



EUROPEAN COMMISSION
DG Competition

***CASE M.7278 - GENERAL ELECTRIC /
ALSTOM (THERMAL POWER -
RENEWABLE POWER & GRID
BUSINESS)***

(Only the English text is authentic)

**MERGER PROCEDURE
REGULATION (EC) 139/2004**

Article 8(2) Regulation (EC) 139/2004

Date: 8/9/2015

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Parts of this text have been edited to ensure that confidential information is not disclosed; those parts are enclosed in square brackets and marked with an asterisk.

EUROPEAN
COMMISSION

Strasbourg, 8.9.2015
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PUBLIC VERSION

COMMISSION DECISION

of 8.9.2015

**declaring a concentration to be compatible with the internal market and the EEA
agreement**

**(Case M.7278 - GENERAL ELECTRIC / ALSTOM (THERMAL POWER -
RENEWABLE POWER & GRID BUSINESS))**

(Only the English text is authentic)

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COMMISSION DECISION

of 8.9.2015

declaring a concentration to be compatible with the internal market and the EEA agreement

(Case M.7278 - GENERAL ELECTRIC / ALSTOM (THERMAL POWER - RENEWABLE POWER & GRID BUSINESS))

(Only the English text is authentic)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to the Agreement on the European Economic Area, and in particular Article 57 thereof,

Having regard to Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings¹, and in particular Article 8(2) thereof,

Having regard to the Commission's decision of 23 February 2015 to initiate proceedings in this case,

Having given the undertakings concerned the opportunity to make known their views on the objections raised by the Commission on 2 July 2015,

Having regard to the opinion of the Advisory Committee on Concentrations²,

Having regard to the final report of the Hearing Officer in this case³,

Whereas:

1. INTRODUCTION

- (1) On 19 January 2015 the Commission received a notification of a proposed concentration pursuant to Article 4 of Regulation (EC) No 139/2004 ("the Merger Regulation") by which the undertaking General Electric Company ("GE"), based in the United States of America ("US") acquires within the meaning of Article 3(1)(b) of the Merger Regulation sole control of the Thermal Power, Renewable Power and Grid businesses of ALSTOM (Société Anonyme) ("Alstom") based in France, by way of purchase of shares. GE is referred to in this Decision as the "Notifying Party" and GE and Alstom are collectively referred to as the "Parties". The acquired businesses will be collectively referred to as "Alstom Business".

¹ OJ L 24, 29.1.2004, p. 1 ("the Merger Regulation"). With effect from 1 December 2009, the Treaty on the Functioning of the European Union ("TFEU") has introduced certain changes, such as the replacement of "Community" by "Union" and "common market" by "internal market". The terminology of the TFEU will be used throughout this decision.

² OJ C 200. , p....

³ OJ C 200. , p....

2. THE PARTIES

- (2) **GE** is a global, diversified manufacturing, technology and services company. Three of GE's divisions are directly related to Alstom's activities:
 - (a) GE Power & Water⁴ serves power generation, industrial, and other customers with energy production products and services, including gas/steam turbines, generators and wind turbines;
 - (b) GE Energy Management⁵ designs, manufactures and services a variety of electrical products and systems;
 - (c) GE Transportation supplies locomotives and rolling stock, as well as rail signalling and train control solutions;
- (3) **Alstom** is a global industrial and engineering company, organised in four business divisions:
 - (a) Thermal Power⁶ offers power generation solutions, various types of gas and steam turbines, generators, boilers, emission control systems, as well as related services;
 - (b) Renewable Power offers turnkey solutions as well as turbines and generators for hydro, wind, geothermal and solar thermal power;
 - (c) Grid offers power transmission and distribution equipment and services, such as transformers and circuit breakers;
 - (d) Transport offers a wide range of rolling stock, rail signalling and transport systems, as well as related services;

3. THE OPERATION AND THE CONCENTRATION

- (4) On 4 November 2014, the Parties entered into a master agreement (the "Transaction"), pursuant to which GE will acquire sole control of Alstom's Thermal Power, Renewable Power and Grid divisions.
- (5) Moreover, after completion of the Transaction the Parties agreed to take certain additional steps in connection with the implementation of the Transaction, designed to safeguard the national strategic interests of the French Republic.
- (6) These additional steps essentially consist in the Parties setting up the following three joint ventures ("JVs"): (i) *Grid and Digital Energy JV*, comprising the combined grid business of Alstom and digital energy business of GE, (ii) *Renewables JV*, comprising Alstom's offshore wind, hydro and marine energy businesses and (iii) *Global Nuclear and French Steam JV*, comprising the global nuclear conventional island activities of Alstom and its steam activities in France. GE would however retain 100% ownership of Alstom's (i) gas

⁴ The subunits of GE Power & Water primarily involved in this Transaction are Power Generation Products ("PGP") and Power Generation Services ("PGS").

⁵ GE Energy Management includes the business unit Digital Energy, which is primarily focused on products that protect, monitor, control and automate the grid, as well as visualization software that helps optimise the grid. GE Digital Energy generated [GE digital energy turnover] in revenue in 2013.

⁶ Alstom's Thermal Power includes the following business units: Gas (10% of the overall turnover division), Steam (35%), Nuclear (5%) and Thermal Services (50%).

turbines business, (ii) non-nuclear steam turbines ("STs") business outside France, and (iii) renewable energy businesses in onshore wind turbines, solar energy and geothermal energy.

- (7) After the Transaction GE will hold 50% *plus one* and Alstom 50% *minus one* of shares and voting rights in both the Grid and Digital Energy JV and the Renewables JV.
- (8) As regards the Global Nuclear and French Steam JV, GE will hold 80% and Alstom 20% *minus two* of the shares, while GE will hold 50% *plus one* and Alstom 50% *minus one* of voting rights. In addition, the French State will hold a preferred share granting it certain minority rights.
- (9) With regard to the JVs, GE will retain the majority interests and the majority of the votes at the general shareholders' meetings. GE will have the casting vote in the Board of Directors, will appoint the Chief Executive Officer ("CEO") and the Chief Financial Officer ("CFO"), and be responsible for the operational management of each of the three JVs. Exercising those rights will give GE sole power to determine the strategic commercial decisions of the JVs and will allow GE to thus retain sole control over each of the JVs.
- (10) For each JV, Alstom will have a set of minority shareholder protection rights designed to protect its financial interest. Alstom will also have certain information rights, including board packs, periodic and annual financial reporting and inspection rights.
- (11) As regards the Global Nuclear and French Steam JV in particular, the French State will hold a preference share granting it the right to sit on the board as well as certain veto rights in matters which might potentially put at risk the integrity and continuity of the supply of conventional island products and services. Such veto rights, however, do not concern strategic business decisions or the day-to-day management of the JV and shall not enable the French State to exercise control over the JV.
- (12) In view of the limited non-controlling voting rights enjoyed by Alstom in all three JVs and by the French State as regards the Global Nuclear and French Steam JV, GE will have sole control over the JVs.
- (13) The additional steps described in Recitals (6) to (12) are subsequent to and separate from the Transaction and do not alter the fact that GE will acquire sole control over Alstom's Thermal Power, Renewable Power and Grid divisions. On this basis, the scope of the transaction notifiable under the Merger Regulation is thus limited to the initial acquisition of sole control over Alstom's Thermal Power, Renewable Power and Grid divisions by GE. This acquisition therefore constitutes a concentration within the meaning of Article 3(1)(b) of the Merger Regulation.

4. UNION DIMENSION

- (14) The undertakings concerned have a combined aggregate world-wide turnover of more than EUR 5 000 million (GE: EUR 109 965 million; Alstom: EUR 14 393 million). Both undertakings have a Union-wide turnover in excess of EUR 250 million (GE: EUR [GE EU turnover]; Alstom: EUR [ALSTOM EU

turnover]) but they do not achieve more than two-thirds of their aggregate Union-wide turnover within one and the same Member State.

- (15) Therefore, the Transaction has a Union dimension pursuant to Article 1(2) of the Merger Regulation.

5. THE PROCEDURE

- (16) During the pre-notification phase, the Commission sent 12 Requests for Information to the Parties and conducted *inter alia* a bidding market reconstruction exercise with the cooperation of the other three Original Equipment Manufacturers ("OEMs"). Site visits were organised at GE's and Alstom's plants in Belfort (France) and Baden (Switzerland). Since July 2014 the Commission has been working in close cooperation with and exchanging information with (also through joint videoconferences with the Parties) the US Department of Justice.
- (17) The Notifying Party notified the Transaction to the Commission on 19 January 2015. The Commission conducted a wide-reaching Phase I market investigation in the markets for heavy duty gas turbines ("HDGTs") and other power plant complement products, namely STs, generators and related services, as well as in relation to certain Grid markets.
- (18) In addition to collecting and analysing a substantial amount of information from the Parties (including internal documents, third party industry reports and submissions), the Commission conducted telephone interviews with numerous key market participants. These include (i) 15 customers and eight competitors in relation to HDGTs and other complement products for power plants; (ii) five customers and two competitors for Network Management Systems ("NMS"), Substation Automation Systems ("SAS") and Fixed-Series Compensation Systems ("FSC").
- (19) Furthermore, over 320 questionnaires were sent to the following five separate groups of market participants: (i) customers of gas-fired power plant components, including HDGTs, (ii) competitors in the various markets for gas-fired power plant components, (iii) Engineering, Procurement and Construction ("EPC") companies, (iv) customers of Alstom's GT36 machine, and (v) customers of NMS, SAS and FSC.⁷
- (20) Based on this market investigation, the Commission raised serious doubts as to the compatibility of the Transaction with the internal market and adopted a Decision to initiate proceedings pursuant to Article 6(1)(c) of the Merger Regulation on 23 February 2015 ("Article 6(1)(c) Decision").
- (21) GE submitted its written comments to the Article 6(1)(c) Decision on 6 March 2015.
- (22) During the Phase II investigation, the Commission sent 63 Requests for Information to the Parties. Further numerous Requests for Information were

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Phase I Questionnaire Q1 to customers gas fired power plants, Phase I Questionnaire Q2 to competitors, Phase I Questionnaire Q3 to EPCs, Phase I Questionnaire Q4 to customers of Alstom GT36 and Phase I Questionnaire Q5 to customers of Grid.

sent to competitors. In addition, over 230 questionnaires were sent to four separate groups of market participants: (i) customers of HDGTs, (ii) competitors in the servicing of GE mature HDGTs, (iii) competitors in generators and STs for gas-fired plants, and (iv) competitors in HDGTs.

- (23) In the course of the Phase II investigation, the Commission received a number of letters from customers expressing their support for the Transaction. These letters were included on the Commission's file.
- (24) On 16 March 2015, the Notifying Party requested an extension of 20 working days of the period for the adoption of a decision pursuant to Article 10(3) of the Merger Regulation.
- (25) On 8 May 2015, the Commission adopted two Decisions pursuant to Article 11(3) of the Merger Regulation, concerning GE's failure to provide a complete response to: (i) the Commission's Request for Information N° 29, addressed to GE on 21 April 2015, with the time limit for reply on 23 April 2015, and (ii) the Commission's Request for Information N° 30, addressed to GE on 24 April 2015. Both Decisions set 13 May 2015 as the time limit for reply. Consequently, the time limits applicable to the present proceedings were suspended for the period between the end of the time limit fixed in the respective Requests for Information and the receipt of complete and accurate information required by these decisions pursuant to Article 11(3) of the Merger Regulation. GE provided complete information concerning the Commission's Request for Information N° 30 on 8 May 2015, and concerning the Commission's Request for Information N° 29 on 11 May 2015.
- (26) In their replies to the Commission's Request for Information, the Parties retained a number of documents over which they claim Legal Professional Privilege ("LPP") protection. Furthermore, GE retained a number of documents which it considered as "potentially privileged documents". Moreover, GE claimed LPP over 41 documents which were provided in GE's reply to the Commission's Request for Information N° 26 and to the Commission's Decision of 8 May 2015 pursuant to Article 11(3) of the Merger Regulation⁸ and requested the Commission to remove the documents from its file. By email dated 22 May 2015, and in the Commission's Request for Information of 5 June 2015, the Commission requested GE to provide the evidence necessary to assess the entirety of LPP claims raised by GE. Pending a decision on GE's claim, the information over which LPP is claimed is not referred to in the present Decision.
- (27) Formal State of play meetings took place between the Commission and the Parties on 10 March 2015 and on 9 June 2015.
- (28) Having received specific requests by the following companies to be recognised as interested third parties to the proceedings, the Hearing Officer recognised the competitors Ansaldo Energia S.p.A., Ethos Energy, MHPS, and Toshiba Corporation, as well as customers Iberdrola Generación España S.A., MPF Operations Limited and PKN Orlen S.A. as interested third persons pursuant to

⁸ See, notably, GE's submissions of 27 April, 3 May and 21 May 2015.

Article 5 of Decision 2011/695/EU⁹ in conjunction with Article 18(4) of the Merger Regulation in the present proceedings.

- (29) A Statement of Objections addressed to the Notifying Party was adopted on 12 June 2015. Access to file was given via CD-ROMs on 15 June 2015, followed by a quantitative data room and a qualitative data room. A second access to file via CD-ROM was given on 14 July 2015.
- (30) The Notifying Party replied to the Statement of Objections on 26 June 2015 ("Reply to the Statement of Objections"). An oral hearing took place on 2 July 2015.
- (31) On 9 July 2015, the Commission sent a Letter of Facts to the Notifying Party, who replied on 16 July 2015 ("Reply to the Letter of Facts").
- (32) In order to address the competition concerns identified in the Statement of Objections, the Notifying Party submitted commitments on 16 July 2015. Consequently, the period for the adoption of a final Decision was extended by 15 working days pursuant to Article 10(3) of the Merger Regulation.
- (33) The Notifying Party subsequently submitted the revised commitments on 21 July 2015 and on 24 July 2015. The Commission launched a market test of those commitments on 24 July 2015. The Notifying Party submitted final commitments on 6 August 2015.
- (34) The meeting of the Advisory Committee took place on 31 August 2015.
- (35) The Hearing Officer issued his final report on 1 September 2015.

GE's contacts with customers in the course of the market investigation and the reliability of certain customers' evidence

- (36) The Commission's investigation revealed that GE implemented a wide ranging and carefully planned campaign to influence customer replies to the Commission questionnaires and their overall reactions to the Transaction. The Commission's analysis of replies to the Requests for Information and other information provided by customers revealed that the effect of following this campaign was that a number of customers reversed their position concerning the Transaction, invariably to the benefit of the merger.
- (37) This calls into question the reliability of such information, and in particular the probative value of those customers' testimonies.¹⁰
- (38) A GE internal presentation dated 5 January 2015 entitled "GE-Alstom Alliance – Commercial Team Training" lays out a detailed action plan to contact ("outreach") approximately 130 customers in the period from 5-9 January 2015 before notifying the Transaction to the Commission.

⁹ Decision 2011/695/EU of the President of the European Commission of 13 October 2011 on the function and terms of reference of the hearing officer in certain competition proceedings, OJ L 275, 20.10.2011, page 29.

¹⁰ According to settled case law, the sole criterion relevant in the Commission's evaluation is the reliability of the evidence (Case C-407/04 P – *Dalmine SpA v Commission*, 2007 ECR I-00829, paragraph 49).

Figure 1: GE-Alstom Alliance – Commercial Team Training

[extract from internal GE document Pre-EC filing communication plan]

Source: Annex 4895, page 2.

- (39) Figure 1 illustrates how this outreach exercise, also called "*Pre-EC filing comm plan*", was planned and carried out to coincide with the opening of the Commission's investigation. This suggests that the exercise was primarily designed to influence the views customers would give about the Transaction to the Commission during its investigation, and it suggests that it was not an ordinary, commercially driven customer campaign.
- (40) As shown in Figure 2, the document notes that "*Customer completion of the EC questionnaire is critical*", and instructs the relevant GE commercial representatives and others to contact the customer and "*explain the EC questionnaire that is forthcoming*". The commercial representatives were also asked to "*request their [the customer's] active and positive reply*" [emphasis added].¹¹

Figure 2: GE-Alstom Alliance – Commercial Team Training

[extract from internal GE document – commercial team training]

Source: Annex 4895, page 6.

- (41) GE has thus not only circulated letters and other general information concerning the Transaction, but has engaged in direct and often recurrent exchanges with customers. These exchanges relate not only to the anticipated effects of the Transaction, but also to the Commission's investigation itself. The exchanges seek to influence how customers frame their replies to the investigation and how they respond to the Transaction in their contact with the Commission.
- (42) According to GE's own reports, there were at least 456 contacts between GE and its customers regarding the Transaction.¹² In at least 223 of these contacts with more than 170 different customers across the world, GE discussed the Commission's investigation and the fact that customers might receive the questionnaires from the Commission. The bulk of the contacts relating to the Commission's investigation took place in the period from 5 January 2015 to 19 January 2015 (the date of the notification to the Commission), when at least 105 contacts were reported. However, minimum of 20 contacts concerning the Commission's investigation took place during the Phase I investigation, and at least a further 15 were reported during Phase II investigation.
- (43) In response to questions from the Commission, customers indicated that these contacts went beyond the customary explanations of the commercial objectives of the Transaction and pursued at least in parallel the objective of influencing the replies of customers to Commission questions. One customer described such contacts as follows: "*At the meeting on 25 March 2015 [...], GE assured*

¹¹ See GE's reply to the Commission's Request for Information N°26, 02.04.2015, question 3.

¹² See GE's reply to the Commission's Request for Information N°21, 16.03.2015, question 1, and Annex 1.

*us that they would continue to support the Alstom turbines as they felt it would be in their commercial interests to do so. GE were keen to stress that there would still be competition in the EPC market place and they felt that it would only take two parties to provide effective competition. As stated above, in our view they were looking for us to express our support for the merger to the Commission".*¹³ GE was also encouraging its customers to express their support for the Transaction to the Commission either in letters or in meetings (see, for example, Recital (45), point f).

- (44) The Commission accordingly considers that GE conducted a wide ranging campaign, which was at least partly designed to influence the replies of customers to questionnaires and otherwise influence customers in their communication with the Commission. Because of multiple ongoing business relationships with GE or Alstom or with both the customers may have had an incentive to align the presentation of their views with that of GE. The Commission therefore concludes that GE's campaign is likely to have disrupted the orderly gathering of reliable evidence. As will be shown in Recital (45) below, GE's campaign appears to have indeed affected at least a certain number of customer reactions in the Commission's investigation.
- (45) In particular, the Commission established that least of eight customers withdrew or reversed their concerns regarding the Transaction as a likely result of GE's campaign. This was done either in response to questions concerning their views on various aspects of the Transaction (in Questionnaires N° 1 and N° 7¹⁴) or in spontaneous submissions by the customers. The sudden change in position was unsubstantiated and no credible or adequate explanation for the sudden change in position was furnished:
 - (a) Customer [GE customer name]: in Phase I, its reasoned answers to questions 64-65, 82, 178, and 180 of the Phase I Questionnaire Q1 to customers of Gas fired power plant¹⁵ raised some concerns with respect to GT13 and GT26 frames, and stated that it anticipated that the Merger would result in increased prices in the European Economic Area (EEA). However, during the Phase II investigation, [GE customer name], in its reply to similar questions 61.3, 86, 149-152 of Phase II Questionnaire Q7 to customers of Gas fired power plant¹⁶ abandoned this position and responded "I don't know" in answer to questions related to the impact of the Transaction without explaining its newly adopted position. It is clear that GE has discussed the Commission's investigation with [GE customer name]¹⁷.
 - (b) Customer [GE customer name]: GE's internal overview of customers' feedback ("GE's Customer Feedback Document")¹⁸ records [GE customer name]

¹³ See replies to questions 8-10 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁴ References to specific questions of the questionnaires are provided for the sake of illustration and do not represent an exhaustive list.

¹⁵ See reply to Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁶ See reply to Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁷ See GE's reply to the Commission's Request for Information N°26, 21.04.2015, question 1.

¹⁸ See GE's reply to the Commission's Request for Information N°26, 16.03.2015, question 2, and Annex 4.1 in reply to of the Request for Information N°26. This document appears to be based on customer feedback pre-dating the "outreach" exercise in January 2015.

concerns: *“It could be an issue on competitiveness in the market excluding a competitor from the current situation. The choice of technologies will be restricted. We are concerned about our installed base on GT 26.”* Similarly, during the Phase I investigation [GE customer name] raised these concerns in its replies to questions 74 and 82 of Phase I Questionnaire Q1 to customers of Gas fired power plant.¹⁹ However, during the Phase II investigation, [GE customer name] no longer raised concerns in its replies to corresponding questions 61.3 and 101 of Phase II Questionnaire Q7 to customers of Gas fired power plant,²⁰ without explaining its newly adopted position. It is clear that GE has discussed the Commission's investigation with [GE customer name]²¹

- (c) Customer [GE customer name]: GE's Customer Feedback Document reveals that [GE customer name] was concerned with the Transaction: *“a. Loss of competitor in EPC product market. GE and Alstom often occupy the top two positions in our EPC project evaluations. We are concerned that the loss of one competitor will harden prices. b. Thermal generation is under great pressure in Europe and innovation and increased flexibility are essential to keep plants and investments viable. The Alstom GT26 is a close competitor for GE 9FA/FB technology. Post-acquisition, we are therefore concerned about the future development path of the [text discontinued in the original document]”*.

However, in its replies to questions in Phase I Questionnaire Q1 to customers of Gas fired power plant²² and Phase II Questionnaire Q7 to customers of Gas fired power plant²³, requesting [GE customer name] subjective views on the Transaction, [GE customer name] questioned Alstom's viability and expressed doubt as to the competitiveness of the GT36 frame compared to GE's products. [GE customer name] no longer raised concerns regarding GT26, basing itself on GE's assurances on further development work on GT26, including upgrades. GE's replies to Requests for Information N° 21 and 26 document numerous contacts between GE and [GE customer name] concerning the Transaction. For example, in an email dated 26 March 2015 GE expressed gratitude for [GE customer name] support in the present proceedings, and, at [GE customer name] request, provided GE's views on the impact on innovation as well as on Alstom's financial condition pre- and absent the merger. The timing of these exchanges also coincided with the period when [GE customer name] was drafting its reply to Phase II Questionnaire Q7 to customers of Gas fired power plant (received on 25 March, reply submitted on 14 April 2015) in which it raised for the first time the issue of Alstom's viability.

- (d) Customer [GE customer name]: GE's Customer Feedback Document reports the following concerns of [GE customer name]: *“Similar to the rest of customers, [GE customer name] by principle doesn't like the idea of losing one OEM,*

¹⁹ See reply to Phase I Questionnaire Q1 to customers of Gas fired power plant.

²⁰ See reply to Phase II Questionnaire Q7 to customers of Gas fired power plant.

²¹ See GE's reply to the Commission's Request for Information N°26, 21.04.2015, Annex 1.

²² See, for example, replies to questions 64, 65, 74, 178 and 180 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

²³ See, for example, replies to questions 61, 86, 149-152 of Phase II Questionnaire Q7 to customers Gas fired plants.

considering they don't have any relationship with MHI [MHPS] not Ansaldo. For that reason A and S would remain as main OEM's for [GE customer name], at least in the gas turbine sector." During the market investigation, [GE customer name] explained that it had been kept informed about the Transaction by both GE and Alstom and confirmed a refusal to reply to the Commission's Requests for Information.²⁴ In contrast to the concerns internally recorded by GE, on 29 April 2015 [GE customer name] addressed a letter of support to GE, claiming, amongst other things, that "[GE customer name] *does not view Alstom as a differentiator innovator in the area of gas turbines, and that the market for gas turbine will remain very competitive after the transaction, even with the elimination of Alstom as an independent supplier*". Despite its earlier refusal to reply to the Commission's Request for Information, [GE customer name] explained to GE that "[GE customer name] *will willingly meet the European Commission to confirm its views*".²⁵ [GE customer name] has not provided any further explanation for its newly adopted position.

- (e) Customer [GE customer name]: GE's Customer Feedback Document reveals that [GE customer name] anticipated that the Transaction would result in less opportunity for competition, and was concerned by a potential price increase. This is consistent with [GE customer name] reply to Phase I Questionnaire Q1 to customers of Gas fired power plant where it raised various concerns for Large and Very Large HDGTs²⁶ (questions 76, 178 and 180).²⁷ However, in its reply to the corresponding questions in Phase II Questionnaire Q7 to customers of Gas fired power plant (questions 86, 101, 150 and 151)²⁸ [GE customer name] abandoned this position and answered "I don't know" without providing any further explanation for its newly adopted position. It is clear that GE has discussed the Commission's investigation with [GE customer name].²⁹
- (f) Customer [GE customer name]: GE's Customer Feedback Document records [GE customer name] concerns: "*Common to the rest of the customers [GE customer name] doesn't like the idea of losing OEM suppliers. Main concern is the gas turbine sector where there is limited offering (comment from the EPC branch). [GE customer name] confirms the sequential combustion seems to be a good technology and in general everything coming from Brown boveri originally. Concerns about GE interest to support that technology in the long-term. Also potential loose of interest by Alstom to support their equipment in the interim.*"

However, in its reply to Phase I Questionnaire Q1 to customers of Gas fired power plant (questions 64-66, 74-76, 178-182)³⁰, and Phase I Questionnaire Q2

²⁴ "The acquisition of Alstom's energy business by General Electric is being followed by [GE customer name] since its announcement and since that date [GE customer name] has been kept informed both by Alstom and GE of the rationale of the operation and its progress. We furthermore inform that [GE customer name] took the decision not to respond to the questionnaire sent by the European Commission".

²⁵ Letter transmitted to the Commission by GE on 27 May 2015.

²⁶ See Recital (112) for a definition of Medium, Large and Very Large HDGTs.

²⁷ See reply to Phase I Questionnaire Q1 to customers of Gas fired power plant.

²⁸ See reply to Phase II Questionnaire Q7 to customers of Gas fired plants.

²⁹ See GE's reply to the Commission's Request for Information N°26, 21.04.2015, question 1.

³⁰ See reply to Phase I Questionnaire Q1 to customers of Gas fired power plant.

to competitors on the gas business (question 86, 101, 149-152)³¹ [GE customer name] no longer maintains such concerns. Evidence shows that GE was closely monitoring and possibly assisting customers in the process of replying to these questionnaires. An email from GE to [GE customer name] dated 20 January 2015 alerted [GE customer name] that Phase I Questionnaire Q1 to customers of Gas fired power plant had been dispatched, and added that "[GE] expect [GE customer name] to fill in [the EC questionnaire], and needless to say that we are at your disposal if you may have any questions for its reply."³²

In a letter to the Commission dated 11 May 2015, [GE customer name] expressed its support for the Transaction due to the increased competitiveness of GE, as well as due to viability issues concerning Alstom. An email chain reveals that this letter was prepared at GE's written request, "asking [GE customer name] to freely express its opinion on the matter and provide arguments supporting that position." GE added that this was "the first line of action for which we request [GE customer name] support, without prejudice to possible requests for other actions going forward".³³

- (g) Customer [GE customer name]: GE's Customer Feedback Document reveals that [GE customer name] was concerned about the loss of a supplier. This is consistent with [GE customer name] replies in Phase I Questionnaire Q1 to customers of Gas fired power plant (questions 64, 76.1, 77.3, 82, 179, 180)³⁴, raising concerns for Medium, Large and Very Large HDGTs.

However, in its reply to Phase II Questionnaire Q7 to customers of Gas fired power plant (questions 61, 86, 101, 149-152)³⁵, [GE customer name] abandoned this position and considered that the Transaction would not have a negative impact, and that sufficient suppliers remained. Therefore [GE customer name] considered that the Transaction would lead to equivalent or better conditions. [GE customer name] has not provided any explanation for its newly adopted position. It is clear that GE has discussed the Commission's investigation with [GE customer name].³⁶

- (h) Customer [GE customer name]: GE's Customer Feedback Document records [GE customer name] concerns: "*Lack of Competition in CCGT supply; less innovation and new products; deal integration impacting negatively on service levels incl after sales follow up and O&M. Will [GE customer name] see benefits from the deal being passed on through the supply chain.*" This position was reversed in [GE customer name] reply to Phase I Questionnaire Q1 to customers of Gas fired power plant (questions 64-66, 73, 74, 179-180)³⁷ where

³¹ See reply to Phase II Questionnaire Q7 to customers of Gas fired plants.

³² Courtesy translation: "*Esperamos la cumplimentación por vuestra parte y ni que decir tiene que quedamos a vuestra disposición en caso de que tengáis cualquier duda en su respuesta.*"

³³ Courtesy translation: "*nos complace adjuntar una carta solicitando a [GE customer name] que exprese libremente su opinión sobre dicho asunto y aporte los argumentos que soporten dicha posición. Finalmente hemos considerado que ésta es la primera línea de acción para la que solicitamos el apoyo de [GE customer name], sin menoscabo de poder solicitar otras acciones en el futuro.*"

³⁴ See reply to Phase I Questionnaire Q1 to customers of Gas fired power plant.

³⁵ See reply to Phase II Questionnaire Q7 to customers of Gas fired plants.

³⁶ See GE's reply to the Commission's Request for Information N°26, 21.04.2015, question 1.

³⁷ See reply to Phase I Questionnaire Q1 to customers of Gas fired power plant.

it considers that there would be sufficient competition remaining, and that the Transaction would not have a negative impact. [GE customer name] has not provided any explanation for its newly adopted position.

- (46) The sole criterion relevant in the Commission's evaluation is the reliability of evidence and this Decision will primarily attach importance to all evidence the reliability of which is not called into question by GE's initiatives to influence its customers' views. The most recent statements referred to in Recital (44) express support for the Transaction but are inconsistent with previously expressed views by the same respondent and fail to provide a credible explanation for the change of position. Therefore, doubts are cast on the probative value of these affirmations and it is questionable whether they are indeed representative of the views the responding companies would have expressed in the ordinary course of business and have not been affected by GE's campaign striving for "*active and positive*" replies in the Commission's investigation. In assessing the contradictory responses, the Commission considers GE's contemporaneous internal reports taken together with the earlier customer replies which were consistent with these reports to have a higher probative value than the subsequent replies containing contradictory views aligned with GE's interest in circumstances where no cogent or adequate explanation has been put forward by the customers to explain this change in position.
- (47) In its Reply to the Statement of Objections and Reply to the Letter of Facts, GE argued that the Commission failed in its legal obligation to consider and weigh up all available evidence by rejecting later opinions which GE alleges reflect the fact that customers had access to more information at that stage and therefore their replies were considered response by customers who are better informed. According to GE, the Parties were not capable of influencing the views of their customers and the Commission is not allowed to ignore exculpatory evidence. GE also accused the Commission of taking the opposite approach when it came to MHPS' earlier replies, which were more favourable to the Transaction but which were allegedly ignored by the Commission³⁸ GE also refers to letters from certain customers mentioned in Recital (45) which, GE claims, clarify the change of position of these customers.
- (48) Firstly, the Commission recalls that the customers' views on the Transaction represent subjective indications. Therefore, for the purpose of establishing on an objective basis whether or not a concentration would significantly impede effective competition, their evidential value is lower than evidence such as contemporaneous documents and market data.
- (49) Secondly, Recital (45) lists several indications that customers prepared the letters referred to by GE in conjunction with, or even at the request of GE. This casts a doubt on whether these letters show the attributes of an independent submission for the purpose of evaluating their evidentiary value. This situation clearly differs from that of MHPS, where the Commission has received no indications that the evolution in MHPS' position may have been influenced by

³⁸ Reply to the Statement of Objections, paragraphs 107-113, Reply to the Letter of Facts, paragraphs 6-11.

another party. However, in assessing the evidentiary value of MHPS submissions, and in particular its subjective views, the Commission takes into account that MHPS is a competitor and may as such have opposing interests to those of the Parties concerning the Transaction.

- (50) Consequently, the Commission will not attach weight to the latest contradictory views made by the customers referred to in Recital (44), which are aligned with GE's interest, and for which those customers have not properly explained their change in position. However, the Commission will attach weight to the facts-based information from those customers (as opposed to their expressed opinions).
- (51) The Commission notes that whether or not the opinions from the customers referred to in Recital (45) are taken into account does not affect the conclusion that the majority of customers who expressed their views on the impact on the Transaction expect such impact to be negative for competition. Therefore this has no bearing on the Commission's assessment.
- (52) Notwithstanding the nature of GE's campaign and its scope and effects, and notwithstanding that it may have influenced customers other than the eight respondents identified in Recital (44), this Decision does not consider that GE's wide-ranging campaign had an impact on the reliability of evidence from other customers beyond the instances identified by the Commission.

6. OVERVIEW OF THE PARTIES' ACTIVITIES

6.1. Introduction to power generation equipment

- (53) Power generation can be divided into the following main technologies:
 - (a) Gas fired plants: In a gas-fired plant, energy is added to compressed air by burning gas; the hot³⁹ compressed air drives a turbine connected to a generator. In a "simple cycle" ("SC") configuration, exhaust heat from the gas turbine ("GT") is released into the air. In a "combined cycle" ("CC") configuration, the exhaust heat is routed to a boiler (the heat recovery steam generator, "HRSG"), where steam is produced. The steam drives a Steam Turbine ("ST") connected to another generator ("multi-shaft" plant) or to the same generator ("single shaft" plant);
 - (b) Steam plants: A fuel is burnt to produce heat. The heat produces steam in a boiler, which in turn drives a ST connected to a generator. The fuel can be coal or lignite (c. 70-75% of all steam plants), heavy oils (c. 20%), and more rarely biomass, geothermal energy or solar heat (solar thermal energy);
 - (c) Nuclear plants: Uranium produces heat through nuclear fission. The heat produces steam in a boiler, which in turn drives a ST connected to a generator;
 - (d) Hydro plants: Falling or running water drives a hydro turbine which is connected to a generator;
 - (e) Wind parks: Wind rotates blades creating kinetic energy which is transformed into electricity in a generator. Wind farms can be onshore or offshore;

³⁹

Firing temperatures range from 1,100 to 1,600 degrees Celsius.

- (f) Solar photovoltaic: Solar energy is converted into electricity using semiconducting materials with photovoltaic effect.

6.2. Description of the Parties' activities

- (54) GE's activities relevant to the assessment of the Transaction are as follows; through its GE Power & Water unit GE manufactures, supplies and services, among others: gas turbines, STs and generators. Through its GE Energy Management unit GE provides products and technology that transmit, distribute and convert electricity, and modernise the grid. A part of the GE Energy Management unit, namely Digital Energy unit offers products that protect, monitor, control and automate the grid, and offers visualisation software that helps optimise the grid.
- (55) Alstom's activities relevant to the assessment of the Transaction are as follows: (i) the manufacture and supply of products and services for thermal power generation plants, such as gas turbines, STs, generators, HRSGs, as well as EPC solutions and service and maintenance, (ii) the supply of automation and control solutions for power plants and for individual equipment, (iii) products and services that transmit electricity as well as grid management.
- (56) Both GE and Alstom have market presence offering certain equipment and services for power plants that run on renewable energy sources such as, wind, hydro, tidal and solar power. In this respect Alstom currently sources wind converters for use in wind turbines from GE and GE would have a share of [30-40]% in a potential merchant market for wind converters. However [90-100]% of GE sales of wind converters are to one customer Siemens AG ("Siemens"), who in 2013 turned to internal production of wind converters. Thus any customer or input foreclosure is unlikely and these markets will not be analysed further in the Decision.
- (57) GE does not have EPC activities and does not supply HRSGs so there is no horizontal overlap between the Parties in these markets. The vertical relationships resulting from the Parties' activities are assessed in Section 9.5.

7. HEAVY DUTY GAS TURBINES – RELEVANT MARKETS

7.1. Introduction to HDGTs

- (58) Gas fired power plants are expected to play a critical role in the coming decades in the European energy mix, as a flexible complement to renewable energies and in the replacement of polluting coal-fired plants (see Section 8.1 of this Decision on the role of Combined Cycle Gas Turbines ("CCGT") power generation in the energy mix).
- (59) Supply pattern for gas-fired plants. Original equipment manufacturers ("OEMs") such as GE, Alstom, Siemens and MHPS generate revenues through two streams: (i) the sale of new equipment and (ii) the servicing of the existing installed fleet of HDGTs. Servicing includes (a) regular operation and maintenance ("O&M") services, aimed at maintaining the performance of the asset, and (b) upgrades/retrofits, aimed at improving performances through certain modifications of the technology. Customers of newly-built HDGTs normally purchase long term service agreements ("LTSA") together with the HDGTs.

- (60) Depending on technologies, the servicing of a specific OEM's equipment is initially mostly closed to competition from other OEMs ("OOEM" servicing) or independent service providers ("ISPs") only after several years (at least 8-16 years)⁴⁰. In fact, unless the technology of the HDGT is already "mature" and unless other operators have developed the capabilities to service that technology, customers normally do not have any other choice when buying a new HDGT than to purchase the servicing of this new machine from the same OEM.
- (61) Frequency. HDGTs spin at a frequency of 50 Hz or 60 Hz depending on the alternating current frequency in the power transmission grid of a given country. In large parts of the world, including the EEA, this frequency is 50 Hz, whereas in the Americas and some parts of Asia and the Middle East it is 60 Hz.
- (62) Currently there are five main OEMs of HDGTs, namely Alstom, Ansaldo Energia ("Ansaldo"), GE, MHPS and Siemens. In certain countries, OEMs develop contractual relationships with third parties to manufacture and sell their own-technology power equipment (GTs, STs, generators, for instance.) under a license agreement. These additional channels have been important in helping OEMs' technology to be deployed in countries that would otherwise not be easily accessible (notably China and India).
- (63) Customers of HDGTs are usually public utilities or independent power producers ("IPPs"), namely entities that produce electricity to be fed into the power transmission grid. These customers typically select their suppliers by organizing competitive tenders.⁴¹ Many customers multisource, in the sense that they operate HDGTs from different OEMs⁴². Similar to other power generation equipment, HDGTs are sold in a small number of large tenders. The markets for HDGTs are therefore to a large extent bidding markets characterized by lumpy demand and infrequent awards. At the same time, long-term framework agreements between customers and OEMs appear to be a well-established practice in the industry,⁴³ though the existence of such agreements does not bind customers to purchasing HDGT solely from these OEMs.⁴⁴ Many projects also appear to be awarded without a competitive tender. Many of these projects awarded without competitive tender process for instance to "repeat customers", who decide to continue buying from an OEM once they have already one unit in operation. Customers might opt for these direct awards either to replace old units or because they see a logistic or financial advantage or both in doing so. For instance, since 2009 there were a total of 30 competitive tenders and 6 direct (non-competing) orders in the EEA.
- (64) When tenders are organized, customers set out the desired performance requirements for HDGTs. There are numerous parameters of differentiation between HDGTs including output (measured in Megawatt "MW"), efficiency

⁴⁰ Case M.7284 - Siemens/ John Wood Group / Rolls-Royce, paragraph 15.

⁴¹ A competitive tender is a tender with more than one participant bidding. A non-competitive tender is a tender where only one OEM participates.

⁴² See replies to question 103 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁴³ See replies to question 107 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁴⁴ See replies to question 108 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

(measured either in SC or in CC operation), flexibility (start-up speed, ramp-up rate, turndown capability; efficiency at partial load); pollutant emissions; fuel flexibility; and heat rate.

- (65) Output and efficiency are often the two most important performance parameters of a HDGT. Output determines the amount of power that can be produced for a given HDGT application, while efficiency defines the amount of fuel that needs to be consumed for a given amount of output, and therefore determines how economical a HDGT is to operate. In the EEA, in particular, operational flexibility appears to be an equally important requirement or even more relevant than output/efficiency.
- (66) The technical specifications put forward by customers will normally reflect the intended plant operation. HDGTs might be used in base-load plants, peak-load plants or mid-merit plants:
 - (a) Base-load plants are designed to meet base-load demand of electricity, namely the minimum level of demand on the transmission grid over 24 hours. These plants should be able to generate continuous, reliable and efficient power and are typically run on a permanent basis throughout the year.
 - (b) Peak-load plants are designed to meet periodic (even hourly) peaks or spikes of electricity demand. These plants are usually smaller and have a level of high operational flexibility. They need to be able to start up fast and are turned on and off frequently. Peaking power plants run for a limited number of hours every year.
 - (c) Mid-merit plants are intermittent sources of power that fill in the gap between the peak-load and base-load. A mid-merit power plant generally has the ability to start and stop on a daily basis to serve electric load that comes on and goes off during the day.
- (67) Customers can choose to put the supply of HDGTs out to tender on a stand-alone basis or to buy HDGTs as part of integrated packages or turnkey power plant solutions. The scope and nature of the bid varies from project to project according to each customer's preferences. Certain customers run tenders for separate components which they integrate themselves. Other customers prefer to contract with an EPC company in charge of managing the integration. When turning to an EPC company, customers either:
 - (a) enter into a single contract with the EPC company by putting the entire scope to tender with that EPC company, which in turn runs tenders for various pieces of equipment; or
 - (b) request the EPC company to form a consortium with the main OEM(s), typically the supplier of the GT or ST. In such case, the customer contracts the consortium company and thus chooses both the EPC company and the OEM.
- (68) Turnkey solutions are a more comprehensive form of EPC, in which the power plant is delivered to the customer, such that they need only to “turn a key” to commence operating the facility. In a turnkey project, the turnkey provider commits to offer a complete power plant at a given price, and thus carries the project risk for scheduling and budget.
- (69) Customers usually will evaluate a project on the basis of a lifecycle cost analysis. Customers may value lower initial capital expenditure ("Capex") of a

HDGT over operating expenses ("Opex") and the other way round depending on the intended purpose of the plant. Customers usually value low Capex in regions of the world where fuel prices are low, where customers have the ability to pass on fuel costs to their own customers, where the power plant is projected to operate only for a few hours per year (for instance in peak-load or mid-merit operation) or where customers have limited access to project financing sources or in both cases. Customers usually value low Opex in cases where the power plant is projected to operate for long hours per year (for instance base-load operation), where fuel costs are high or electricity prices are low or both. In this case, customers will usually seek the lowest lifecycle cost of electricity, achieved through high-efficiency HDGTs and economies of scale through larger plant sizes. In regions where gas prices are high (as is currently the case in Europe and Asia), customers are particularly focused on the need for low Opex, and therefore tend to favour high-efficiency GT offerings to other technology classes. In tenders involving GTs, customers usually also buy LTSAs for their new GT. Therefore, the costs of maintenance become another important criterion for the award of the contract.

- (70) The winning bid will be selected by customers on the basis of complex evaluation models taking the lifecycle cost analysis into account and applying different weightings to different performance criteria. It is not uncommon however for customers to modify the operational profile of the plant, the evaluation criteria and the technical specifications during the bidding process.

7.2. The relevant product market

7.2.1. The Notifying Party's views

- (71) The Notifying Party submits that HDGTs constitute a separate product market from Industrial Gas Turbines ("IGTs"), such distinction being based on both demand-side and supply-side considerations.⁴⁵ From a demand side perspective, IGTs and HDGTs cover different output ranges and, thus, fulfil different needs. HDGTs, which offer higher outputs, are typically used for power generation or co-generation. IGTs, which produce lower outputs, are designed for small-scale power generation projects in oil and gas applications and in a variety of industrial applications (either to produce mechanical drive or heat). Consequently, according to GE, there is no demand-side substitutability between higher end HDGTs and IGTs, even if a limited degree of demand-side substitutability between higher output IGTs and lower output HDGTs cannot be excluded. From a supply side point of view, IGTs manufacturers face high entry barriers to produce HDGTs. In fact, even though there are no significant technological barriers from an aerodynamic perspective to scale a IGT into a HDGT, from a combustion technology point of view there are significant differences between the two types of machines, which entail substantial development, testing costs and R&D investments.⁴⁶
- (72) Moreover, the Notifying Party submits that the cut-off point between these two markets should be set at 90 MW. According to the Notifying Party, GTs with an output between 60 MW and 90 MW do not compete against GTs with

⁴⁵ See Form CO, paragraphs 201-208.

⁴⁶ See GE's reply to the Commission's Request for Information N°18, 06.03.2015, question 14.

output larger than 90 MW due to output limitations and their use in specific applications. Moreover, the Notifying Party submits that GE's smallest GTs that could potentially compete with Alstom's smallest GTs (namely the GT13E2 with an output of 185 MW) are GE's so-called E-class models (which start at a minimum output of 90 MW). Therefore, GE considers that the competitive effects of the Transaction should be examined within the market comprising GTs with an output equal or superior to 90 MW. According to the Notifying Party, the proposed product market definition would allow the competitive assessment to be focused on the segment where the Parties' activities overlap and to reflect competitive realities in the marketplace. The Notifying Party also submits that aeroderivative GTs⁴⁷ should not be included in the HDGT relevant product market.

- (73) With regard to a possible product market distinction between 50 Hz and 60 Hz HDGTs, the Notifying Party submits that, from a demand-side perspective, 50 Hz and 60 Hz HDGTs are by definition not substitutable. From a supply-side perspective, the Notifying Party submits that 50 Hz and 60 Hz HDGT units are based on similar technology. Once an OEM has developed one version (50 Hz or 60 Hz), the other Hz version can be developed in approximately one to two years. The Notifying Party does not conclude on whether a product market distinction should be made on the basis of the above, but submits that a distinction between 50 Hz and 60 Hz GTs does not have a significant effect on the market shares of the Parties and their competitors.
- (74) Furthermore, the Notifying Party submits that the HDGT relevant product market could be subject to further segmentation according to technological classes, which are used in the industry to designate newer, more efficient or more powerful products and to distinguish them from smaller models. For instance, whereas GE's internal classification is based on firing temperatures (so-called B, E, F, H classes), Alstom's internal classification is based on output ranges (so-called Medium, Large and Very Large classes). In any case, since increasing firing temperatures results in increasing output, the two broadly coincide.⁴⁸ The Notifying Party submits that the different HDGTs classes may not necessarily constitute separate relevant markets as they rather represent a technological continuum belonging to the same market. Nonetheless, the Notifying Party considers that the nature of competition between HDGTs in a given class does warrant a discussion of the competitive effects of the Transaction for each class.

⁴⁷ There are two types of GTs: (i) frame GTs (IGTs and HDGTs), and (ii) aeroderivative GTs ("aeroderivatives"). Aeroderivatives are generally lighter-weight GTs derived from aircraft engines. According to the Notifying Party, aeroderivatives generate outputs generally ranging from 15 MW to ~100 MW (Form CO, paragraph 159). Alstom does not produce aeroderivatives.

⁴⁸ Firing temperature in the combustion chamber of the GT is positively correlated with output and efficiency. In fact, higher firing temperatures produce higher efficiencies, because the GT is able to extract more energy from the fuel fed into the combustion. In other words, GTs operating at higher firing temperatures generate higher output for a given amount of fuel. Therefore, there is a positive correlation between firing temperature, output and efficiency.

7.2.2. Previous Commission Decisions

- (75) The Commission has in the past analyzed the market for the supply for gas turbines.⁴⁹
- (76) In previous cases, the Commission has considered a potential segmentation of product markets for GTs according to their power output⁵⁰. In its most recent decisions⁵¹, the Commission has considered an output of 60 MW as the cut-off point between HDGTs and IGTs.
- (77) However, the Commission has to-date left the exact product market definition open in all relevant cases.

7.2.3. Commission's assessment

7.2.3.1. HDGTs constitute a separate product market distinct from IGTs

- (78) The Commission's investigation analysed whether HDGTs and IGTs constitute separate markets.⁵²
- (79) The majority of suppliers considered that the two types of machines are not too dissimilar from a product characteristics and technical point of view and that the major difference between the two is the different output range covered. In fact, IGTs are by definition characterized by lower output than HDGTs and, thus, by lower firing temperatures. Consequently, IGTs are inherently simpler from a technological point of view than HDGTs. IGTs do not have to face the technical challenges posed by extremely high firing temperatures, such as the need for special thermal coating capable of preserving GTs components at temperatures exceeding their melting points. The overwhelming majority of customers considered that IGTs and HDGTs have in fact different technical features and different maintenance costs.⁵³
- (80) Moreover, based on a recent analysis of these markets conducted by the Commission,⁵⁴ it appears that different competitors are active in the two markets and that there are a larger number of competitors active in the IGTs than in the HDGTs. This simple fact suggests the existence of technological barriers between the two spaces.
- (81) The majority of suppliers also acknowledged that substitutability from a demand point of view is quite limited. *"HDGTs [are] typically selected for Utility applications for base load, where produced electricity [is] directly connected to Grid, whereas IGTs typically are selected for Industrial power*

⁴⁹ Case M.7083 - John Wood Group/ Siemens/ JV.

⁵⁰ Case M.7284 - Siemens/ John Wood Group / Rolls-Royce, paragraphs 20-25, Case M.3148 - Siemens/Alstom Gas and Steam Turbines, paragraphs 13-14, Case M.2220 - General Electric/Honeywell, paragraphs 461-465, Case M.1484 Alstom/ABB, paragraphs 13-19,. Case M.1404 - General Electric/Alstom, paragraphs 8-14; Case M.440 - GE/ENI/Nuovo Pignone, paragraphs 13-15.

⁵¹ Case M.7284 - Siemens/ John Wood Group / Rolls-Royce, paragraphs 20-24, Case M.3148 - Siemens/Alstom Gas and Steam Turbines, paragraph 13.

⁵² See replies to questions 6, 6.1, 6.2 and 6.2.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant and questions 11, 11.1, 11.2 and 11.2.1 of Phase I Questionnaire Q2 to competitors on the gas business.

⁵³ See replies to question 12 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁵⁴ Case M.7284 - Siemens/ John Wood Group / Rolls-Royce, paragraph 68.

generation applications for in house power consumption".⁵⁵ Contrary to large power output GTs, small output GTs (below 90/60 MW) are not generally used for large scale power generation, but are used instead for mechanical drive, cogeneration applications⁵⁶ or industrial power generation. "Industrial GTs do not have the necessary scale or efficiency to compete in electricity market applications with HDGTs. They are often considered for smaller projects (CHP, industrial projects) where HDGTs would not be a good fit".⁵⁷ However, there appears to be a certain degree of substitutability between lower output HDGTs and IGTs, in that the former can also be used for large industrial power generation projects. "The E class machine⁵⁸ is quite often the switch from an IGT and HDGT. The E class can be put in an Industrial application or a Utility configuration".⁵⁹ Another customer points out that: "I will use, if economically viable, a HDGT in lieu of an IGT. Not the other way round".⁶⁰

- (82) Therefore, the Commission concludes that HDGTs and IGTs constitute distinct product markets.

7.2.3.2. The market for HDGTs comprises GTs with output above 90 MW

- (83) The replies to the Commission's questionnaires were not conclusive as to whether 60 MW or 90 MW output threshold should be used as the cut-off value to distinguish between the two products. Whereas the majority of customers agreed with the 60 MW threshold,⁶¹ the majority of competitors agreed that 90 MW would be a more appropriate value.⁶² One competitor explains that it *"would choose 90 MW because this is roughly the top end of the available aero-derivative gas turbine packages on the market, and matches the lower end of the non-aero-derivative gas turbines. For example, the GE Frame 7 is a 90 MW product".⁶³*
- (84) Although the majority of customers considered that GTs with output between 60 and 90 MW are not suitable for large scale power generation projects,⁶⁴ a number of customers disagreed and considered that GTs with output btw 60-90 MW could also be suitable for large scale power generation.⁶⁵ For instance one customer explained: *"With this GT size, CCGT in 2+1 or 3+1 configuration may achieve power output of 200 MW and larger. This power output, even in the lower part, may be considered in the range of large scale power generation".⁶⁶* However, another customer warns: *"From economic point of*

⁵⁵ See reply to questions 11.1 of Phase I Questionnaire Q2 to competitors on the gas business.

⁵⁶ Cogeneration plants use the exhaust hot gases of the GT to produce heat, in addition to electricity.

⁵⁷ See reply to question 6.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁵⁸ According to the Notifying Party, the lower bound HDGTs consist of the E-class GT machines, which are defined as GTs having firing temperatures between of 2000-2300F/1110-1260°C, and usually offer a minimum output of 90 MW. Alstom's smallest HDGT is its GT13E2 machine, which has a minimum output of 185 MW.

⁵⁹ See reply to question 11.2.1 of Phase I Questionnaire Q2 to competitors on the gas business.

⁶⁰ See reply to question 6.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶¹ See replies to question 6.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶² See replies to question 11.2 of Phase I Questionnaire Q2 to competitors on the gas business.

⁶³ See reply to question 11.2.1 of Phase I Questionnaire Q2 to competitors on the gas business.

⁶⁴ See replies to question 6 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁵ See replies to question 11 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁶⁶ See reply to question 11.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

view, there are not feasible (bankable) to use small gas turbine for large-scale GTs except any limitation of space and transmission line".⁶⁷

- (85) Along the same line, a market participant explains the grey area between 60 MW and 90 MW: "*Within this range, substitution is a technical/economical choice. Outside this range, substitution makes little or no sense*", in any case "*because of technical developments and innovation, power output of GT versions steadily increases, so even a defined power range will be a moving target*".⁶⁸
- (86) In line with the Notifying Party's submission, considering that Alstom's HDGT offering does not include any machine in the range of 60-90 MW or surroundings⁶⁹, the Commission concludes that the market for HDGTs comprises GTs with an output above 90 MW.

7.2.3.3. The market for the supply of HDGTs includes the associated aftermarket for the initial servicing and the HDGT control system

- (87) At the time of contracting a new HDGT unit, customers usually also purchase the associated services for maintaining the machine operational from the same OEM.⁷⁰ These services are usually bought by customers in the form of packages including different types of services over a long time period (see also Section 7.1 about LTSA definition).
- (88) In some instances the HDGT is sold independently of the related services as customers might opt to purchase services on an ad-hoc transactional basis rather than in the form of an integrated long term package of services. One customer indicates: "*Sometimes we want to have a separate competition for services.*"⁷¹ However, data collected in relation to the Parties' sales show that this rarely happens in reality. Over the last 5 years, Alstom has [sold 80-100%] its HDGT units together with a LTSA.⁷² GE's sales of HDGT included the sale of the associated relevant servicing package in over [80-100]% of the cases (in [number of GE projects] out of the overall [number of GE projects] projects won by GE, the sale of HDGTs were associated to some form of servicing package)⁷³. Furthermore, by looking at those limited projects where GE did not sell some type of associated initial servicing, it emerges that none of the projects concerns European customers and half of the projects are related to projects in China.

⁶⁷ See reply to question 11.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁶⁸ See reply to questions 11.1 and 11.2.1 of Phase I Questionnaire Q2 to competitors on the gas business.

⁶⁹ Whereas GE's smallest HDGTs are the 7E (90 MW) and 9E (130 MW), Alstom's smallest HDGT is the GT13E2 machine, which has a minimum output of 185 MW. The GT13E2 is Alstom's smallest GT still in production. Alstom used to have lower output GTs in its portfolio, namely the GT8C2 and GT11N2, but they are no longer in production. The last orders for the GT8C2 (57 MW) and GT11N2 unit (114-115 MW) were placed in 2009 and 2007 respectively (see Form CO, paragraph 202).

⁷⁰ See replies to question 22 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷¹ See reply to question 22 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷² See Alstom's reply to Commission's Request for Information N°18, question 31 and to Commission's Request for Information N°28, 21.04.2015, question 7.

⁷³ See Alstom's reply to Commission's Request for Information N°18, question 31 and to Commission's Request for Information N°28, 21.04.2015, question 7.

- (89) The most common practice also in the EEA appears thus to be the purchasing of the new unit with the associated initial services.
- (90) Customer submissions suggest that in several instances there is no real choice but to purchase the HDGT together with the initial servicing from the same OEM.
- (91) Specifically, customers point to the fact that performance warranties offered by OEMs might not be valid unless the same OEM is also in charge of the servicing of the machine. OEMs are often asked to provide warranties for the new HDGTs as part of the tender requirements. *"Due to warranty and the lack of other resources in the industry, OEM will typically be the only provider with the know-how and appropriate parts."*⁷⁴ *"In practice, it is extremely difficult to separate the supply of a new GT (even if mature) from some form of ongoing maintenance from the same OEM. This period may only be for the warranty period or longer."*⁷⁵ *"Using non OEM will have a negative effect on warranty".*⁷⁶ Another customer clarifies that *"Purchasing a newly built gas turbine will come with a warranty. During this warranty period one has to keep using OEM hot gas path parts."*⁷⁷
- (92) Moreover, customers reported that in some instances, lenders/insurers might require customers to perform the servicing of the HDGT with the OEMs as a way to guarantee the value of the investment. Sometimes, the choice of the OEM as supplier of servicing for the HDGT *"[...] is likely to be an insurance and finance requirement"*.⁷⁸ *"Conclusion of the service agreement, as an additional part of a contract for GT, may be also required by OEM as a condition of a guarantee for a new build unit underwritten by the OEM."*⁷⁹ Customers indicate: *"GT services by OEM are normally required by project lenders to secure the stable operation of the power plants"*⁸⁰. *"We preferred this solution due to: insufficient technology maturity or as financing party requirement"*⁸¹.
- (93) In any case, for non-mature technologies, customers have no choice. A vast majority of customers indicated that when sourcing a newly-built "non-mature" HDGT, they are *de facto* obliged to contract the initial services from the same OEM.⁸² As explained by one customer, *"This depends on the class of GT - the higher rating/newer technology machines cannot be serviced by 3rd party providers as the technology for the hot gas parts in particular are not available to them. Fitting of reverse engineered parts can be risky if their provenance is not known and also may impact on insurance position"*.⁸³ Another customer points out that *"For state-of-the-art HDGT you have to source Services from*

⁷⁴ See reply to question 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁵ See reply to question 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁶ See reply to question 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁷ See reply to question 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁸ See reply to question 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁹ See reply to question 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁰ See reply to question 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸¹ See reply to question 22 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸² See replies to question 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸³ See reply to question 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

*the OEM-supplier at least for the first few years, therefore this has to be negotiated ahead of the purchase".*⁸⁴

- (94) Therefore, for non-mature technologies, since the OEM is the only one with the servicing capability, by buying the associated LTSA at the outset customers protect their investment value by controlling and reducing the associated operational failure risks. *"Newest technology needs a LTSA otherwise may be too long reaction time in case of a failure etc., older technology not always due to existing competition."*⁸⁵
- (95) Finally, it makes sense from an economic point of view, for customers to source the initial servicing at the time of the purchase of the HDGT. The majority of customers take the LTSA costs into account in their HDGT evaluation model.⁸⁶ Total cost of ownership, including the initial investment costs and the operation costs, is one of the main evaluation criteria for the selection of HDGTs. By introducing the cost of maintenance/service in the tender procedure, customers are in the position to introduce a certain degree of competition even in a monopoly market, such as the servicing of non-mature HDGTs. *"In coupling the purchase of new equipment and services there is the possibility to have a life cycle cost competition and ensure a correct decision is made based on the total cost of ownership between different technologies. This allows also for competition on the LTSA even in the case of new technologies where only the OEM could offer the LTSA."*⁸⁷
- (96) In conclusion, demand for services for HDGT only arises as a result of the purchase of the respective HDGT. The associated services therefore constitute an aftermarket. In view of the advantages related to the simultaneous purchase of the initial services with the new unit and the purchasing patterns observed, the Commission concludes that the market for the supply of new-built HDGTs also encompasses the supply of the associated initial services.
- (97) In addition, in order to be operational, gas turbine requires a gas turbine control system. Control systems are automation products combining hardware and software that automate and control the operation of the gas turbine.⁸⁸ Therefore, they are usually sold together with the turbine. This is evidenced by each of the Parties' sales statistics which show that [80-100]% of their turbines were sold in a bundle with the gas turbine control system.⁸⁹ Therefore, the Commission concludes that the market for the supply of new-built HDGTs encompasses not only the supply of the associated initial services, but also the supply of the gas turbine control systems.

7.2.3.4. HDGTs for 50 Hz and 60 Hz constitute separate markets

- (98) The Commission's investigation also examined whether HDGTs developed for the 50 Hz and 60 Hz frequency constitute separate relevant markets.

⁸⁴ See reply to question 22 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁵ See reply to question 22 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁶ See replies to question 22.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁷ See reply to question 22 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁸ See Form CO, paragraph 1100.

⁸⁹ See GE's reply to the Commission's Request for Information N°57, 30.07.2015, question 1.

- (99) Based on the findings of the market investigation, the two types of machines are not substitutable from a demand point of view.⁹⁰
- (100) From a supply perspective, competitors confirmed that GT machines above 125 MW output, and HDGTs in general, are usually designed and developed to run at a specific frequency and cannot be geared to run at both 50 Hz and 60 Hz.⁹¹ Since each HDGT model is developed for a certain frequency, scaling/adapting it for the other frequency requires significant investments (EUR 50-100 million depending on the HDGT model/technology) and between 3-4 years of development. OEMs consider that scaling up/down a HDGT model from one frequency to another is technically always feasible.⁹² According to the majority of the OEMs, once a HDGT model is developed for a given frequency, the investment required for developing a HDGT version for the other frequency represents approximately 51-75% of the original Net Present Investment.⁹³ This suggests that there are technological commonalities between the two models but that however the savings associated to transforming a 50 Hz model into a 60 Hz model, and vice versa, amount to a small part of the overall investments needed to develop a new model from scratch. From a production point of view, there appear to be no significant technical differences between 50 and 60 Hz machines, except that 50 Hz machines are generally larger than 60 Hz machines and thus require slightly different components (for example larger blades).⁹⁴
- (101) The existence of substantial technological differences is further evidenced by the fact that the competitive landscape in the two frequencies appears to be quite different. In fact, two of the five major OEMs of 50 Hz HDGT are practically absent from the 60 Hz space. Ansaldo does not currently have any HDGT offering for the 60 Hz market. Alstom has not been commercially present in 60 Hz for approximately 10 years (2004-2013). Following the unsuccessful launch of the GT26 sister version for the 60 Hz (namely, the GT24) in the early 2000's, it took Alstom 5 years (from 2006 until 2011, the year of the first upgrade) to resolve the performance issues of the product, despite the success of its 50 Hz model.
- (102) The Commission notes that both Parties analyse the two markets separately internally and develop specific different strategies for each of the two markets.⁹⁵
- (103) Therefore, the Commission concludes that the markets for 50 Hz HDGTs and for 60 Hz HDGTs constitute separate markets. Since the EEA is a 50 Hz frequency area, the impact of the Transaction will be assessed only in relation to the market for 50 Hz HDGTs. In fact, any impact on the market for 60 Hz HDGTs would not affect EEA customers.

⁹⁰ See replies to questions 5 and 5.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁹¹ See replies to questions 10 and 10.1 of Phase I Questionnaire Q2 to competitors on the gas business.

⁹² See replies to questions 5 and 6 of Phase I Questionnaire Q2 to competitors on the gas business.

⁹³ See replies to questions 7 and 8 of Phase I Questionnaire Q2 to competitors on the gas business.

⁹⁴ See replies to questions 9 of Phase I Questionnaire Q2 to competitors on the gas business.

⁹⁵ See for instance Annex 1079; Annex 1863; Annex 3851; Annex 3860.

7.2.3.5. The market for 50 Hz HDGTs is a highly differentiated market

- (104) The market for 50 Hz HDGTs is a highly differentiated market where HDGTs vary across a vast number of dimensions. Differentiation takes place on the basis of several technical parameters that qualify and identify each HDGT, namely: power output, efficiency, operational flexibility, fuel flexibility, pollutant emissions, heat rate, etc. (see Section 7.1). The combination of those technical features determines the HDGT's performance and, thus, its suitability for different customers' needs.
- (105) The HDGTs offered by the OEMs are also highly differentiated. First, OEMs tend to have a portfolio of products that are spread across the multiple axes of differentiation (for instance machines with different output/efficiency levels) in order to be able to capture as many customers as possible. However, in view of the high level of investments required to develop a new frame⁹⁶ and to maintain it, OEMs usually can rely on a limited range of products in their portfolio, which on average correspond to 2-4 frames, to cover the entire space. As a consequence, in any given demand spot, customers will rarely be able to have a full choice among the OEMs. In most cases, customers will have a limited choice among two to three options at best as discussed in the Section 4.3.2 of Annex I.
- (106) Secondly, OEMs aim at distinguishing themselves from one another in their ability to develop certain technical features of their machines. For instance, whereas MHPS has a reputation for offering efficient machines and focusing on the development of machines at the forefront of the firing temperature frontier, Alstom has a strong reputation for the best-in-class operational flexibility of its machines.
- (107) The existence of multiple combinations of the various HDGT parameters allow OEMs to accommodate heterogeneous customers' needs, which in turn depend on customers' operating regimes (full-load, mid-merit and cycling operating modes), power plant configurations (simple cycle vs combined cycle), types of applications (electricity vs cogeneration plants), project scopes (stand-alone components vs bundled integrated packages for PP), preferences (driven by regional considerations).
- (108) As summarized by Alstom, the differentiation in demand for HDGTs is mainly driven by (i) diverse requirements for HDGT technical features, which are strictly intertwined with customers' local differentiation, (ii) diverse planned operation modes for the power plants and (iii) diverse evaluation criteria set by customers. In Alstom's view, these evaluation criteria not only include the assessment of the overall life-cycle costs of the project (based on cost of electricity or net present value or internal rate of return of the overall investment or on all of these factors), but also considerations of proof of a technology, local presence/local service availability, schedule risk/bidder experience/customer relation, fleet size and the expected level of technology innovation.⁹⁷

⁹⁶

A frame in this context is a set of versions of machines sharing the common technological platform.

⁹⁷

See Annex 1084, page 9.

- (109) GE for instance differentiates among categories of HDGT customers on the basis of [...].⁹⁸

Figure 3: Drivers of differentiation in the market for 50 Hz HDGTs according to GE

[extract from internal GE document containing discussion on GT differentiation]

Source: Annex 1863.

- (110) The Commission considers the market for 50 Hz HDGTs as an overall highly differentiated market. Nonetheless, the identification of criteria that enable the aggregation of multiple and diverse customers' needs in more homogeneous classes of products can significantly help the analysis of the competitive dynamics in this complex and highly differentiated market. The Commission will therefore also consider possible further segmentations of the market for 50 Hz HDGTs.

7.2.3.6. A meaningful way to segment the market for 50 Hz HDGTs is by power output classes

- (111) Power output represents one of the key features of HDGTs. Customers tend to define a target output range when organizing their tenders and while they can adjust to slightly different outputs in the course of the bidding process, they cannot depart completely from their initial target output. There is a continuum of substitution between adjacent power values. However, HDGTs positioned at the upper and lower bound of the possible output range for HDGT (respectively 470 MW and 90 MW) meet very different needs. This is in a way confirmed by the fact that all the OEMs tend to have in their portfolios HDGTs with different outputs positioned across the overall HDGT output range.
- (112) Accordingly, OEMs tend to analyse the market for 50 Hz HDGTs by looking at different output classes or classes based on other parameters that in any case can be translated into output classes. Alstom for instance distinguishes among "Medium" (90 MW – 200 MW), "Large" (200 -320 MW) and "Very Large" (above 320 MW) HDGT segments. GE internally relies on a classification based on firing temperatures (namely B, E, F and H classes),⁹⁹ which in turn reflect also output ranges.¹⁰⁰
- (113) In the course of its investigation, the Commission tested whether it would be appropriate to segment the market for 50 Hz HDGTs on the basis of the power output classes using as reference thresholds the ones used internally by Alstom.
- (114) Several market participants, including the majority of competitors,¹⁰¹ suggested that criteria other than output might be relevant to analyse the market, for instance firing temperatures. A customer explains: *"At first glance, the size classification seems to fit the names (medium, large, very large) but buyers also consider the firing temperature of the products to classify them by their*

⁹⁸ See Annex 1863, page 22.

⁹⁹ See Annex 1308, page 9.

¹⁰⁰ See footnote 48.

¹⁰¹ See replies to question 12 of Phase I Questionnaire Q2 to competitors on the gas business.

technical sophistication, efficiency, proven operating experience, availability of competitive parts and services".¹⁰²

- (115) Nonetheless, the majority of customers accepted as relevant the market segmentation based on output. Although a number of customers suggested that other output thresholds might also be relevant to segment the market for 50 Hz HDGTs, the majority considered the output thresholds (90 MW/ 200 MW/ 320 MW) used internally by Alstom to distinguish Medium, Large and Very Large HDGTs as the appropriate output thresholds.¹⁰³
- (116) The majority of market participants agreed that depending on the intended plant operation, a certain degree of substitutability exists between contiguous output segments (namely Medium and Large, Large and Very Large), such that the distinction between adjacent segments might become blurred.¹⁰⁴ A customer explains that the *"choice of several smaller size GT's compared to larger size GT's will depend on the intended application, peaking or base load, simple cycle or combined cycle, size of the grid, redundancy expectations, performance expectations, possible cogeneration or desalination applications etc".¹⁰⁵*
- (117) On the one hand, HDGTs with extremely different output ranges do not compete directly against each other. On the other hand, in the overall output space between 90 MW and the current largest Very Large machines with an output of around 470 MW, there are no self-evident clear boundaries of separate segments which would clearly suggest separate markets.
- (118) The Commission concludes that the relevant market is the overall market for 50 Hz HDGTs covering the whole output range. The Commission considers that the competitive assessment should include the analysis of the power output segments of the relevant market where Alstom exercises a competitive pressure. The Commission will assess the impact of the Transaction both at the level of the overall market for 50 Hz HDGTs and at the level of its possible segments (Medium, Large and Very Large).

7.2.3.7. Another meaningful way to segment the market for 50 Hz HDGTs is by intended use: SC vs CC configurations

- (119) The Commission also examined the relevance of a segmentation of the market for 50 Hz HDGTs by type of power plant configuration, namely combined cycle power plants ("CCPP"s) and simple cycle power plants ("SCPP").
- (120) From a demand point of view, customers generally consider that any HDGT could be used in both CC and SC configurations. The majority of market participants considered that HDGTs for SCPPs and CCPPs are substitutable in terms of technology, product characteristics and price¹⁰⁶ and the majority of

¹⁰² See reply to question 8 of Questionnaire Q1 to customers of Gas fired power plant.

¹⁰³ See replies to questions 7 and 7.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁰⁴ See replies to question 8 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁰⁵ See reply to question 8 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁰⁶ See replies to question 9 of Phase I Questionnaire Q1 to customers of Gas fired power plant and replies to question 13 of Phase I Questionnaire Q2 to competitors on the gas business.

customers maintained that any HDGT model could be used efficiently in both SC and CC configuration.¹⁰⁷

- (121) However, customers also acknowledged that, depending on the intended plant operation, certain HDGT characteristics (for instance efficiency and flexibility) become more relevant than others, therefore limiting the scope of substitution. In fact, *"The GTs are optimized for their purpose (i.e. for open cycle or CCGT)"*¹⁰⁸. *"While some GTs can be used in SC and CC (and the GT component is the same), this is not the same as asserting that SC and CC projects are substitutable as they compete for completely different portions of the electricity market"*.¹⁰⁹
- (122) Therefore, although they could be adapted to operate under both CC and SC configuration, the cost of operating them in a configuration for which they have not been optimised might make the choice of certain GTs for SC/CC not viable from an economic point of view. As put by one customer: *"They are substitutable from a technical basis, but commercially this would probably make the project unviable"*.¹¹⁰
- (123) This is explained by the fact that machines designed to operate in a certain configuration have different technical features and performances. As indicated by one market participant: *"Simple cycle GTs need to start quickly and change load quickly during peak power demand periods. During such periods, they are competing for dispatch with older, less efficient generators, so having the best efficiency is not very important. Combined cycle GT's will be used in intermediate to base load applications where highest efficiency is of the utmost importance"*.¹¹¹ One customer explains that *"GT for CCPP requires high temperature exhaust gas and the calculation of the efficiency is based on total CCPP. GT for single cycle use requires efficiency on GT itself, so the required characteristics are different. Further, GT for single cycle is normally required more flexibility (early start up/shut down, and partial load operation) than that of CCPP. (On the other hand, CCPP is also nowadays required flexible operation because of increase of renewable power which the volatility to the grid is big and CCPP needs to adjust its capacity to fit to such variation.)"*.¹¹² Another customer confirms: *"We believe that most HDGTs can be used in both modes, but efficiency will be obviously much lower in simple cycle (as the heat energy in the exhaust is wasted in simple-cycle operation). There may be certain applications and markets where simple cycle operation is viable, but generally they will not be competitive with combined cycle plant on a cost of energy basis."*¹¹³
- (124) From a supply point of view, the Notifying Party submits that there are no technological barriers between HDGTs for SC and CC. According to GE, all HDGTs can either be used in a SC or CC as the core engine for both

¹⁰⁷ See replies to question 15 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁰⁸ See reply to question 9.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁰⁹ See reply to question 9.1 of Questionnaire Q1 to customers of Gas fired power plant.

¹¹⁰ See reply to question 9.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹¹¹ See reply to question 9.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹¹² See reply to question 9.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹¹³ See reply to question 15 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

configurations is the same and no core HDGT component needs to be modified. Given that the main difference between SCPP and CCPP is the exhaust system, according to GE, it is relatively straightforward and not technologically challenging to create the steam portion of a CC and connect it to an SC in order to convert a Simple Cycle Gas Turbine ("SCGT") to a CCGT.¹¹⁴

- (125) The majority of competitors agreed that there are no major technological differences between SCGTs and CCGTs. However, some market participants explain that the design and technology of a HDGT can determine whether that machine is more suitable to be operated in CC or SC. A market participant clarifies that *"The design parameters (especially exhaust energy) are completely different for GTs intended for combined cycle power plants and GTs for single cycle power plants."*¹¹⁵ In fact, *"Some HDGT are not suitable for Single Cycle operation as they are designed for efficiency rather than rapid response and flexibility. Some HDGT are not suitable for combined cycle as their exhaust conditions are not appropriate for use in this mode (e.g. too hot, too cold, too much flow, too little flow, etc.)."*¹¹⁶
- (126) One customer indicates: *"Gas turbine models that use steam cooling of internal hot gas path parts, or gas turbines that use the water/steam cycle of a combined cycle to cool compressed air used for the combustion process or for cooling of hot gas path parts are not suited for simple cycle or peaking operation"*¹¹⁷.
- (127) This appears for instance to be the case with the GT26. *"The GT26 requires a heat rejection system known as the "OTC" or Once Through Coolers - these rely on the steam cycle to provide cooling for GT cooler air system. This does not normally restrict operation in simple-cycle in a CCGT, however it would impose additional costs on a purely simple-cycle GT26 relative to a plant based on other GTs. As a result we are not aware of GT26 plant that has been constructed solely for simple cycle outside of the Alstom test unit in Birr, Switzerland."*¹¹⁸
- (128) In fact, one of the OEMs clarifies: *"Usually it is possible to use the same GTs in single cycle plants and in combined cycle because ST part of the combined cycle simply get in input the gas turbine flow output. For what we know GT26 is not very suitable for open cycle operation while the other GTs are used in both applications."*¹¹⁹
- (129) Therefore, on balance, HDGTs for SC and CC appear to be positioned in different segments both in view of demand and supply side considerations.
- (130) Such differentiation is also reflected in the Parties' internal documents and in their external analysis of the markets. In Alstom's internal analysis,¹²⁰ the

¹¹⁴ See GE's reply to the Commission's Request for Information N°18, 06.03.2015, question 16.

¹¹⁵ See reply to question 9.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹¹⁶ See reply to question 15 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹¹⁷ See reply to question 9.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹¹⁸ See reply to question 15 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹¹⁹ See reply to question 13.1 of Phase I Questionnaire Q2 to competitors on the gas business.

¹²⁰ See Annex 223, page 93 and Annex 225, pages 11-14.

market development and forecast trends of HDGTs for SC and CC are examined separately. Moreover, Alstom produces separate analysis of the competitive landscape for the Medium and Large HDGTs for SC and for CC respectively.¹²¹ As regards the Large segment, Alstom explains that *"In both the L50 and L60 markets, however, the SC market behaves differently from the very competitive CC market, and is not really focussed on the latest state-of-the art performance. The SC market is also highly competitive, but generally not on performance/efficiency, instead on first cost "*.¹²²

- (131) External studies prepared by consultancies examine the trends of the demand for HDGTs by distinguishing between GTs for CC and for SC configurations.¹²³ The industry organization "Gas Turbine World", which publishes an annual list of the GT technologies and specifications available on the market distinguishes between GTs for SC and CC configurations.¹²⁴
- (132) In conclusion, in order to be able to meet different customers' requirements in terms of performance, HDGTs for SC and CC appear to have different designs and technical characteristics.
- (133) Therefore, in light of the evidence collected, the Commission takes the view that the distinction between HDGTs for SC and CC is another meaningful dimension of differentiation in the overall markets for HDGTs.
- (134) However, the Commission also notices that the relevance of this segmentation varies with the power output of the machines. Large and Very Large HDGTs are essentially used for CC configurations. Over the last years, only two Very Large projects and less than 7% of the overall number of worldwide (excluding China and Iran) projects (10 over 146) for Large HDGTs concerned SC applications (see also Section 8.4.2). The trend observed is likely to continue for Large and Very Large HDGTs in the future. The new class of HDGTs, the Very Large ones, appears to be pushing the technological boundaries on efficiency and flexibility, which are features highly desired and important for CC applications (see also Section 8.1). By contrast, 53% of the overall number of worldwide projects (excluding China and Iran) for Medium HDGTs was constituted by SC projects.
- (135) In view of the limited relevance of SC applications for Large and Very Large HDGTs and the important weight of SC applications in the Medium segment, the impact of the Transaction will be examined separately for each of the two segments (CC and SC) mainly with respect to the Medium segment.

7.2.3.8. Purchasing pattern as another element of differentiation (stand-alone HDGT vs HDGTs bundled with other components)

- (136) There are different ways in which HDGTs for gas-fired power plants can be sold, for instance (i) the HDGT on its own on a stand-alone basis, (ii) HDGT plus generator, (iii) the so-called power island, including the HDGT, the generator and the ST, (iv) engineered packages (EEP), including HDGT, the

¹²¹ See Annex 225, pages 11-15.

¹²² See Annex 4281, page 4.

¹²³ See Annex 1698 and Annex 1206.

¹²⁴ See Annex 201.

generator, the ST and the HRSG, (v) engineered packages plus EPC (engineering, procurement and construction) scope (for instance, civil works), and (vi) full turnkey solutions (including commissioning and financing).

- (137) By analysing the Parties' data on HDGT sales, it appears that the vast majority of HDGT sales are made bundled with other products. Over the period 2009-2014, Alstom never sold a HDGT individually, whereas GE did so only in [20-40]% of the overall projects won.¹²⁵
- (138) The Commission's investigation also showed that there is a trend towards more integrated offers, namely for sourcing the power island, the EEP or even turnkey solutions instead of the components individually.¹²⁶ The majority of customers confirmed that they have a preference for sourcing the HDGT or the ST coupled with the respective generator or for sourcing turnkey solutions.¹²⁷ Competitors confirmed this trend in customers' preferences.¹²⁸
- (139) Customers tend to source generators and HDGTs from the same OEM in the majority of cases¹²⁹ as this clearly brings *"better overall efficiency"*¹³⁰ and the *"Additional advantage [of] easier management of outages reduce maintenance costs"*.¹³¹ In general, sourcing the two components from the same OEM implies that *"In all the phases, construction, commissioning, operation and maintenance, there are significant advantages in terms of supply liability, overall performance of unit (efficiency, output, etc.), delivery time, etc."*¹³²
- (140) As regards the bundle GT+ST, a considerable number of customers indicated that they primarily purchase both components manufactured from the same OEM.¹³³ A majority of competitors also pointed to the fact that the choice of the HDGT drives the choice of the ST supplier.¹³⁴ In fact, there are advantages linked to choosing the ST and GT from the same OEM, mainly for the enhanced performance of the components that are optimised to operate together.¹³⁵ In particular, some customers explain that in the case of single shaft configuration, there is almost no alternative but to buy the bundle from the same OEM: the choice is *"[...] highly dependent on the CCPP plant configuration: a) multi-shaft arrangement - here the ST-Geno package can be separated from the GT OEM[;] b) single-shaft arrangement - here the ST are in line with the GT and the Geno - therefore this power train shall be in ONE*

¹²⁵ See GE's reply to the Commission's Request for Information N°18, 06.03.2015, question 25.

¹²⁶ See replies to questions 172, 174 and 176 of Phase I Questionnaire Q1 to customers of gas fired power plant and questions 154, 156 and 158 of Phase I Questionnaire Q2 to competitors on the gas business. See replies question 37 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²⁷ See replies to questions 169 and 175 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹²⁸ See replies to questions 152, 153, 155 and 157 of Phase I Questionnaire Q2 to competitors on the gas business.

¹²⁹ See replies to question 137 of Phase II Questionnaire Q7 to customers of Gas fired power plant and replies to question 35 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁰ See reply to question 138.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³¹ See reply to question 138.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³² See reply to question 138.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³³ See replies to question 145 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁴ See replies to question 34 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁵ See replies to question 146 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

OEM responsibility, otherwise the customer cannot control the high risk of interfaces"¹³⁶. Another customer confirms: *"It depends from CCGT configuration. In case of Single shaft it is practically a must."*¹³⁷

- (141) Despite these indications, only a minority of customers pointed to the fact that when they purchased HDGT in a bundle (HDGT+ generator or HDGT+ST) from the same OEM, they did so because they had no real alternative but to mix and match the two products.¹³⁸ Customers indicated that sourcing a given set of components of a gas power plant from the same OEM (such as the power island) or a turnkey solution is substitutable in terms of technical characteristics and pricing to sourcing the components of that same set on a stand-alone basis from different OEMs.
- (142) However, as a matter of fact, customers show a clear preference for the integrated package offered because of the associated advantages in terms of performance/costs. This was also confirmed by all the suppliers of HDGTs, STs and generators.
- (143) In particular, customers identify the following main advantages for purchasing a bundled package: (i) the reduced costs and risks associated with integration of the different components into a power plant, (ii) the better optimization of the equipment in terms of efficiency and operation flexibility, (iii) well defined responsibilities of the supplier, and (iv) the existence of a single point of contact for all power plant operation and maintenance questions.¹³⁹
- (144) Nonetheless, as reported by a number of customers and evidenced by the Parties' sales statistics, stand-alone sales are observed in the market and in certain regions they are the preferred purchase model chosen by a majority of customers (see Figure 12 and Figure 13).
- (145) Therefore, despite the general market trend towards the sale of integrated bundles, in view of the heterogeneity of the possible bundles and the fact that components continue to be sold on a stand-alone basis, the Commission considers that the supply of bundles does not constitute a separate market.
- (146) The Commission considers that each component of a power plant constitutes a separate market. Therefore, the impact of the Transaction will be analysed on the market for 50 Hz HDGTs only. However, the market reality described in Recital (137) to Recital (143) will be taken into account in the competitive assessment by assessing the effects of the Transaction with respect to generators bundled with HDGTs and STs bundled with HDGTs.

7.2.3.9. Conclusion

- (147) In summary, for the purpose of assessing the Transaction, and given that the frequency in the EEA is 50 Hz, the Commission considers that the relevant product market is the overall market for 50 Hz HDGTs with an output above 90 MW including the associated initial servicing and the supply of the gas turbine control system. The market for 50 Hz HDGTs does not include any

¹³⁶ See reply to question 146.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁷ See reply to question 145.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁸ See replies to question 139 and 147 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁹ See replies to question 36 of Phase II Questionnaire Q9 to competitors on generators and ST.

other components of a power plant, which constitute separate markets. The Commission will accordingly conduct its competitive assessment both at the overall market for 50 Hz HDGTs and at segment levels, on the basis of the different power output classes (Medium, Large and Very Large) and as explained in Section 7.2.3 on the basis of plant configuration (CC or SC) in the case of the Medium segment.

7.3. The relevant geographic market

7.3.1. The Notifying Party's views

- (148) The Notifying Party submits that the geographic scope of the market for HDGTs is worldwide or includes minimum all 50 Hz regions, given that (a) customers source and manufacturers supply on a global basis, (b) products are similar across regions, (c) extensive trade flows exist worldwide and (d) given that local servicing presence is not essential for the success of an OEM.¹⁴⁰
- (149) In its response to the Article 6(1)(c) Decision, the Notifying Party submits that China should not be excluded from the global market on the basis that that HDGT OEMs need to partner with local suppliers to gain access to Chinese customers. According to GE, this does not represent a barrier to accessing the market since OEMs must still compete with each other to gain acceptance from Chinese partners. Alstom's lack of partnership was more a sign of its competitive weakness.¹⁴¹
- (150) In the Reply to the Statement of Objections the Notifying Party maintains that China should not be considered as a separate market in view of the fact that Alstom has in only very recent times partnered with a local supplier. According to GE, Alstom's failure to attract a good partner is more an indication of a lack of competitiveness on Alstom's behalf.¹⁴² GE submits that Alstom's failure to attract a partner is not a legitimate basis for excluding China from the relevant global market, which is the area with the fastest growing HDGT demand.¹⁴³ However, China is excluded from the relevant geographic market not due to Alstom's absence up to recently or because of its demand characteristics and outlook, but because China is characterized by specific access barriers which create different conditions for competition and supply as further explained below.
- (151) In its Reply to the Letter of Facts, GE contests the conclusions reached by the Commission concerning China. GE maintains that in previous decisions, the Commission has acknowledged the global nature of this market and therefore the conclusions reached by the Commission should be aligned with the previous decisions. GE also submits that (i) there are many jurisdictions where OEM's commercial success depends on the local partners, such as EPCs and (ii) the fact that final product is assembled by the local partner is inherent in

¹⁴⁰ Case M.7083 - John Wood Group/ Siemens/ JV, paragraphs 15-36.

¹⁴¹ See reply to the Article 6(1)(c) Decision, paragraphs 28-32.

¹⁴² See Reply to the Statement of Objections, paragraph 148-149.

¹⁴³ See Reply to the Article 6(1)(c) decision, paragraphs 28-34.

many licensing or manufacturing agreements and is not unique to China, such as in the case of GE's licenses.¹⁴⁴

7.3.2. Previous Commission Decisions

- (152) In previous cases, the Commission has considered the market for HDGT to be most likely EEA-wide in scope, if not worldwide. The precise definition of the geographic market was however left open in all relevant cases.¹⁴⁵

7.3.3. Commission's assessment

- (153) The evidence collected during the Commission's investigation points to elements suggesting that the market for 50 Hz HDGTs could be a global market and that there is a strong regional dimension of the market for 50 Hz HDGTs.

7.3.3.1. The market for 50 Hz HDGTs has various features of a worldwide market

- (154) The Commission's investigation indicates that HDGT customers source globally.¹⁴⁶ EEA-based customers confirmed that HDGT suppliers are invited to their tenders regardless of the location of their manufacturing facility.¹⁴⁷
- (155) This is in line with the fact that OEMs are active on a global basis.¹⁴⁸ The location of the manufacturing facilities does not determine the addressable market of each OEM. In fact, OEMs do not have manufacturing facilities in each region/country in which they operate. For instance, in the case of GE, HDGT production is based in France and in the US (respectively Belfort and Greenville plants). Likewise, the other OEMs supply customers across the world from few manufacturing centres.
- (156) The market for 50 Hz HDGTs is, thus, characterized by extensive trade flows. In fact, transportation costs do not appear to constitute a barrier to global supplies as they are relatively insignificant compared to the overall value of the product. GE estimates that relative to the total value of the equipment, the cost of transportation accounts for not more than [0-5]% of the total value of the GT.

7.3.3.2. Local presence (for servicing) is not a prerequisite for sales, but represents an important competitive advantage

- (157) The majority of the competitors considered that a local presence in terms of local servicing capabilities is not a requirement to be able to compete in the market, although it can represent a competitive advantage:¹⁴⁹ *"Local servicing capabilities might be of advantage but are not a necessary requirement to compete for a tender"* and *"It is a competitive advantage but it is not a necessary requirement for the [HDGT] new built"*.¹⁵⁰

¹⁴⁴ Reply to the Letter of Facts, paragraphs 51-57.

¹⁴⁵ Case M.3148 - Siemens/Alstom Gas and Steam Turbines, paragraphs 20-21, Case M.1484 - Alstom/ABB, paragraphs 32-36, Case M.1404 - General Electric/Alstom, paragraphs 15-18.

¹⁴⁶ See replies to questions 38.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴⁷ See replies to question 39.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴⁸ See replies to question 38.1.1 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁴⁹ See replies to question 40.1 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁵⁰ See replies to question 40.1.1 of Phase I Questionnaire Q2 to competitors on the gas business.

- (158) This was also confirmed by customers. On the one hand, they indicated that proximity of a supplier's manufacturing/repair/servicing facility is not a decisive criterion when awarding a HDGT contract.¹⁵¹ On the other hand, they recognized that the local servicing capabilities are an important criterion for the selection of a HDGT supplier and, thus, can give significant competitive advantages.¹⁵²
- (159) In particular, some customers suggested that the costs of servicing HDGTs, which in turn is taken into account in the selection of new HDGTs, can be affected by the location of the supplier. A customer explains that *"Service requires the transport of components. Therefore long distance transports are very problematic. From the maintenance point of view a workshop, equipped with all necessary tooling to be reached within one or two days of transports is a clear advantage."*¹⁵³ Another customer points out that: *"Services are locally provided and transport of large components after installation is problematic"*¹⁵⁴. Finally, another clarifies: *"[...] in case we need to ship any large component back to the supplier for the purpose of any service (such as repair) and then ship it back to the plant, the location of the supplier would affect the transportation cost and logistic arrangements which are key factors of consideration"*.¹⁵⁵
- (160) To conclude, although local presence is not a requirement for OEMs to be able to participate in tenders in a given region, the availability of a local servicing network gives OEMs an important competitive advantage in the sale of new HDGTs.

7.3.3.3. Specific market access barriers exist in some world regions (China and Iran)

- (161) Although generally there appear to be no barriers in terms of technical specifications, regional regulation or other standards to global supplies of HDGTs across different world regions,¹⁵⁶ OEMs face very specific barriers to access in China and Iran.
- (i) Local partnership with Chinese manufacturers and government approval are requirements for participation in bids in China**
- (162) In the course of the market investigation, competitors indicated that they face specific access barriers to Chinese customers in that a partnership with local companies is a requirement to compete for those customers.¹⁵⁷ The requirement of finding a local partner to gain access to the Chinese market is a requirement which is unique to this market and is not found in any other country. Although it is not clear whether such a requirement has a legal nature or whether it is just an established business practice, it represents a *de facto* barrier to access the market.

¹⁵¹ See replies to question 37.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵² See replies to question 100 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵³ See reply to question 34 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁴ See reply to question 34 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁵ See reply to question 34 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁶ See replies to question 34.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 34.1 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁵⁷ See replies to question 35 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

- (163) As explained by the Notifying Party,¹⁵⁸ the Chinese Government set the establishment of partnerships with local Chinese manufacturers as a requirement for OEMs' participation in local bids. Such partnerships need to be approved by the Government¹⁵⁹ in order to enable OEMs to bid through the joint consortium with the local partner. Local partnerships have been a requirement since 2002, when the Chinese market for HDGTs opened for the first time to foreign OEMs.
- (164) In 2002 the Chinese government invited all the OEMs to apply for the prequalification to bid participation. In order to pre-qualify, OEMs were required to agree to set up a joint-bid consortium with a local Chinese manufacturer and provide for a technological transfer to the local manufacturer. Siemens, MHPS, Alstom, and GE all completed the application process and were prequalified by the Chinese government. However, whereas Siemens, MHPS and GE received the approval for their respective partnerships each with one of the three large power plant equipment manufacturers (Shanghai Electric, Dong Fang, and Harbin respectively), Alstom's partnership with the company Li Ming was not approved.¹⁶⁰ According to GE, Alstom's local partner, a small manufacturer of aircraft engine and turbine blades, was too small a player to compete effectively with the large well-known Chinese manufacturers (which are indeed the ones submitting bids for HDGTs). Therefore, the Government felt that three joint ventures (bidders) with the foreign OEMs were sufficient to effectively supply the Chinese market with E-class and F-class GTs and denied the approval to Alstom.
- (165) Alstom has only recently been able to obtain the approval for partnerships for the sale of Medium HDGTs (in 2012) and the sale of Large HDGTs (in 2014).¹⁶¹
- (166) All the OEMs confirmed that local partnership is a key requirement for participation imposed by the Chinese authorities. MHPS reiterated that *"in order to compete for tenders in China, a non-Chinese OEM needs a local partner with whom it can bid as a consortium"*.¹⁶² Siemens added that the *"Chinese market policy is strictly based on policy of localization which is a barrier to independently enter into the market"* and therefore *"local manufacturing and a local partner are required to be able to offer on the Chinese market. Western companies therefore need to have an agreement with a Chinese provider"*, so that *"unless you have a local partner and local manufacturing, it is very difficult to enter this market and compete successfully"*.¹⁶³ Ansaldo specified that *"It's rather difficult to establish a partnership in China because all the big manufacturers are already partnered, but in principle if any manufacturer would be available, it's more a decision of*

¹⁵⁸ See GE's reply to the Commission's Request for Information N°24, 25.03.2015, question 2 and Form CO, paragraph 427.

¹⁵⁹ The relevant body is the Chinese National Development and Reform Commission – NDRC.

¹⁶⁰ Alstom's received the approval for a local partnership and set up an agreement with Harbin for the GT13 only in April 2013. Since February 2014, Alstom has also a partnership with the steam supplier Beizhong in relation to the GT26.

¹⁶¹ See GE's reply to the Commission's Request for Information N°24, 25.03.2015, question 2.

¹⁶² See competitor's reply to the Commission's Request for Information, 26.03.2015, question 9.

¹⁶³ See replies to question 35.1 of Phase I Questionnaire Q2 to competitors on the gas business.

*the Chinese player and of Chinese Government than of the OEM. Usually the Chinese manufacturer evaluates from a technological point of view the product line and then they decide to partner with an OEM, but final approval is from the government."*¹⁶⁴

- (167) GE further acknowledged that *"China indeed is the only country in which OEMs are formally required to sell their products through local partners. In all other countries, OEMs are permitted to participate in tenders and sell their products to local customers without the need of a local intermediary"*¹⁶⁵. Alstom, which until recently could not count on a local partnership, in its internal documents regards China as a *"no-access country"*.¹⁶⁶
- (168) Although Alstom submits that there is no longer the legal requirement to set up a joint-bid consortium to participate in bids for Medium and Large HDGTs,¹⁶⁷ according to Alstom, its local partners Harbin (for Medium HDGTs) and Beizhong (for Large HDGTs) have been liaising with the Chinese authorities *"for guidance. Alstom understands that the NDRC approves of the partnerships between Alstom and each of Harbin and Beizhong"*.¹⁶⁸
- (169) Siemens explains that the cooperation with local Chinese manufacturers no longer strictly needs to be in the form of a JV. Any form of partnerships is acceptable as long as there is a partnership in place with a local manufacturer to provide for local production of HDGT parts and as long as the OEM agrees to a technological transfer agreement.¹⁶⁹
- (170) OEMs are required to establish partnerships with local Chinese manufacturers and ensure a minimum local content in the equipment manufacturing by guaranteeing that partners take up the manufacturing and assembly of the HDGTs or related important CCPP complements, such as generators, STs, etc. or both
- (171) Alstom internal documents analysing the recent partnership with Beizhong for the supply of Large 50 Hz HDGTs in China indicate that HDGTs are prevalently produced locally as these are actually manufactured and assembled by Beizhong. As illustrated in Figure 4, in Phase 2 of the partnership [scope of ALSTOM partnership in China]. This implies that the ability of Alstom and all other OEMs to market their products is strictly intertwined with their local partners and has a heavy dependence on them.

Figure 4: Local partnership in China requires also delegation of manufacturing, including thermal block

[extract from internal ALSTOM document containing information on ALSTOM partnership]

Source: Annex 4893, slide 8.

¹⁶⁴ See competitor's reply to the Commission's Request for Information, 27.03.2015, question 10.
¹⁶⁵ See GE's reply to the Commission's Request for Information N°24, 25.03.2015, question 7.
¹⁶⁶ See Form CO, Annex 1586, page 54.
¹⁶⁷ See GE's reply to the Commission's Request for Information N°33, 06.05.2015, question 5.
¹⁶⁸ See GE's reply to the Commission's Request for Information N°33, 06.05.2015, question 4.
¹⁶⁹ See competitor's reply to the Commission's Request for Information, 20.03.2015, question 11.

- (172) These requirements go way beyond those imposed by other countries across the world and imply that the competitiveness of OEMs in China is heavily dependent on their local partners.
- (173) Moreover, once a partnership is established, the Chinese partners are in charge of the bidding process and they are the ones actually submitting the bid to customers and negotiating with them. Siemens indicates for instance that "*only local suppliers will be able to participate in a bid*" and "*the submission of a bid can only be done via the Chinese partner*"¹⁷⁰. MHPS confirmed that "*The local Chinese partner acts as the bidder in the tender*"¹⁷¹.
- (174) Other internal documents from Alstom also confirm that an OEM's competitiveness in China depends on the local partner's access to and relationship with customers.
- (175) For instance, in 2012, when Alstom was in the process of searching for a local partner for the GT26 in China, it weighted the pros and cons of different potential partners, not only in terms of both manufacturing capabilities/industrial set up/manufacturing costs, but also in terms of customers' relationships. [ALSTOM assessment of potential partnerships].¹⁷²

Figure 5: Alstom's analysis the pros and cons of potential Chinese local partners

[extract from internal ALSTOM document containing information on potential ALSTOM partnerships]

Source: Annex 3907, slide 10.

- (176) More recently, when analysing opportunities for Large 50 Hz HDGTs in China, [ALSTOM assessment of potential partnerships].

Figure 6: [information on ALSTOM's competitiveness in China]

[extract from internal ALSTOM document containing information on potential ALSTOM projects in China]

Source: Annex 4893, slide 9.

- (177) This is confirmed by the evidence from another internal document where it is mentioned that "*The purchasing of the gas turbine is through public bidding. The utility company and the design institute will evaluate the suppliers (GE/Harbin, Siemens/Shanghai Electric and MHI/Dongfang) based on given criteria. Also, some political factor such as the relationship between the supplier and the government may influence the final decision*".¹⁷³
- (178) An OEM's competitiveness in China appears to be determined to a large extent by its local partner and not just by its own HDGT supply capability.
- (179) Alstom recognises this when it explains that [ALSTOM assessment of partnerships]¹⁷⁴ and that [ALSTOM assessment of partnerships].¹⁷⁵

¹⁷⁰ Siemens' reply to the Commission's Request for Information dated 20 March 2015, question 11.

¹⁷¹ MHPS' reply to the Commission's Request for Information dated 26 March 2015, question 11.

¹⁷² See Annex 3907.

¹⁷³ See Annex 3934

¹⁷⁴ See Annex 4872.

- (180) The existence of access barriers to China in the form of local partnership requirement along the terms illustrated above appears to be one of the reasons for the late introduction of Very Large HDGTs in China. [information in ALSTOM internal document on local partnership requirement in China].¹⁷⁶
- (181) As regards the entry in the Very Large segment in China, one of Alstom's documents mentions the risk of [information in Alstom internal document on local partnership requirement in China].¹⁷⁷
- (182) Based on the findings of the Commission's investigation, China appears to represent a distinct geographic market because of the specific barriers that create markedly different conditions of competition on the supply side of the market.
- (183) In summary Alstom did not have access to China until recently because it had not formed a partnership with a local company. The findings of the market investigation confirmed that a partnership with local Chinese company is a crucial requirement for bidding in China. Whereas now partnerships might not need to be strictly in the form of a JV, local manufacturing and technological transfer still remain essential required elements of such partnerships. Based on indications of competitors, fulfilling this requirement does not seem to depend on the OEM's willingness to have access to the market, but rather on external factors, such as the availability of companies to partner with and approval of the partnership by local authorities. This is also demonstrated by Alstom who had wanted to enter the Chinese market since 2002. Alstom made entry to the Chinese market one of its top strategic priorities,¹⁷⁸ but did not achieve this until very recently. Therefore, the Commission considers that the requirement for local partnerships represents a specific barrier to access the Chinese market. Moreover, this access barrier implies that the conditions of competition within the Chinese market are very different from the rest of the world. In fact, the minimum local content requirement associated to the local partnership requirement, the dependency of OEMs on the local partner's competitiveness, the ability to access customers and networks, result in different conditions for competition and supply. Based on the findings of the Commission's investigation, China appears to represent a distinct geographic market because of the specific barriers that create markedly different conditions of competition on the supply side of the market.
- (184) The Commission concludes that China constitutes a separate market and should thus be excluded from the worldwide market for 50 Hz HDGTs.

(ii) Sanctions enforced against Iran restrict access to that market

- (185) Since 2012 the Iranian market is considered as inaccessible due to the international sanctions imposed on Iran. Alstom has not sold any new GTs in

¹⁷⁵ See GE's reply to the Commission's Request for Information N° 33, 06.05.2015, questions 3-5.

¹⁷⁶ See Annex 3934.

¹⁷⁷ See Annex 1084.

¹⁷⁸ See Annex 3876, page 4.

Iran over the 2009-2014 period.¹⁷⁹ [information on Iran from internal ALSTOM documents].

Figure 7: [information on Iran from internal ALSTOM documents]

[extract from internal ALSTOM document containing information on ALSTOM's geographic presence in the large HDGT segment]

Source: Annex 1586.

Figure 8: [information on Iran from internal ALSTOM documents]

[extract from internal ALSTOM document containing information on ALSTOM's accessible portion of demand]

Source: Annex 1586.

- (186) As GE has its registered office in the United States, GE complies with the US sanctions against Iran which prohibit the export of goods, technology, or services from the United States or by a citizen of the United States, wherever located, to Iran, unless licensed by the government of the United States. [reference to GE's corporate policy].¹⁸⁰
- (187) Siemens acknowledged that there are particular barriers to enter Iran¹⁸¹ due to the international embargos that constitute specific barriers to entry.
- (188) As regards the other OEMs, Siemens appear to be the only OEM to have been active in Iran in the last 5 years, although McCoy's Equipment Data and Reports ('McCoy')¹⁸² reports its last award in 2012.
- (189) MHPS indicates that "*Economic sanctions and export regulations by Japan, US and the EU on Iran impose restrictions on MHPS' sales to Iran.*"¹⁸³
- (190) On the one hand, sanctions represent a regulatory barrier to access the market. On the other hand, as a matter of fact, although for different reasons, neither GE nor Alstom have been active in Iran. Therefore, bids that took place there are not representative of the competitive interaction between the Parties or of their strengths or of both.
- (191) Therefore, the Commission concludes that Iran constitutes a separate market and should be excluded from the worldwide market for 50 Hz HDGTs.

7.3.3.4. From a demand perspective, there is strong regional differentiation of preferences and requirements

- (192) The regional nature of demand differentiation has been broadly stressed by both customers and competitors in the course of the market investigation.
- (193) OEMs analyse the different markets by taking into account how the various elements of differentiation drive the value in the market for 50 Hz HDGTs.

¹⁷⁹ See Alstom's reply to the Commission's Request for Information N°33, 06.05.2015, question 1.

¹⁸⁰ See GE's reply to the Commission's Request for Information N°33, 06.05.2015, question 2.

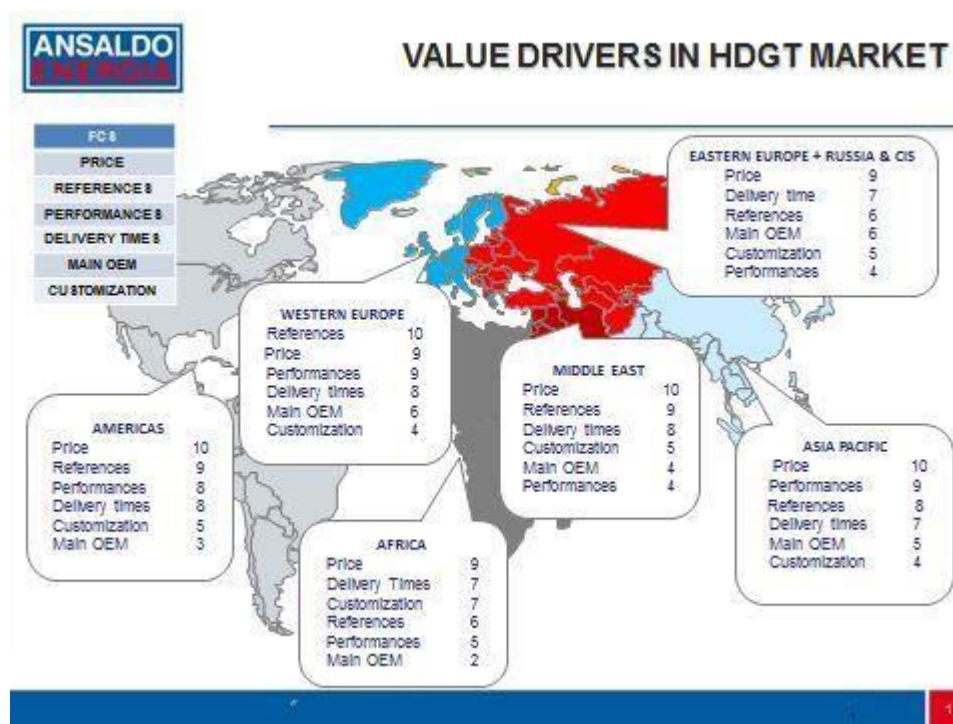
¹⁸¹ See reply to question 35.2 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁸² McCoy is an independent source of information on thermal, nuclear and hydro power projects above 5 MW.

¹⁸³ See competitor's reply to the Commission's Request for Information, 6.05.2015, question 3.

- (194) Ansaldo for instance considers that the weight attributed to price, references, performance, delivery times, customization and the receipt of an offer from a main OEM varies across different regions.¹⁸⁴

Figure 9: Value Drivers in the market for 50 Hz HDGTs according to Ansaldo



Source: Competitor's reply to Commission's Request for Information, 27.03.2015, attachment n.1, page 1.

- (195) Alstom, in its internal analysis of the markets takes into account the specificity of different world regions in terms of demand requirements.[information on ALSTOM's internal assessment of demand].

Figure 10: Technical features by regions

[extract from internal ALSTOM document containing analysis of demand]

Source: Annex 1084, page 11.

- (196) The regional specificity of customers' needs in terms of [information on Alstom's internal assessment of demand] translate to specific evaluation criteria as illustrated by Figure 11 below.

Figure 11: Evaluation criteria by regions

[extract from internal ALSTOM document containing analysis of technical features by region]

Source: Annex 1084, page 11.

- (197) [information on ALSTOM's internal assessment of demand].

¹⁸⁴ See competitor's reply to the Commission's Request for Information, 27.03.2015, attachment n.1, page 1.

- (198) Similarly, while carrying out the analysis of the expected trends for demand of high efficiency types of machines (Very Large), GE analyses the geographic distribution of this type of demand and concludes that demand will come primarily from 5 regions, namely [GE demand forecasts].¹⁸⁵

7.3.3.5. Main drivers of demand differentiation include differences in fuel prices, ambient conditions, environmental regulations and purchasing patterns

- (199) The differentiation in the demand characteristics across different world regions depends on: different fuel prices; different position of gas in the merit curve; different environmental regulations, different ambient conditions, different customers' preferences. *"The location of the plant influences the equipment as a result of local ambient conditions, regional labor cost and quality, local codes or standards and the ISO or utility to which the asset will interconnect. The user's location also will dictate whether the buyer prefers the lower initial cost solution or the lowest lifecycle (more efficient, longer parts life) cost solution."*¹⁸⁶ Another customer also stresses that: *"50Hz or 60Hz requirements, fuel flexibility, operation flexibility, grid code requirement & emissions will influence the technical specifications"*.¹⁸⁷
- (200) Fuel price levels and, thus, different positioning of gas-fired power plants in the electricity merit order are the main driver of differentiation.
- (201) As Alstom explains in one of its internal documents: *"wide fuel price range [drives] very regionalized power plant economics"*.¹⁸⁸ Indeed, customers' preferences for HDGT are strongly affected by the price of fuel or electricity or by both. In areas where gas prices are high or electricity prices are low or both (for instance, Europe), customers typically value efficiency (namely, Opex) of the HDGTs more than other characteristics, because they would need to operate their gas-fired power plant at the lowest possible cost. On the contrary, in areas where gas prices are low (for instance, the Middle East), customers typically value savings in the initial investment (namely, Capex) more than other characteristics. For instance in Europe, where gas prices are high and the use of renewables has been steadily increasing in line with Union 2020 energy policy, gas-fired power plants are likely to continue to be used mainly for mid-merit operation, namely to supplement the electricity produced by intermittent renewables. Whereas other sources, such as coal, are cheaper than gas, they cannot offer the same flexibility of gas-fired power plants, which is a requirement for mid-merit plants. Accordingly, the Parties analyse the various trends in demand by distinguishing regions on the basis of fuels prices (namely coal/gas).¹⁸⁹
- (202) Among others, technical requirements appear to be strongly affected by environmental regulations and climate conditions.
- (203) A number of countries across the world have taken steps in an effort to reduce greenhouse gas emissions, which include both carbon dioxide (CO₂) and

¹⁸⁵ See Annex 1863.

¹⁸⁶ See reply to question 35.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁸⁷ See reply to question 35.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁸⁸ See Annex 223, page 37.

¹⁸⁹ See Annex 223, page 38.

nitrogen dioxide (NOx). In particular, local laws usually set NOx emissions caps. Consequently, environmental regulations in each country set specific requirements in terms of emissions level that power plants, including SCPP and CCPP, need to respect. In particular, emissions requirements for power plants usually entail CO2 and NOx emissions, which are a by-product of the gas combustion process.

- (204) Power plant operators usually receive precise indications about the power plant's emission requirements as part of the relevant operating permit assigned to them. Power plant operators will thus have an obligation to ensure their installations are compliant with these requirements. The emission requirements for HDGTs and power plants will thus depend on power plant location.
- (205) Each country has its own electricity grid code. The actual flexibility needs will depend on the needs of the specific customer and the specific project. Grid-related flexibility features such as frequency response, spinning reserve¹⁹⁰ and black-start¹⁹¹ generally will be determined by the local grid code.
- (206) The local grid requirements may also contain several other restrictions that ultimately may affect the chances of a GT unit to be the “right fit” for the tendered power plant (for example, required peak capacity over base load).
- (207) Ambient conditions have also a strong impact on customers' technical preferences.¹⁹² In particular, climate is relevant for efficiency and output performance of HDGTs.
- (208) The performance of GTs in terms of output and efficiency depends on ambient conditions. For this reason, the industry has adopted an international convention to define the conditions into which HDGTs can be compared (namely the ISO conditions, which establish the ambient temperature, ambient pressure and relative humidity).
- (209) Another element of demand differentiation is related to the purchase model adopted by end-customers. As mentioned in Section 7.1, customers can opt for buying HDGTs and other CCPP components on a stand-alone basis by organizing ad-hoc tenders for each of the components. Another possibility is for the customer to tender out the full turnkey power plant. This can be achieved either by commissioning the project directly to the HDGT OEM, who becomes responsible for the completion of the project, or to an engineering company, who becomes responsible for procuring all the necessary components and integrating them into a complete power plant. Customers based in different world regions appear to have very different preferences when it comes to the desired purchase model.

¹⁹⁰ Spinning reserve is any back-up energy production capacity which can be made available to a transmission system with ten minutes' notice and can operate continuously for at least two hours once it is brought online.

¹⁹¹ Black-start is the procedure to recover from a total or partial shutdown of the transmission system which has caused an extensive loss of supplies. This entails isolated power stations being started individually and gradually being reconnected to each other in order to form an interconnected system again.

¹⁹² See replies to question 35.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 36.1 of Phase I Questionnaire Q2 to competitors on the gas business.

- (210) As explained by Alstom, *"in Europe the main purchase model to-date has been Full Turnkey EPCs led by the OEM, but starting to see increase in EPCs that are also Non-OEM led. In the Gulf/Middle East and Asia the preferred purchase model is Non-OEM led, as this is considered less expensive, but at the same time EPC Contractors that have experience. In China the main purchase model is Component-based. [see Figure 12]"*¹⁹³

Figure 12: Purchase models by region

[extract from internal ALSTOM document concerning power plant purchase models by region]

Source: Annex 1084, page 9.

- (211) The different purchasing models have in turn an impact on the way OEMs market their HDGTs and, if relevant, the scope of the integrated package with which HDGTs are offered (see Recital (136) - (144) for a detailed description of the possible scope of the packages).
- (212) As seen by Alstom, *"Europe still has tendency/preference for the OEM to have major part in the scope of the work. The MEA and Russia/CIS regions open to Component supply [see Figure 13]"*.¹⁹⁴

Figure 13: Scope of packages by regions

[extract from internal ALSTOM document concerning power plant purchase models by region]

Source: Annex 1084, page 10.

7.3.3.6. The EEA stands out as an example of a region with highly specific demand characteristics

- (213) In relation to the EEA in particular, a number of market participants pointed to the fact that there are some unique elements in the EEA market, for instance in terms of stricter environmental regulations and emission levels, although it is not excluded that *"generally speaking, similar requirements may exist outside EEA"*¹⁹⁵. One competitor indicates that *"Power generation market does not follow a unique technical specification/requirement. For example EEA countries requires high efficiency and flexibility and very low emission, while Russia & CIS countries are more interested in Co-generation Power plants, etc."*¹⁹⁶ Another big customer considers that *"For GT, technical specifications/requirements are different in EEA as compared to other regions of the world due to different social, environmental, and economic consideration"*.¹⁹⁷
- (214) The EEA appear to be characterized by a sophisticated customer base with a strong need for operational flexibility which, in view of the increasing role of renewables power sources is likely to remain a key requirement in this region (see Section 8.2 for details on the demand for new HDGTs in the EEA).

¹⁹³ See Annex 1084, page 9.

¹⁹⁴ See Annex 1084, page 10.

¹⁹⁵ See replies to question 36.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁹⁶ See reply to question 37.1 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁹⁷ See reply to question 36.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

7.3.3.7. Strong regional differentiation of demand characteristics drives different competitive dynamics in different regions

- (215) Conditions of competition do not appear to be homogeneous on a global basis as demand for HDGTs is highly dependent on customer location and therefore the extreme differentiation of demand drives different competitive dynamics in different geographies.
- (216) The analysis and comparison of the positioning of the OEMs in the different world regions supports the finding of strong regional differentiations in customers' preferences. In fact, some competitors appear to be more successful in some regions than in others. For example, Ansaldo and MHPS appear not to be very successful in Europe, although they performed well in other regions (for instance Ansaldo in the Middle East and MHPS in Asia). Since the products offered by OEMs are the same across different regions, the different market positioning is the result of the fact that their products were able to better meet customers' preferences in certain regions rather than others.
- (217) OEMs take this demand variety carefully into account when planning their business operations. For instance, in its Market Analysis and Competitive Assessment¹⁹⁸, Alstom analyses in detail the trends in each of the regions. On that basis, Alstom then develops ad-hoc business strategies for each region.¹⁹⁹

7.3.3.8. Conclusion

- (218) With the exception of China and Iran which are characterized by specific market access barriers leading to markedly different conditions of competition on the supply side, the market for 50 Hz HDGTs appears to be characterized by extensive trade flow and global patterns in supply and sourcing. At the same time, the strong demand differentiation driven by geographic considerations implies that competitive conditions across different regions are not homogeneous. For instance, demand in the EEA region is highly differentiated from other world regions and thus also observes different competitive dynamics. At the very minimum, the investigation points to strong regional differentiations.
- (219) For the purpose of assessing the present Transaction, the issue whether the relevant geographic market should be considered as worldwide (excluding China and Iran) or EEA-wide in scope can be left open. The competitive assessment will be conducted both at worldwide level (excluding China and Iran) and EEA level for the overall market for 50 Hz HDGTs and relevant segments by power output classes (Medium, Large and Very Large) and plant configuration (CC or SC).

7.4. Conclusions

- (220) For the purpose of assessing the present Transaction, the relevant market is the market for 50 Hz HDGTs, including the associated initial servicing and the supply of the gas turbine control system, at a worldwide (excluding China and Iran) and EEA level.

¹⁹⁸ See Annex 223 and 224.

¹⁹⁹ See Annex 225.

8. COMPETITIVE ASSESSMENT IN THE MARKET FOR 50 Hz HDGTs

8.1. Test under the Merger Regulation and the Horizontal Merger Guidelines and theory of harm in this case

Legal Basis

- (221) Article 2(3) of the Merger Regulation stipulates that “[a] concentration which would significantly impede effective competition, in the common market or in a substantial part of it, in particular as a result of the creation or strengthening of a dominant position, shall be declared incompatible with the common market.”
- (222) The Transaction consists essentially in the acquisition by GE, the leading 50 Hz HDGT supplier, of Alstom, the number three competitor in the overall world market for 50 Hz HDGTs with smaller market shares but an important R&D base and pipeline. This Transaction takes place in the already concentrated market for 50 Hz HDGTs, where only few other competitors are present, namely Siemens and MHPS, and – to a more limited extent – Ansaldo.

Focus on non-coordinated effects

- (223) Horizontal mergers, such as the Transaction, may significantly impede effective competition within the meaning of Article 2(3) of the Merger Regulation in two ways – through non-coordinated or coordinated effects or through both. This Decision focusses on non-coordinated effects, characterised as “eliminating important competitive constraints on one or more firms, which consequently would have increased market power, without resorting to coordinated behaviour”.^{200 201}
- (224) The “most direct effect” of such a merger will “be the loss of competition between the merging firms”, in this case the loss of competition between GE and Alstom.
- (225) The Horizontal Merger Guidelines clarify that such a horizontal merger can also lead to the reduction of competitive pressure on other competitors: “Non-merging firms in the same market can also benefit from the reduction of competitive pressure that results from the merger, since the merging firms’ price increase may switch some demand to the rival firms, which, in turn, may find it profitable to increase their prices.”²⁰²
- (226) As will be explained in Section 8.5 and in Annex I sections 4.3.3 and 4.4.10 below, in the present case the elimination of Alstom as an independent competitor which prior to the merger not only constrained GE but also Siemens and the two other competitors, reduces the competitive pressure also on those other OEMs.
- (227) A particular additional feature of the present case is that it is likely that GE will discontinue Alstom’s gas turbine technology for the Large and Very Large segments and all future oriented research and development efforts relating to

²⁰⁰ Horizontal Merger Guidelines, paragraph 22.

²⁰¹ During the market investigation no concerns were expressed and no evidence was presented on coordinated effects on any of the relevant markets.

²⁰² Horizontal Merger Guidelines, paragraph 24.

the Alstom technology. This discontinuation of Alstom's gas turbines and technology would reduce the competitive pressure on the remaining competitors Siemens, MHPS and Ansaldo even further still.

Oligopolistic market with very high barriers to entry and high profit margins

- (228) In line with paragraph 25 of the Horizontal Merger Guidelines and prior to embarking on the forward looking assessment of the effects of the merger the Commission will first assess the pre-merger situation in the market for 50 Hz HDGTs and in particular whether it is characterised by oligopolistic competition within the meaning of the Merger Regulation and the Horizontal Merger Guidelines.
- (229) As discussed in more detail in Section 8.3, the Commission considers that the market for 50 Hz HDGT:
- (a) is an oligopolistic market with only four full technology competitors (GE, Siemens, Alstom and MHPS) and one weaker 'niche' player (Ansaldo),
 - (b) is characterised by very high barriers to entry,
 - (c) is characterised by very high profit margins linked to the high level of concentration and the very high barriers to entry.

Factors taken into account by the Commission for the assessment of whether significant non coordinated effects are likely

- (230) Paragraphs 27 to 38 of the Horizontal Merger Guidelines list a number of factors which may significantly impede effective competition by influencing the ability and incentives of the merging parties to increase prices or affect other parameters of competition. Paragraph 26 of the Horizontal Merger Guidelines clarifies that (1) taken separately these factors do not have to be decisive, (2) not all these factors need to be present for such effects to be likely and (3) the list should not be considered as exhaustive.

Transaction results in market-leading and often very large market shares

- (231) In the present case the Commission will first examine the Parties' market shares.
- (232) According to paragraph 27 of the Horizontal Merger Guidelines, the larger the market share, the more likely a firm is to possess market power. And the larger the addition of market share, the more likely it is that a merger will lead to a significant increase in market power.
- (233) As will be seen in section 8.4 the Parties have very large combined market shares world-wide and in the EEA²⁰³. The Transaction also leads to sizeable market share additions in particular in the EEA. As the market for 50 Hz HDGTs is typified by bidding with large orders, historic market share data will be used. This approach has been confirmed by the General Court, which found that "*even on a bidding market, the fact of a manufacturer maintaining, or even*

²⁰³

Paragraph 17 of the Horizontal Merger Guidelines defines 'very large market' shares as those amounting to 50% or more, "*which may in themselves be evidence of the existence of a dominant market position*".

*increasing, its market share over a number of years in succession is an indication of market strength".*²⁰⁴

Transaction eliminates a significant and close competitor of GE

- (234) Secondly, in line with paragraphs 25 and 28 to 30 of the Horizontal Merger Guidelines the Commission will examine whether the Transaction eliminates a significant and close competitor of GE (and Siemens). The Commission will also examine whether MHPS and Ansaldo are more distant competitors.
- (235) Under Paragraphs 25 and 28 to 30 of the Horizontal Merger Guidelines, and in line with Commission practice and economic theory, the fact that the merging parties are close competitors is sufficient to establish competitive harm. They do not necessarily have to be the closest competitors. This is all the more true in cases where the merger creates or strengthens a new market leader with large or very large market shares.
- (236) The assessment will examine the degree of substitutability between the Parties' HDGTs, and the importance of rivalry between GE and Alstom for competition in the market. *"The higher the degree of substitutability between the merging firms' products, the more likely it is that the merging firms will raise prices significantly."*²⁰⁵ It will, amongst other, in particular examine whether *"historically the submitted bids by one of the merging parties have been constrained by the presence of the other merging party"*.²⁰⁶
- (237) As will be discussed in section 8.5, the investigation shows that Alstom and GE are close competitors although not necessarily the closest competitors within the Large and Very Large segment of the market for 50 Hz HDGTs. The investigation also shows that MHPS is consistently a more distant competitor and that Ansaldo is an even more distant competitor, with the exception of within the Medium segment.

Further reduction of the limited number of alternatives available to customers

- (238) Thirdly, according to paragraph 31 of the Horizontal Merger Guidelines *"[c]ustomers of the merging parties may have difficulties switching to other suppliers because there are few alternative suppliers. ... The merger may affect these customers' ability to protect themselves against price increases."*²⁰⁷
- (239) In bidding markets, there is no presumption that few bidders (even as low as two or three bidders) are sufficient to generate a competitive outcome. Economic theory predicts that where firms offer differentiated products, bidding markets will not be characterized by a perfectly competitive outcome, and can generate non-coordinated effects if two competing firms merge.²⁰⁸

²⁰⁴ Case T-210/01 General Electric v Commission (2005), paragraph 151. See also Horizontal Merger Guidelines, paragraph 15: *"Changes in historic market shares may provide useful information about the competitive process and the likely future importance of the various competitors, for instance, by indicating whether firms have been gaining or losing market shares."*

²⁰⁵ Horizontal Merger Guidelines, paragraph 28.

²⁰⁶ Horizontal Merger Guidelines, paragraph 29.

²⁰⁷ Horizontal Merger Guidelines, paragraphs 31.

²⁰⁸ Ibid. paragraph (252) et seq.

- (240) This Decision will assess the availability of effective alternatives, taking into account differing demand characteristics and the corresponding product and geographic differentiation in the various geographic regions and segments of the market for 50 Hz HDGTs. Not all HDGT suppliers may act as an effective alternative to the Parties for products within each product segment, group of customers, or territory.
- (241) As explained in more detail in section 8.6 the Commission's main finding is that for most customers in the Large and Very Large segments the Transaction does not represent a reduction of the number of available alternatives from 5 to 4, but from 4 to 3 or often even from 3 to 2.
- (242) The relatively high degree of closeness of competition between the Parties together with the very high barriers to entry, large combined market shares, and limited number of alternatives are important drivers of the likelihood of anticompetitive price effects in this case.

Transaction eliminates an important competitive force from an innovation and technology point of view

- (243) Fourthly, according to paragraph 37 of the Horizontal Merger Guidelines: “[s]ome firms have more of an influence on the competitive process than their market shares or similar measures would suggest. A merger involving such a firm may change the competitive dynamics in a significant, anticompetitive way, in particular when the market is already concentrated.”²⁰⁹
- (244) The Transaction appears to eliminate in Alstom an important technology competitor and innovator in the market for 50 Hz HDGTs. Alstom is a fully-fledged technology competitor, (1) with a complete HDGT product and technology portfolio, (2) supported by strong engineering capabilities and R&D investment, (3) with an important new product in the Very Large segment and (4) with projects in the pipeline to also offer cutting edge HDGTs in the medium and long term.
- (245) The Decision will examine whether from a technology and innovation point of view Alstom is a stronger competitive force than its market share suggests.

The Transaction will likely lead to the discontinuation of Alstom HDGTs and related R&D for the Large and Very Large segment

- (246) Fifthly, for the effects discussed above to be triggered it is sufficient that GE eliminates Alstom as an independent competitive force competing pre-merger both with GE and the other rivals within the narrow market for 50 Hz HDGTs.
- (247) As explained in Recital (227), an additional effect of the Transaction is that the Transaction not only puts an end to Alstom's independence on the market, but GE will likely discontinue the most advanced parts of the Alstom HDGT product offering, and the related R&D including the support for the Large and Very Large segments as well as forward looking R&D efforts to further develop the Alstom technology (see Section 8.8).

²⁰⁹ Horizontal Merger Guidelines, paragraphs 37 and 38.

- (248) This discontinuation would further compound the effects discussed above. In addition, as a result of the discontinuation GE will no longer have the same ability and incentives as Alstom to develop and sell significant performance upgrades to Alstom's installed base of gas turbines. Significantly, given the very high barriers to entry, this discontinuation will cause significant and lasting harm to innovation.

Countervailing factors raised by the Parties

- (249) In the last part of this section on HDGTs the Commission will discuss the two countervailing factors raised by the Parties.
- (250) Firstly, Alstom claims that its financial situation has had an appreciable impact on its ability and incentive to compete in the market for 50 Hz HDGTs in the past [information on ALSTOM's financial situation] The Commission will assess this claim.
- (251) Secondly, GE claims that the efficiencies created by the Transaction in particular in gas turbine servicing, largely outweigh the limited harm brought about by the Transaction. The Commission will assess this claim.

The Commission's assessment is not affected by the presence of a "bidding market"

- (252) A merger between competing firms in a concentrated market with few alternatives can affect competitive outcomes in markets characterized by tendering (so-called "bidding markets").²¹⁰ The general mechanism through which mergers in bidding markets with differentiated products can influence competitive outcomes is similar to those in mergers in ordinary differentiated product industries, where firms also compete on price. A merger internalizes the competitive pressure that two firms exercised on each other prior to the merger, and can lead each firm to bid less aggressively post-merger (for example by submitting higher bids).
- (253) The Notifying Party has argued that in a bidding market a merger may lead to anticompetitive effects only if it brings together the winning bidder and the second-best bidder (or "runner-up") in a significant number of tenders. Moreover, competition from other bidders (for example, the third-best bidder in those tenders where the merger brings together the winner and the runner-up) may limit any anti-competitive effects from a merger. Therefore, intense competition from non-merging parties may be sufficient to constrain the merged entity's prices post-merger.
- (254) The Commission notes as a preliminary remark that there is no presumption that presence of small number of bidders (even as low as two bidders) in a bidding market is sufficient to generate a competitive outcome. The extreme result where two firms compete intensely with each other and offer their output at cost depends on specific features of a market that are not related to whether or not competition takes place via tenders. In particular, the extreme result whereby the presence of just two firms is sufficient to ensure competitive pricing holds when firms sell identical products, have identical costs, have

²¹⁰ The nature of non-coordinated effects in bidding markets is explained in detail in Annex I of the Decision.

sufficient capacity to serve the entire market, and have reliable information on the cost of the rival bidders. In such a case, as regards non-coordinated effects, a merger would have no impact on market outcomes as long as two firms remain in the market. However, this stylised result no longer holds if firms offer differentiated products, and as a result earn a margin over cost. A bidding market where firms offer differentiated products will therefore not be characterized by the stylized perfectly competitive outcome. Non-coordinated effects can therefore arise in a bidding market especially if the two merging firms are close competitors (as in any standard market with differentiated products).

- (255) Moreover, the fact that competition is organized via tenders has no direct bearing on whether an industry is characterized by high or low barriers to entry. The presence of high barriers to entry is compatible with the existence of bidding markets, and can increase the risk of significant non-coordinated effects of a merger as in any other type of market. As will be discussed below, the market for 50 Hz HDGTs is characterised by high barriers to entry, and as such is susceptible to significant non-coordinated effects.
- (256) The Commission notes that whilst bidding markets can be expected to operate like any other market with product differentiation, the precise mechanism by which a merger can lead to less competitive outcomes in a bidding market depends on the type of tender process at work. There are two leading alternative auction processes: the first price (or sealed-bid) auction; and the second price (or descending/ascending) auction.
- (257) In a first-price or sealed-bid auction, firms compete with each other in tenders by submitting sealed bids. The customer selects the firm which provides it with the highest surplus (the difference between the value of the product offered by each firm and its bid). The winner of the tender is then paid its bid. This auction mechanism provides a good approximation of tenders where firms are paid their bid (if they are ultimately selected as the winner), and when they face uncertainty on the conditions offered by competing bidders (including the quality of competing products, and the bids at which they are offered), and on how the buyer will evaluate different characteristics of each bid. Auctions are best characterized as sealed-bid environments also when competing sellers do not know the number of chances they will have to improve their offer.
- (258) Second-price auctions describe auction processes where the price for an object is raised successively until only one bidder remains (as with auctions for paintings). In the case of a procurement procedure, the design becomes a descending one, where the price is lowered until only one competitor remains and who wins the tender at the final price that it has bid. In a simple setting where competing sellers differ in their cost of supplying the product, the price in a second-price auction will equal the cost of the second-best bidder (the bidder with the second-lowest cost), and the tender will be awarded to the bidder with the lowest cost. In this setting, the second-best bidder is the only (or most relevant) constraint on the price offered by the winning bidder.²¹¹

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In a more complex, but more realistic, setting with asymmetries between competing sellers in terms of both costs and the value offered to customers, a second-price auction will deliver the result that second-

- (259) The Notifying Party has argued in favour of the use of a descending price auction to describe how tenders for HDGTs operate.²¹² However, the Commission's market investigation indicates instead that a first-price auction framework is more appropriate to describe tenders for HDGTs, in light of the significant uncertainty faced by OEMs when submitting bids for HDGTs and the limited information conveyed by customers on rival offers during the tender process. This is confirmed by the significant discrepancies between competing OEMs on some of the main competitive parameter tenders (for instance the identity of other participants and the identity of runner-up bidders), and is also consistent with the information on the margins of the Notifying Party across tenders events (see Annex I for a discussion of this evidence).
- (260) Under a sealed-bid format, the pricing incentives of competing bidders closely resemble those at work in ordinary markets with differentiated products. With uncertainty on the required level of the winning bid, each firm will face a trade-off between the probability of winning the tender and the margin earned in case of winning the tender. A higher bid will reduce the probability of winning the tender, but will increase the margin if the bid is successful. Each bidder therefore chooses its optimal bid in order to optimize the trade-off between expected sales and price, and as such maximize its expected profits.
- (261) The incentives to increase bids in a first-price auction following a merger are analogous to those in ordinary markets with differentiated products. Following a merger each firm knows that if it bids less aggressively, its probability of winning the tender will decrease, but the probability of winning the tender enjoyed by the other merging party will increase. This provides an incentive to increase bids for both merging parties, in order to increase the probability of winning of the other merging party. Under the assumption of imperfect information on customer valuation for each bidder, the effect of a merger is likely to affect a relatively broad class of buyers, rather than being targeted on customers for whom the merging parties are the two preferred bidders.²¹³
- (262) As in other highly differentiated product markets, the number of alternatives is relevant to determine competitive outcomes in a bidding market. With fewer competitors, each bidder will face a higher probability of winning a tender, and will therefore bid less aggressively. The removal of an independent competitor due to a merger can be expected to have a particularly pronounced effect on the bidding incentives of the other merging party (the acquiring firm), since the merger would directly remove competition between the two merging firms. This effect is stronger the closer the two merging parties are to each other. However, incentives to increase bids are likely to also apply to non-merging parties, since the merged entity would be less aggressive in its bidding behaviour. The impact of the merger on the bidding behaviour of non-merging

best bidder bids at cost and represents the only (or most relevant) constraint on the price offered by the winning bidder if bidders have reliable information on the bids offered by rivals, and on the value that each of the rival products brings to the customer.

²¹² See Annex 4713, "Net Benefits to Heavy-Duty Gas Turbine Customers", CRA, [Professors], and see "On the relevance of runner-up data" by [Professor A].

²¹³ See also Case M.6950 – UPS/TNT Express, paragraph 722.

parties is even more pronounced if one of the two products offered by the merging parties is discontinued as a result of the merger.

- (263) A reduction in the number of competing bidders also affects competitive outcomes under the alternative second-price auction format. When there are fewer independent bidders it is less likely that the winning bidder and the runner-up bidder will offer closely competing products (providing a similar level of utility to buyers), thus allowing the winning bidder to extract a higher price from customers. It can therefore be expected that a lower number of independent bidders would result in higher prices for customers, assuming that competing bidders offer differentiated products. As in the case of a first-price auction environment, the strength of this effect in a merger depends on the closeness between the merging parties (for example as proxied by the frequency with which they are the winner and runner-up in past tenders), assuming that the products of the two merging parties continued to be offered post-merger. If one of the two merging products is no longer offered post-merger, anticompetitive effects apply to all tenders where the discontinued product was either the winning firm or the runner-up firm, and are therefore likely to apply to a broader set of bids.

Structure of the Commission's assessment

- (264) In view of the foregoing, the Commission's assessment will be structured as follows, as a preliminary point, Section 8.2 will establish that there is market demand for 50Hz HDGTs. Section 8.3 will examine the competitive structure and conclude that the market for 50 Hz HDGTs is an oligopolistic market with very high barriers to entry and expansion and high profit margins. Section 8.4 will conclude that the Transaction leads to market-leading and often very-high market shares. Section 8.5 will find that the Transaction eliminates a significant and close competitor of GE. Section 8.6 will conclude that the Transaction will further reduce the limited number of alternatives available to customers. Section 8.7 will conclude that the Transaction eliminates an important competitive force from an innovation and technology point of view. Further, Section 8.8 will show that the Transaction will likely lead to the discontinuation of Alstom's HDGTs for the Large and Very Large segment and all forward-looking R&D capabilities. Section 8.9 will describe why the Transaction is likely to have significant adverse effects on prices, product choice and innovation. Section 8.10 will show that Alstom's financial situation was unlikely to, in the past or in the future, have an impact on its ability to compete in the market for 50 Hz HDGTs. Section 8.11 will analyse the claimed merger efficiencies and establish that at least for the Large and Very Large segment the efficiencies are not sufficient to outweigh the harm brought about by the Transaction. Lastly, Section 8.12 will summarise the findings, respectively, for the overall market for 50 Hz HDGTs, for the Large segment of the market for 50 Hz HDGTs, for the Very Large segment of the market for 50 Hz HDGTs, and for the Medium segment of the market for 50 Hz HDGTs, distinguishing also between the SC and the CC segment whenever relevant.
- (265) Annex I presents the Commission's economic analysis of the bidding data for the Large segment of the market for 50 Hz HDGTs.

8.2. Market Demand for 50 Hz HDGTs

8.2.1. *The role of CCGT generation in the power generation mix in the recent past and present*

8.2.1.1. Gas fired power generation has been a key source of electricity in the recent past and continues to be so at present

- (266) CCGT generation has acquired an increasingly prominent role in the power generation mix over the recent past. This trend has been particularly evident in Europe, but can also be observed at the global level.
- (267) International Energy Agency (“IEA”) data on generation output by fuel shows that during the period between 1990 and 2012, gas-fired generation in the Union has increased by 392 TWh, from 193 TWh to 582 TWh (a 3-fold increase), well above the overall growth in generation output (which increased from 2,576 TWh to 3,260 TWh, a 26% increase).²¹⁴ The only other energy source that has experienced a similar absolute growth to the one of gas-fired generation is renewable generation (defined as bioenergy, wind and solar), which have increased by 422 TWh during the period (from a level in 1990 of only 20 TWh). Overall, the increase in gas-fired generation and renewable generation jointly accounted for more of the total increase in generation, and compensated for the reduction in other sources (most notably oil and coal).
- (268) The growth in overall generation by gas-fired plants has been associated with a strong growth in installed capacity, by almost 120 GW during the 2000-2010 period in the Member States (the largest single increase in installed capacity by fuel, followed by wind and solar).²¹⁵ Over the longer 1990-2013 period, McCoy data indicates a growth in total installed capacity of HDGTs of 108 GW in the EEA, 95% of which was in Combined Cycle modality. The increase in CCGT capacity over this period is equivalent to roughly 155 GW of CCGT capacity using a standard conversion factor)²¹⁶, equivalent to over 70% of the total gas-fired installed capacity as of 2012 according to the IEA.

8.2.1.2. Annual HDGT capacity sold varies considerably on an annual basis

- (269) Figure 14 illustrates the demand trend for HDGTs in Combined Cycle mode in the EEA during the 1990-2013 period based on McCoy data, showing two large demand spikes around 2000 and 2007, and a decline in demand since 2010. As the Figure illustrates, most of the demand for CCGTs in Europe over this period has been in the Large segment (accounting for over 80% of installed capacity over the period).
- (270) The decline in demand for HDGTs over the past 3-4 years has been due to a combination of factors, including cheaper coal prices, low CO₂ prices under the European Emission Trading Scheme (“ETS”), the general economic downturn,

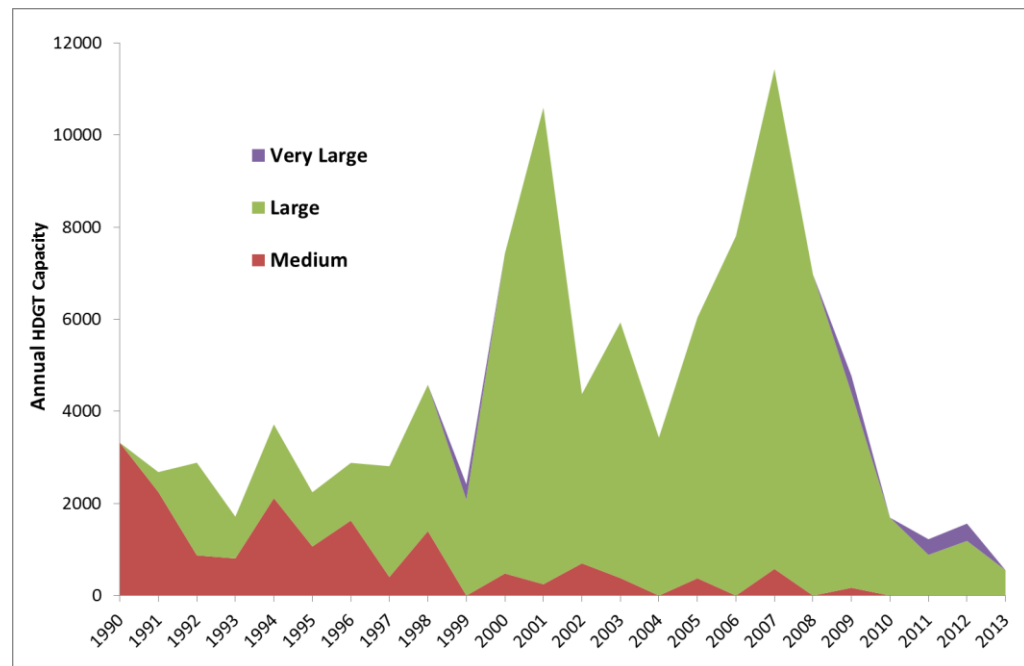
²¹⁴ See Annex 1577, page 628.

²¹⁵ See “The Impact of Wind Power on European Natural Gas Markets” by Irene Vos, International Energy Agency, Working Paper dated January 2012, Figure 3 page 12.

²¹⁶ See Annex 5149, page 22.

and the continued growth of renewable generation.²¹⁷ These factors have also reduced the capacity utilization rates of existing CCGTs in the European market. Alstom reports a reduction in average utilization in the five largest Member States from 46% in 2009 to 27% in 2013.²¹⁸ The recent drop in generation by existing CCGT and in new CCGT projects in Europe does not mean however that there will be no or insignificant demand for new HDGT projects in the near future. The prospects for future demand for HDGTs are discussed in detail in Section 8.2.2.

Figure 14: Annual HDGT capacity in CC mode sold in the EEA, 1990-2013 (MW)



Source: Commission's services illustration based on McCoy.

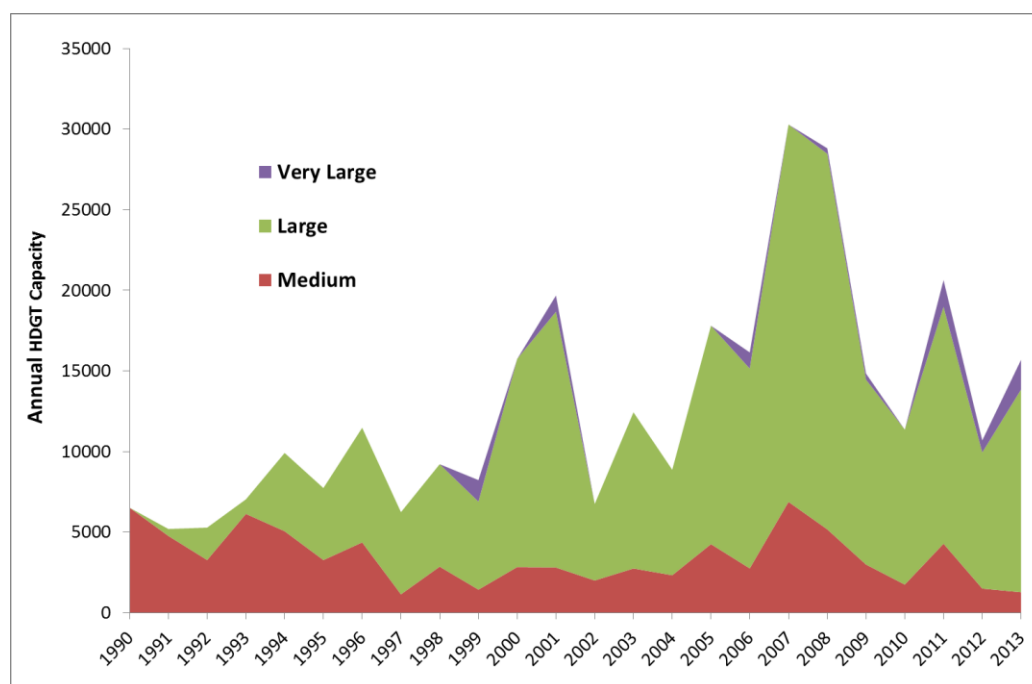
- (271) The trend towards greater gas-fired generation can be observed also at a global level, beyond Europe. On a worldwide level, gas-fired power generation has also increased very rapidly (from 1,760 TWh in 1990 to 5,104 TWh in 2012, a 3-fold increase), and contributed to almost a third of the increase in total demand.²¹⁹
- (272) Figure 15 illustrates the demand trend for HDGTs in CC mode in the 50Hz worldwide market excluding China and Iran, during the 1990-2013 period based on McCoy data. Demand peaked in 2007-2008, and has declined since, but note at the same rate as in Europe. Indeed, average annual installed HDGT capacity during the last three years of the sample period (2011-2013) has been of 16.3 GW, above the annual average of the whole 1990-2013 period (which is at 13.6 GW). Two-thirds of demand for HDGTs in the sample shown in Figure 15 was in the Large segment.

²¹⁷ See "World Energy Investment Outlook 2014 – Special Report" by International Energy Agency, pages 111-114 [submitted as Annex to Hogan Lovells paper, M.7278_Future of Gas Turbine Demand in Europe_Annex 4873, Tab 08].

²¹⁸ See Annex 4873.

²¹⁹ See Annex 1577, page 608.

Figure 15: Annual HDGT capacity in CC mode sold in 50Hz excluding China and Iran, 1990-2013 (MW)



Source: Commission's services illustration based on McCoy.

8.2.1.3. Gas fired power plants are more efficient, less costly, produce fewer emissions, and are more flexible than other thermal plants

(273) There are a number of reasons why gas-fired generation has been the technology of choice for fossil fuel generation over the recent past, in particular in Europe. These include the following features: (a) significant lower capital costs per capacity (KW) compared to other thermal sources such as coal and nuclear, and also compared to renewables²²⁰; (b) much higher thermal efficiency in relation to coal (up to 60% for the current generation of CCGT, compared to 48% for coal)²²¹; (c) significantly lower emissions of CO₂²²²; and (d) significantly higher operational flexibility, in terms of key features such as start-up time, start-up costs, ramp rate and minimum stable generation.²²³ The last of these features make CCGT generation particularly important as a complementary source of generation to intermittent renewable sources. It is a particularly important advantage of CCGT generation over other sources of thermal power in a context where renewable sources are also growing, as the

²²⁰ See "World Energy Investment Outlook 2014 – Special Report" by International Energy Agency. For example, the IEA reports average annual unit investment costs (in USD/kW) of roughly 1,000 USD for gas in the OECD over the period 2000-2013, relative to roughly double for coal, and even more for hydro and nuclear.

²²¹ See "Flexibility Options in Electricity Systems" by ECOFYS, dated 10 March 2014, page 10.

²²² See GE's reply to the Commission's Request for Information N°20, doc "GE_0006051_GE - Strictly Confidential - Contains Business Secrets.msg/TR: GT developments", page 5, moreover, "Energy Technology Perspectives 2014 Harnessing Electricity's Potential" IEA, 2014, reports on page 170 that that a modern CCGT emits around 350 kg of CO₂ per MWh, compared to 730-810 kg Co₂/MWh for modern ultra-supercritical or supercritical plants fuelled by hard coal.

²²³ See "Medium-Term Oil & Gas Markets 2011" by International Energy Agency, dated 2011, page 169; "Flexibility Options in Electricity Systems", by ECOFYS, dated 10 March 2014, page 10.

power sector decarbonizes. The trend towards greater reliance on flexible thermal generation as a consequence of the growth in renewable generation has been particularly evident in Europe over the past few years, and is set to continue in the future. The nature and implications of this trend are discussed further in Section 8.2.2.

- (274) The advantages of gas-fired generation relative to other fossil fuels are widely recognized both in public documents, and in the internal documents of the Parties. For example, in the 2010 World Energy Outlook, the IEA notes several advantages of CCGT generation, including *"its inherent environmental advantages over coal, the higher thermal efficiency and lower capital costs and construction lead-times of CCGTs, and their operational flexibility"*.²²⁴ Similarly, the United Kingdom's Department of Energy & Climate Change ("DECC") states that gas-fired power plants using CCGTs are *"quick to build, have relatively low capital costs, emit around half the carbon of coal power stations"*.²²⁵ ECOFYS argues that *"On the basis of both technical capabilities and costs, natural-gas fired generation technologies to be the best suited of the three studied technologies [gas, coal, and nuclear], to supply flexibility"*.²²⁶
- (275) The internal documents provided by the Parties also confirm the benefit of CCGT generation over other sources of thermal generation. A study commissioned by Alstom notes that gas powered generation will be *"Complementary to strong renewables, which output shall be totally substituted by gas"*.²²⁷ An internal document by GE also recognizes that an increasing reliance on renewable energy, the divergence of fossil fuel prices and stringent environmental requirements call for equipment that provides excellent flexibility and capabilities.²²⁸ Similarly GE notes that *"[A]s additional renewable sources join the grid, reliable power generation and stress on the grid become larger issues"* and that GE's *"flexible, jet engine-based [GT] technology addresses variability, reliability and the need for lower fuel use and operating costs"*.²²⁹
- (276) In this context, the Commission notes that supporting R&D focused on increasing flexibility for conventional fossil fuel power plants in Europe is one of its priorities under the Horizon 2020 work programmes. Topic *"LCE 17 – 2015: Highly flexible and efficient fossil fuel power plants"* of the Work Plan 2014-2015 reads as follows:

"Specific challenge: The share of energy produced from renewable resources is growing rapidly. The output of wind and solar power is highly variable, and depends of factors such as weather conditions and time of day. With this growing share of renewable power, in particular when having priority access

²²⁴ See Annex 1577, pages 183-184.

²²⁵ See "Energy Security Strategy 2012" by DECC, page 36, Recital 4.16.

²²⁶ See "Flexibility Options in Electricity Systems", by ECOFYS, dated 10 March 2014, pages 10-12; "The Impact of Wind Power on European Natural Gas Markets" by Irene Vos, International Energy Agency, Working Paper dated January 2012, page 32.

²²⁷ See Annex 1207, page 29.

²²⁸ See Annex 139, page 29.

²²⁹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0011489_GE - Strictly Confidential - Contains Business Secrets", page 1.

to the grid, fossil fuel power plants will have to increasingly shift their role from providing base-load power to providing fluctuating back-up power to meet unpredictable and short-noticed demand peaks, in order to control and stabilise the grid. Plants should be able to run both at the lowest part load possible at the highest possible efficiency. Moreover, plants will be required to operate across the entire load range with high load-change velocities, and even operate in start/stop mode with full turndown and very fast re-start, all at minimal fuel consumption. This forces base-load plants to operate closer to their design limits and through significantly more thermal cycles, leading to increased rate of wear on plant components. Operational flexibility therefore presents a significant challenge for fossil fuel power (and CHP) plants. [...]

Expected impact: Projects should lead to new and cost-effective solutions for highly flexible new and existing fossil fuel power plants (including those using dispatchable renewable fuels), capable of meeting demand peaks and renewable output reductions, at minimal fuel consumption and emissions, while mitigating the effects of cycling operation to avoid excessive service life expenditure, and not impeding the potential CO2 capture readiness of the power plants."

- (277) A similar topic with similar goals will be published in the Work Plan for 2016-2017.

8.2.1.4. Conclusion

- (278) Based on the evidence reviewed above, the Commission concludes that electricity generation based on CCGT technology has significant advantages over other forms of electricity generation, in particular other thermal generation. As a result, generation based on this technology has grown significantly over the recent past, and it currently plays a major role in the power mix, both in Europe and at a global level.

8.2.2. Future demand for HDGTs

8.2.2.1. The Notifying Party's views

- (279) In its Response to the Article 6(1)(c) Decision the Notifying Party has argued that EEA demand is only a small fraction of global demand and that is projected to remain so in the future. It also argues that demand is likely to be lower than the forecasts indicated in Alstom internal documents (most notably the [title of internal ALSTOM document containing demand forecasts]). On May 4 2015, the Parties have made a subsequent submission on "The Future of Gas Turbine Demand in Europe". In this submission, it is argued that European demand for HDGTs is weak, and likely to remain depressed for at least the next five years (if not longer). Part of the reasons for these limited demand prospects are a low level of overall electricity demand, policies promoting renewable generation, and the current levels of mothballed gas capacity (which could return to the market if necessary). The Notifying Party has also submitted a report entitled "An Assessment of Future Demand for Heavy Duty Gas Turbines in Europe". The findings of this report and its assumptions are discussed in detail below.

8.2.2.2. Commission's assessment

- (280) As a general point, the Merger Regulation is applicable to transactions concerning relevant markets where there is a future demand for products, even if that demand may be declining.

- (281) The Commission has assessed the Parties arguments on demand for HDGTs (in particular demand in Europe) by considering a number of public sources, and also by examining the internal demand projections made by Alstom and by GE.
- (i) Global demand for new HDGTs is set to continue over the short and medium term**
- (282) Public agencies have published a range of the future demand predictions for gas-fired power generation. A range of demand forecasts can also be found in the internal documents of the Notifying Party and of Alstom. Under the various forecasts examined by the Commission, demand for new HDGTs is set to continue in the future at the global level (including in the 50Hz excluding China areas).
- (ii) IEA's forecasts indicate a worldwide increase in gas-fired capacity**
- (283) The IEA predicts a significant worldwide increase in total generation capacity of gas-fired power plants up to 2040 under the three scenarios considered in the latest World Energy Outlook of 2014.²³⁰ Under the central "New Policies" scenario, the cumulative global additions on gas-fired generation during the period 2014-2025 are of 788 GW (equivalent to 66 GW per year).²³¹ This represents the second largest increase in capacity after renewables. A similar absolute growth in capacity is forecasted for the 2025-2040 period (an addition of 833 GW of capacity, equivalent to 52 GW per year). It is not possible to infer demand for 50Hz regions from the data reported by the IEA. It is however possible to report data on Europe and on the EU, which is discussed in Recitals (291) to (301) below.
- (iii) Alstom's forecasts indicate significant investments between 2014-2023 in the market for 50 Hz HDGTs**
- (284) Alstom's internal demand estimates (as contained in the [title of internal ALSTOM document containing demand forecasts]) provide more detailed forecasts by region compared to the IEA. These estimates also confirm that significant demand for HDGTs will persist over the short to medium term.²³²

²³⁰ See Annex 1577, "World Energy Outlook 2014" by International Energy Agency, pages 36-38. The International Energy Agency defines the three scenarios as following: (1) the New Policies Scenario is the central scenario, taking into account policies and measures that have been adopted as of mid-2014 that affect energy markets. This includes not formalized policies yet; (2) the Current Policies Scenario excludes those policies and implementing measures that have not yet been formally adopted as of mid-2014; (3) the 450 Scenario illustrates how the "*international goal to limit the rise in long-term average global temperature to two degrees Celsius (2 °C)*" can be achieved.

²³¹ The cumulative increase forecast by 2025 is equivalent to 54% of the total gas fired capacity installed as of 2012. See Annex 1577, page 608.

²³² See Annex 223, pages 100, 103.

- (285) For the overall 50Hz region (including China), the market value for the overall segment is estimated by Alstom to be EUR [ALSTOM internal demand forecast] per year between 2014 and 2018, and EUR [ALSTOM internal demand forecast] per year for the 2019-2023 period.²³³ These investments are equivalent close to [ALSTOM internal demand forecast] GW of new HDGT capacity per year during the 2014-18 period, and roughly [ALSTOM internal demand forecast] GW during the 2019-2023 period. Overall, these forecasts indicate an increase in total CCGT capacity of [ALSTOM internal demand forecast] GW of capacity by 2023.²³⁴ Most of the growth in capacity ([50-60]%) is projected to be accounted by the Large segment.

Table 1: Market forecasts per year for new 50 Hz HDGTs

MEDIUM	2014 -2018 .	2019 -2023 .	LARGE	2014 -2018 .	2019 -2023 .
#GTs /y	[ALSTOM internal demand forecast]	ALSTOM internal demand forecast]	#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]

VERY LARGE	2014 -2018 .	2019 -2023 .	TOTAL	2014 -2018 .	2019 -2023 .
#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]

Source: Annex 223.

- (286) Excluding China, the annual market value of 50Hz HDGTs in 2014-2018 is reported in Table 2. For this geographic market definition, the overall market for 50 Hz HDGTs is projected to represent an annual value of EUR [ALSTOM internal demand forecast] between 2014-2018, and EUR [ALSTOM internal demand forecast] between 2019-2023.²³⁵ In terms of capacity, Alstom projects an annual level of new orders of [ALSTOM internal demand forecast] GW during the 2014-2018 period, rising to [ALSTOM internal demand forecast]

²³³ As stated in Recital (147), the product definition of concern employed by the Commission is defined as the sum of the Medium, Large and Very Large segment.

²³⁴ See Annex 225, slide 13.

²³⁵ The Commission notes that, based on the information in Annex 224, market forecasts for Iran are not available in isolation (in contrast to China), as Iran is combined with Jordan, Iraq, Jordan, KSA, Lebanon and Yemen to one sales region ("Middle East") by Alstom (see Annex 224, page 516). Therefore, market forecasts excluding Iran (in addition to China) could not be presented.

GW during the 2019-2023 period.²³⁶ The demand projection for 2014-2018 is roughly in line with the historical demand observed during the preceding 5-year period (2009-2013) according to McCoy data (see Figure 15 above). This data therefore does not indicate an expected reduction in demand at the 50Hz level excluding China over the next 5 years. The Large segment will remain the single largest segment of HDGT demand according to these projections, equivalent to [60-70]% of capacity during the 2014-2018 period (falling to [40-50]% in the subsequent five years), and [40-50]% of HDGTs during the 2014-2018 period (falling to [40-50]% in the subsequent five years).

Table 2: Market forecasts per year for new 50 Hz HDGTs excluding China

MEDIUM	2014 -2018 .	2019 -2023 .	LARGE	2014 -2018 .	2019 -2023 .
#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]

VERY LARGE	2014 -2018 .	2019 -2023 .	TOTAL	2014 -2018 .	2019 -2023 .
#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]

Source: Annex 223 and Annex 224.

- (287) Additionally, based on Alstom's full opportunities database²³⁷, the following table presents all sales opportunities for 50 Hz HDGTs as of May 2015, spanning through the financial years 14/15 ([number of potential projects] tenders), 15/16 ([number of potential projects] tenders), 16/17 ([number of potential projects] tenders) and 17/18 ([number of potential projects] tender).

²³⁶ Overall, these forecasts indicate an increase in total CCGT capacity of over [ALSTOM internal demand forecast] of capacity by 2023.

²³⁷ See Alstom's reply to the Commission's Request for Information N° 37, 28.05.2015, question 1.

Table 3: Alstom's full sales opportunities for 50 Hz HDGTs worldwide

Alstom's HDGT model	# Projects WW (excl. China & Iran)	# GTs WW (excl. China & Iran)
GT13	[number of potential projects]	[number of potential projects]
GT26²³⁸	[number of potential projects]	[number of potential projects]
GT36	[number of potential projects]	[number of potential projects]
Total	[number of potential projects]	[number of potential projects]

Source: Alstom's reply to the Commission's Request for Information N° 37, 28.05.2015, question 1.

(288) As shown in

²³⁸ A tender in [location, name of project and number of GT] is excluded from

Table 3, as it has been considered in the Commission's bidding analysis of past bidding events in Annex 1 of the Statement of Objections. This tender, however, still appears in Alstom's prospective sales opportunities database with the Status "*Booked / likely to be booked in FY14*" (Reply to the Commission's Request for Information N° 37, 28.05.2015, question 1, "External Counsel Confidential Annex 37.01.05_Alstom Project List_4 June 2015.xlsm").

- (289) Table 3, Alstom has already identified [number of potential projects] HDGTs future projects where it could bid, corresponding to potential [number of potential projects] new units, at a worldwide level excluding China and Iran. It should be noted however that Alstom generally does not participate in all the projects. For instance, Alstom only participated in [60-70]% of the worldwide tenders for Large 50 HDGTs. It follows that the numbers of opportunities for 50 Hz HDGTs are likely to be even higher than the ones presented in

(290) Table 3.

(291) In its internal estimates, the Notifying Party expects a higher sales volume than Alstom for the years 2015 and 2016 for the Large and Very Large segment. The Notifying Party expects between [number of GTs] and [number of GTs] Large and Very Large GTs to be sold per year in the period 2015-2016 in 50Hz excl. China, which is above the corresponding estimate from Alstom.²³⁹ In contrast, its outlook on the future of the Medium segment is lower than Alstom's estimates.²⁴⁰

(292) In view of the above, the Commission concludes that there will be demand for gas-fired power plants and the corresponding HDGT in the future. The Large segment is projected to be the main segment of demand over the near to medium term, in 50Hz regions excluding China.

(iv) Demand for HDGTs in the EEA is projected to continue by several sources

IEA and Commission projections show a significant role for gas-fired power generation and increasing capacities

(293) When considering demand for gas-fired generation at the EU level, the IEA reports in its central "New Policies" scenario a cumulative addition of capacity of 92 GW (7.7 GW per year) during the 2014-2025 period, dropping to 62 GW per year (3.9 GW per year) during the 2026-2040 period. The increase of 92 GW of capacity by 2025 represents 43% of total installed capacity as of 2012, and is therefore a significant increase compared to current levels. Compared to other fuel sources, gas-fired generation is projected to experience the second-largest increase in capacity, behind renewables (which grows by 229 GW during the 2014-2025 period), but well ahead of coal (projected to grow by 33 GW) and nuclear (projected to grow by 12 GW).

(294) The net increase in gas-fired capacity is projected to be lower than 92 GW, due to plant retirements of 23 GW during the same period, leading to a net increase of capacity of 69 GW during the 2014-2025 period. Over the shorter 2012-2020 period, the IEA central scenario predicts an increase in net gas-fired generation of 45 GW. The net increase in gas-fired generation is higher under the alternative "Current Policies" scenario considered by the IEA. Under this scenario, the net increase in gas-fired generation is of 60 GW by 2020.²⁴¹ By contrast, under the "450" Scenario, the net increase in gas-fired generation is of 34 GW, and hence lower than the one considered under "New Policies".

²³⁹ See GE internal document [title of internal GE document] dated 26 February 2015, Annex 3720, where on page 5 the 2015-2016 GT Orders 50Hz F/H segment are equal to [internal GE forecast of GT orders] GW, of which [internal GE forecast of GT orders]% is H-Class. In this period, China is expected to buy [internal GE forecast of GT orders] GWs of F, and [internal GE forecast of GT orders] GWs of H. Subtracting these numbers from the two segments, results in a segment of [internal GE forecast of GT orders] GW of H-Class, and [internal GE forecast of GT orders] GW of F-Class for the 50Hz excl. China sample. The estimated range of HDGTs sold is calculated on the basis of the ranges of HDGT size for a Large HDGT and for a Very Large HDGT included in the bidding data provided by GE.

²⁴⁰ See Annex 3857, slide 13.

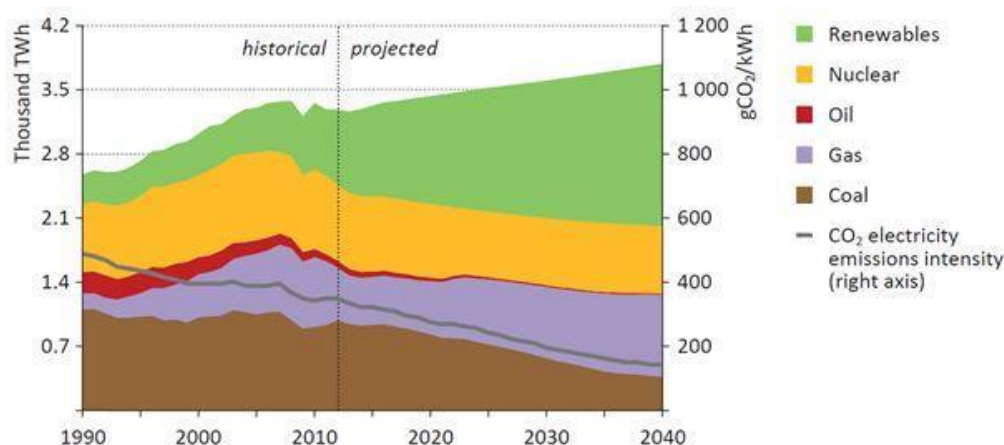
²⁴¹ In a separate IEA document, the IEA reports a "very positive" outlook for gas-fired generation in a scenario with current policy commitments (IEA, "Energy Technology Perspectives 2014", page 167).

Nonetheless, this is a significant increase compared to current level of capacity (+16%).²⁴²

- (295) An important reason for the increase in gas-fired capacity projected by the IEA is the need to maintain system adequacy in the presence of large renewable capacity, and significant retirements of thermal plant (in particular coal).²⁴³ Gas fired generation is particularly suitable as back-up for renewables given its operational flexibility. This supports both an increase in gas-fired capacity, and over time also an increase in generation output. In relation to Europe, the IEA notes that *"The recent rebound in coal use for power generation in the EU, which has driven down gas use, is reversed in the coming years, with relative fuel prices projected to improve for gas and higher CO₂ prices under the EU Emissions Trading Scheme (ETS) (see Chapter 1). Coal-fired generation falls by more than 60% in the period to 2040 as more coal-fired plants are retired than added and CO₂ prices rise, lowering the load factor of coal plants. Gas-fired generation, which fell further in 2013, remains relatively low until the end of the current decade when higher CO₂ prices, declining generation from coal-fired plants and the need for system flexibility (due to growth of variable renewables) push it back up"* (WEO 2014, page 213). The IEA also assumes a CO₂ price of USD 22/tonne in 2020, and USD 37/tonne in 2030, well above current levels. The CO₂ price is an important determinant of the relative position of coal and gas in the electricity merit order, given the significantly higher carbon emissions associated with coal plants.

- (296) Figure 16 below illustrates the evolution of power generation by source under the IEA New Policies Scenario.

Figure 16: Electricity generation European Union by source under the New Policies Scenario



Source: Annex 1577.

²⁴² Assuming the same ratio of gross to net installed capacity assumed by the IEA under the "New Policies" case for the period 2014-2025, the total increase in gross installed capacity under the "450" scenario would be of 45 GW by 2020.

²⁴³ See Annex 1577, "World Energy Outlook 2014" by International Energy Agency, Table 6.3. Moreover, 81GW of coal retirements are projected for 2014-25 period, well above 23GW for gas.

- (297) In a separate report,²⁴⁴ the IEA estimates that over the period 2014-2035, total investments in gas-fired generation would total USD 117 Billion, with average annual investments of USD 4 Billion during the 2014-20 period, rising to USD 8 Billion during the 2021-25 period. In this report, the IEA notes the advantage of gas over coal in accommodating the increasing share of renewable generation.²⁴⁵
- (298) The implied utilisation rate for gas-fired generation in the IEA forecasts is relatively low. For example, under the central scenario, gas-fired capacity would amount to 260 GW in 2020, and gas-fired output would equal 583 TWh. This implies an annual utilisation rate of 26%. This utilisation rate is in line with the load factor of gas-fired capacity indicated by the Notifying Party. The Notifying Party argues in its submission on European gas demand that increasing the utilisation rate of existing gas fired generation to 40% would generate a significant amount of generation, equivalent to a significant amount of new gas fired capacity. The Commission does not however consider it realistic to assume the utilisation rate for gas fired generation will increase significantly in Europe. The need for CCGT generation as back-up capacity for intermittent renewable generation makes it more likely that its utilisation rate will remain low, and its output profile peaker. This is in line with the IEA projections, and also consistent with the likely operating regime of CCGT plants in the future in Europe.
- (299) The IEA projections for gas-fired generation are also in line with separate long-term projections prepared by the Commission in December 2013.²⁴⁶ The Commission projects a significant total investment in gas-fired plants in the period 2011-2050, amounting to 335 GW (against 225 GW gas plants are operating in 2010). This represents an average of 8.4 GW per year of gross capacity additions over the entire period considered. The Commission report notes that *"This strong increase in gas capacity despite rather stagnant generation from gas highlights the key role that gas is increasingly playing as a back-up technology for variable RES"*.²⁴⁷ CCGT technology accounts for the main investment in gas-fired capacity according to these projections.^{248 249}

²⁴⁴ See "World Energy Investment Outlook 2014 – Special Report" by International Energy Agency, page 103 [submitted as Annex to Hogan Lovells paper, M.7278_Future of Gas Turbine Demand in Europe_Annex 4873, Tab 08].

²⁴⁵ *"Additions of new gas-fired power plants, favoured for their flexibility (that can more readily accommodate increasing shares of renewables), amount to almost 6 GW per year, almost four times as much as the 1.5 GW retired on average. More capital-intensive plants, such as coal-fired and nuclear, can also provide flexibility, but their profitability is hard hit when their operating hours decrease significantly. Gas-fired capacity is better suited to this need, because its relatively low capital costs and typically high fuel costs mean that it is generally profitable when operating at medium capacity factors."* *ibid*, page 116.

²⁴⁶ See "EU energy, transport and GHG emissions trends to 2050 – reference scenario 2013" by European Commission.

²⁴⁷ *Ibid*, page 45.

²⁴⁸ *Ibid*, Figure 30 and Figure 31.

²⁴⁹ More generally, the Commission document notes the importance of CCGT generation in the thermal generation mix, stating as follows: *"Gas plays a crucial role in the context of emission reduction targets and increased penetration of intermittent RES. As a fuel it is less CO₂ emissions intensive relative to other fossil fuels, and gas units are flexible enough to serve the increased balancing requirements of*

The Demand Report does not contradict the public evidence on demand growth in Europe

- (300) The Notifying Party has submitted a report by a specialised energy consultancy on 29 April 2015 ("the Demand Report"),²⁵⁰ which provides an alternative demand forecast for HDGTs in the EU, and compares it to the one contained in the IEA World Energy Outlook. According to this Report, the total "accessible market" for new gas capacity (measured in terms of the capacity of the HDGTs) would amount to 6GW by 2020, and 32 GW by 2025 (in the Central scenario). This amount only includes CCGT and Combined Heat and Power ("CHP", cogeneration which typically presents a SCGT) capacity to be commissioned from 2018 onwards, and SCGT capacity to be commissioned from 2016 onwards, on the grounds that this capacity would already be commissioned. The amount of excluded capacity is 23 GW (in terms of the overall gas-fired capacity).
- (301) The figures reported in the Demand Report are not directly comparable to the ones projected by the IEA, given that the figures are reported in terms of HDGT capacity, and only refer to a so-called accessible market. On a like-for-like basis, in other words adjusted for already contracted capacity, the Demand Report implies a level of gas-fired capacity of roughly 49 GW for the longer period 2015-2025.²⁵¹ Whilst the 2015-2025 figure is lower than the one reported by IEA, it still represents a significant increase in overall gas-fired generation. The Demand Report posits that reasons for the large discrepancy between the two demand estimates could be due to the assumptions on the return of mothballed capacity²⁵² and the presence of other generation sources (for instance demand shedding and interconnection) made in the Demand Report.
- (302) The Commission does not consider it appropriate to exclude from the computation of future demand the level of CCGT capacity that is already contracted. This exclusion relies on the fact that there is a lag time between the

RES. Overall, generation from gas power capacities provides around 20% of total net generation up to 2040, falling only 1 percentage point in the decade to 2050. The contribution of gas to total net thermal generation ranges between 45% and 55% throughout the projection period. Generation from CCGT in particular constitutes 35% and 42% of total thermal generation in 2020 and 2030 respectively, reaching 45% in 2050. Industrial gas technologies serve CHP purposes, while gas peak devices reach 7% of total thermal generation at the end of the projection period" (page 45).

²⁵⁰ See "An assessment of future demand for heavy duty gas turbines in Europe", by Pöyry, Annex 5149.

²⁵¹ This figure is based on Annex 5149 (Demand Report) where it is stated that the amount of HDGT capacity for 2025 removing the filter due to "already contracted capacity" would be of 35 GW. The 49 GW of overall gas-fired capacity can be obtained by applying to the 35 GW of HDGT capacity the same split between SCGT, CCGT and CHP capacity indicated in Demand Report for the 32 GW of capacity obtained applying the filters, and converting the HDGT capacity projections contained in the Demand Report by using the conversion factors given at page 22 of the report (0.67 for CCGT, 0.85 for SCGT, and 0.5 for CHP gas).

²⁵² On the assumption of return of mothballed capacity, the Demand Report projects that 16 GW of capacity could return from mothball. The Commission notes however that Alstom projects that potentially [ALSTOM internal estimates]% of existing long-term mothballed capacity could be retired (amounting to [internal ALSTOM estimates of mothballed capacity] GW) if capacity markets require stringent criteria (for instance on ageing and flexibility) (see "[title of internal ALSTOM document containing demand forecasts], Booklet 1", dated 10 July 2014, page 33 – Annex 223.

award of a CCGT contract to an OEM, and the actual coming on-line of the capacity. Applying this methodology correctly would require bringing forward any capacity to be commissioned in the future, to reflect its likely order date (for instance capacity to be commissioned in 2021 would need to be brought forward by 3 years or so, to 2018, in order to reflect the lag between the award of an order and the coming on-line of the capacity). This implies that capacity to be commissioned after 2025 would need to be considered for an assessment of capacity to be awarded prior to 2025. However, the Demand Report considers capacity to be commissioned by 2025. This leads to an inconsistent outcome, and an understatement of demand.

- (303) The Demand Report also notes that a significant part of new gas fired generation will be represented by SCGT plants (16 GW out of the additional 32 GW of "addressable" HDGT capacity considered in the Demand Report). This is apparently the outcome of the detailed simulation modelling conducted in the Demand Report. The Demand Report does not state the proportion of SCGT included in the additional 3 GW of non-addressable HDGT capacity not considered in the Demand Report. Assuming that same split of SCGT, CCGT and CHP as in the 32 GW of additional "addressable" capacity, implies that HDGT capacity for CCGT and CHP would grow by roughly 17.5 GW over the 2015-2025 period (1.6 GW per year). Assuming that the additional 3 GW is all CCGT or CHP (which appears reasonable in light of the lack of demand for SCGT in Europe in the recent past), the implied increase in HDGT for CCGT and CHP would be of 19 GW by 2025 (1.7 GW per year). Growth in the 1.6-1.7 GW range represents an increase in demand relative to the levels reported in the McCoy data during the 2010-2013 period (see Figure 15).

Alstom projections suggest continuing growth for HDGT demand in Europe

- (304) Internal documents of Alstom suggest that there will be a demand for HDGTs in the future in the European region. Alstom estimates that in the period 2014-2018, [internal ALSTOM forecast of future GT sales] Large HDGTs, and [internal ALSTOM forecast of future GT sales] Very Large HDGTs will be sold.^{253 254} This corresponds to an average of [number of GTs based on internal ALSTOM forecasts] Large, and [number of GTs based on internal ALSTOM forecasts] Very Large HDGTs per year. As regards the period 2019-2023, Alstom expects [number of GTs based on internal ALSTOM forecasts] Large and [number of GTs based on internal ALSTOM forecasts] Very Large HDGTs to be sold in Europe per year.²⁵⁵

²⁵³ See Annex 224, pages 299, 422. There are 3 (1 in Northern & Central Europe, 1 in Southern Europe & Turkey) Large HDGTs expected per annum, for the period 2014-2018. Similarly, 4 Very Large HDGTs (3 in Northern & Central Europe, 1 in Turkey) are expected per year in 2014-2018.

²⁵⁴ Countries included in this sample are Germany, the UK, Poland, Netherlands, Denmark, Israel, Austria, Finland, Czech Republic, Sweden, Turkey, France, Italy, Belgium, Portugal, Greece, Spain, Cyprus, Luxembourg, and 'others'. Please note that no distinction between Simple Cycle and Combined Cycle HDGTs is made, whereas the market definition used in the 6(1)(c) does do so (For the expected demand per country, please see Annex 224, pages 278, 413.

²⁵⁵ See Annex 224, pages 299, 422. Here, [detailed forecasts by region].

Table 4: [title of internal ALSTOM document containing demand forecasts] Market forecasts per year for new HDGTs in Europe (including Turkey and Israel)

MEDIUM	2014 -2018 .	2019 -2023 .	LARGE	2014 -2018 .	2019 -2023 .
#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]

VERY LARGE	2014 -2018 .	2019 -2023 .	TOTAL	2014 -2018 .	2019 -2023 .
#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	#GTs /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	GW /y	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]
EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]	EURm GT only	[ALSTOM internal demand forecast]	[ALSTOM internal demand forecast]

Source: Annex 223 and Annex 224.

- (305) The Commission notes that the definition of Europe used by Alstom in its internal analysis (as captured in the [title of internal ALSTOM document containing demand forecasts]) is broader than the EEA, and also includes countries such as Turkey and Israel. Alstom has submitted separately its demand projections for the EEA, based on the underlying data reflected in the [title of internal ALSTOM document containing demand forecasts] (but not included in the printed version available to the Commission). According to this data, Alstom expects [number of GTs based on internal ALSTOM forecasts] GTs per year in the EEA during the 2014-2018 period ([number of GTs based on internal ALSTOM forecasts] Small, [number of GTs based on internal ALSTOM forecasts] Large and [number of GTs based on internal ALSTOM forecasts] Very Large) and [number of GTs based on internal ALSTOM forecasts] GTs per year during the 2019-2023 period ([number of GTs based on internal ALSTOM forecasts] Small, [number of GTs based on internal ALSTOM forecasts] Medium, [number of GTs based on internal ALSTOM forecasts] Large and [number of GTs based on internal ALSTOM forecasts] Very Large). In terms of GW, this estimate amounts to [GW based on internal ALSTOM forecasts] GW of power plant output per year for 2014-18, and [GW based on internal ALSTOM forecasts] GW per year during 2019-2023. Converting the capacity figures in HDGT capacity, yields demand of [GW based on internal ALSTOM forecasts] GW of annual HDGT capacity during 2014-2018, and [GW based on internal ALSTOM forecasts] GW during 2019-2023.²⁵⁶ Most of this demand (except for [GW based on internal

²⁵⁶

See Alstom's reply to Commission's Request for Information N°33, 06.05.2015, question 3a. Alstom projects an EEA demand of [GW based on internal ALSTOM forecasts] GW of HDGT during the period 2014-2018 and [GW based on internal ALSTOM forecasts] GW for the 2019-2023 period. All of

ALSTOM forecasts] GW during the 2019-2023 period) is expected to be for CCGTs, as opposed to SCGTs. On average, this yields a demand level of [GW based on internal ALSTOM forecasts] GW of HDGT capacity per year, which is higher than the estimate derived from the Demand Report. The projected demand levels in the EEA by use of the [title of internal ALSTOM document containing demand forecasts] data correspond to a market value of EUR [value of demand based on internal ALSTOM forecasts] per year in 2014-2018, and EUR [value of demand based on internal ALSTOM forecasts] per year in 2019-2023.²⁵⁷

- (306) As regards Alstom's full opportunities database, in the EEA Alstom envisages at least [number of tenders based on internal ALSTOM forecasts] tenders in the next few years where it could bid, the majority of which concerns Large HDGTs ([number of tenders based on internal ALSTOM forecasts] tenders corresponding to [number of tenders based on internal ALSTOM forecasts] HDGTs).

Table 5: Alstom's full sales opportunities for 50 Hz HDGTs in the EEA²⁵⁸

Alstom's HDGT model	# Projects EEA	# HDGTs EEA
GT13	[number of potential projects] ²⁵⁹	[number of potential projects]
GT26 ²⁶⁰	[number of potential projects]	[number of potential projects]

the demand is in CCGT modality during the 2014-18 period, with only [GW based on internal ALSTOM forecasts] GW of SCGT projected for 2019-2023.

²⁵⁷ Market values are calculated by proportionately adjusting the 50Hz market value, based on the projections for HDGT GW per segment. Between 2014-2018, Large HDGTs account for EUR [value of demand based on internal ALSTOM forecasts], and Very Large for EUR [value of demand based on internal ALSTOM forecasts] In the 2019-2023 period, Medium represents EUR [value of demand based on internal ALSTOM forecasts], Large EUR [value of demand based on internal ALSTOM forecasts], and Very Large [value of demand based on internal ALSTOM forecasts].

²⁵⁸

Table 3 accounts for the tender "[name of GT project]", whose status is described by Alstom as follows: "*Alstom recommended as selected EPC pending board approval - but project suspended due to oil price decline and QPI reorganization - project will be parked to be picked up one economic environment improves. Alstom will propose plan for fast restart*" (See reply to the Commission's Request for Information No. 37, question 1, 28.05.2015, "External Counsel Confidential Annex 37.01.05_Alstom Project List_4 June 2015.xlsm").

²⁵⁹ Alstom argues that there are only [number of tenders] projects, since three projects listed separately in the database ([name of GT projects]) actually constitute a single project ([name of customer]).

²⁶⁰ A tender in [name of location, project and number of GT] is excluded from

Table 3, as it has been considered in the Commission's bidding analysis of past bidding events in Annex 1 of the Statement of Objections. This tender, however, still appears in Alstom's prospective sales opportunities database with the Status "*Booked / likely to be booked in FY14*" (Reply to the Commission's Request for Information No. 37, question 1, 28.05.2015, "External Counsel Confidential Annex 37.01.05_Alstom Project List_4 June 2015.xlsm").

GT36	[number of potential projects]	[number of potential projects]
Total	[number of potential projects]	[number of potential projects]

Source: Alstom's reply to the Commission's Request for Information N° 37, 28.05.2015, question 1.

GE's demand forecasts also suggest continuing demand for HDGT in Europe

- (307) The internal documents and projections of the Notifying Party also contain future demand estimates for Europe. GE forecasts that overall demand for Large and Very Large HDGTs would [GE forecast of demand] in 2015 and 2016 in Europe, relative to 2013 and 2014.²⁶¹ These projections do not fully correspond to the Large and Very Large segmentation contained in the [title of internal ALSTOM document containing demand forecasts]. Notably, Alstom's latest GT26 (denoted as the "GT26+") is included as an H product in these estimates, whilst Alstom treats it as a Large HDGT.²⁶² Most of the growth in demand between 2013-2014 and 2015-2016 is due to H technology, with the demand for F products declining slightly.
- (308) [GE internal view of GT demand]²⁶³. The Notifying Party expects [GW based on internal GE forecasts] GWs H GTs [GW based on internal GE forecasts] and [GW based on internal GE forecasts] GWs of Large/Very Large HDGTs in Poland in 2015-2016.²⁶⁴ Overall, GE expects [number of projects based on internal GE forecasts] projects in Europe in 2015-2016.²⁶⁵
- (309) In the submission "The Future of Gas Turbine Demand in Europe" (of 4 May 2015), the Parties also report internal GE demand projections of [internal GE forecasts of GT demand] GW of HDGT capacity per year in Europe over the period 2014-2018. This is above the level indicated in the [title of internal ALSTOM document containing demand forecasts] and the one implied by the Demand Report (for CCGT and CHP applications).
- (310) The Commission notes that both Alstom and GE project stronger demand for Very Large relative to the Large segment in Europe over the coming years [internal Alstom and GE forecasts]. [internal ALSTOM forecasts].²⁶⁶ Even though the market share of the Very Large segment is ramping up, this does not necessarily imply a rapid disappearance of the orders for Large HDGTs.²⁶⁷ The introduction of Large HDGTs in the beginning of the 1990s illustrates the effect of a larger, more efficient, HDGT entering the marketplace in the past. Based on McCoy data, the Medium segment remained significant for a long

²⁶¹ See Annex 3720, slide 5. The illustrations are based on GT MW.

²⁶² [information on GE's demand forecast].

²⁶³ See Annex 3834, slide 13.

²⁶⁴ See Annex 3720, page 5. The illustrations are based on GT MW.

²⁶⁵ See Annex 3834, slide 13.

²⁶⁶ See Annex 1079, page 14.

²⁶⁷ See Annex 225, slide 13.

period of time: the share of Medium GTs based on capacity (MW) ranged from 86% in 1991 to 16% in 2002 in the EEA, declining gradually over time (as illustrated in Figure 14). However, internal documents from GE show that there are a number of ongoing opportunities for Medium HDGTs [internal GE forecasts].²⁶⁸

The Commission's market investigation suggests stable or increasing overall demand for HDGTs in Europe

- (311) According to the Commission's market investigation, slightly more than half of respondents in the EEA (54%) expect stable or increasing demand for gas.²⁶⁹ This includes responses from 28 customers active in the EEA. In particular, the replies to the Commission's questionnaires suggest that there will continue to be demand for Medium HDGTs in the EEA. In fact, one fifth of the respondents that expressed their views in this regard expect to buy a Medium HDGT in the next 10 years in the EEA.²⁷⁰ Four of the five respondents that envisage buying a Medium HDGT in the next 10 years are EEA-based customers.
- (312) At the segment level (Medium, Large or Very Large), however, responses indicate an expectation of reducing demand for each segment.²⁷¹ The Commission notes that the discrepancy between the responses relating to overall demand (in other words across all three segments), and the one relating to demand for each segment may be due to the lower number of respondents for the question relating to each segment.

8.2.2.3. Conclusion

- (313) The Commission considers that the evidence points to continued demand for HDGTs in Europe. Estimates of the level of this demand vary considerably across sources (including the internal documents of the Notifying Party, internal Alstom documents, and the submission made by the Notifying Party during the procedure). The estimates all indicate, however, that demand for HDGTs is set to continue over the short to medium term. This includes demand across all segments of the market for 50 Hz HDGTs, in particular for Very Large HDGTs, followed by Large HDGTs.

8.2.3. *The role of operational flexibility in determining demand for CCGTs*

8.2.3.1. Key features of operational flexibility include the start-up, ramp rate, turndown capability, and part-load of a HDGT

- (314) A key feature of current and future demand for CCGT is the increasing need for flexible power generation, especially in electricity systems with a growing share of intermittent renewable electricity. This feature of demand for CCGT generation is particularly prominent in Europe.²⁷²

²⁶⁸ See GE's reply to the Commission's Request for Information N° 31, 30.04.2015, question 13.

²⁶⁹ See replies to question 31 of the Phase II Questionnaire Q7 to customers of HDGTs. The percentage is based on respondents who are active in the EEA.

²⁷⁰ See replies to question 50 of the Phase II Questionnaire Q7 to customers of HDGTs.

²⁷¹ See replies to question 52, 66 and 90 of the Phase II Questionnaire Q7 to customers of HDGTs.

²⁷² In the EEA, the Commission has adopted actions to reduce greenhouse gas emissions in 2020 by 20 per cent, and electricity is expected to play a central role in the shift to a low carbon economy. Renewable

- (315) The IEA describes flexibility as *"the extent to which an electricity system can adapt to the extent to which an electricity system can adapt the pattern of electricity generation and consumption in order to balance supply and demand. Mismatches between supply and demand affect system voltage and frequency, both of which need to be maintained within a narrow target band to ensure reliable electricity supply"*.²⁷³
- (316) CCGT generation is particularly well-placed to provide flexibility to the power system and back-up to the growing share of renewable generation given its superior flexibility features relative to other forms of thermal generation.²⁷⁴ Customers also confirm that *"flexibility is a must-have for grid stability and profitable operation, enabling them to capture pops in power pricing from the intraday market"*.²⁷⁵
- (317) The concept of flexibility is typically assessed on the basis of several technical features including: start-up time and start-up cost, ramp rate, turndown capability, and part load efficiency.²⁷⁶ These are briefly reviewed in turn in Recitals (632) to (660), by reference to the performance of HDGTs and the evidence from the Commission's market investigation.
- (318) Start-up time and cost are relevant and important when HDGTs are turned on and off more frequently. In recent years, more emphasis has been placed on the development of power plants that can start up within a short time frame enabling a customer to be active on the grid immediately. Intermediate and cycling operation regimes (namely, regimes that start up to 300 times a year, as defined in Alstom's documents) are projected to be particularly important for customers in Europe.²⁷⁷

energy is expected to generate at least 38 percent of the electricity in 2040 under the different IEA scenarios (46% in the New Policies Scenario, 38% in the CPS Scenario, and 60% in the 450 Scenario) - see Annex 1577.

²⁷³ See Annex 1574, page 190. In more detail, *"Electricity system flexibility has four main sources (IEA, 2011b): generation (dispatchable plant); electricity storage; interconnection with other electrical systems; and demand response, which aims to either reduce or increase the load. Curtailment of VRE generation can also help to ensure system stability if supply strongly exceeds demand, but to maximise CO2 reductions from VRE generation it is likely to remain an exceptional measure."* and *"Generation flexibility refers to the extent to which generators across a given system can respond to the variability (expected or otherwise) in the residual load¹¹ on a timescale of a few minutes to several hours. Electricity demand is inherently variable, cannot be fully predicted and can occasionally exhibit large, rapid fluctuations. Operators have traditionally relied on dispatchable plants (including reservoir hydro plants and gas- and coal-fired peaking plants) to match supply to demand at every instant. Generation flexibility has traditionally been the dominant source of system flexibility. In the short to medium term, generation flexibility is likely to remain the critical resource to deliver flexibility: it is less limited in capacity and geography compared with interconnection, and more mature than demand response and storage."* (ibid).

²⁷⁴ The fact that CCGT generation has significantly lower carbon emissions relative to other sources of thermal generation also implies that the provision of system back-up is compatible with the shift towards a low-carbon system, and the associated push for renewable generation.

²⁷⁵ See GE's reply to Request for Information N° 20, 12.03.2015, doc "GE_0009078_GE - Strictly Confidential - Contains Business Secrets.msg".

²⁷⁶ See IEA "Medium-Term Oil & Gas Markets", 2011, page 169; IEA, "Energy Technology Perspectives 2014", page 167; Annex 1079, page 70.

²⁷⁷ See Annex 1079, page 54.

- (319) The Commission's market investigation illustrates the importance of start-up time and costs, with 76% of customers mentioning this feature as a key parameter of operational flexibility in the EEA.²⁷⁸
- (320) Evidence from the market investigation points to the fact the start-up time of a HDGT is "*a key factor for commercial success*" (according to for instance [name of customers]).²⁷⁹ [name of customer] states that a "*cheap and fast start up can allow to capture running opportunities for a few hours*".²⁸⁰
- (321) On the other hand, starting up and turning down a GT more frequently shortens the maintenance intervals. The wear and tear of the GT is increased owing to the pressure the materials face when the GT is started. This heightens the importance of being able to turn-down the GT to a low output level without having to re-start it when more output is demanded.²⁸¹
- (322) The ramp-rate of a GT indicates its ability to increase electrical output quickly and respond to demand changes swiftly. This can be an important source of commercial opportunities, given that when spot prices are high, more money can be earned by utilities if their machines ramp up faster. Meeting peak demands or fill-in when there is no renewable energy available requires "*fast ramp rates between varying power levels and good frequency response capabilities*".²⁸²
- (323) Turndown capability (or minimum stable generation) is an important parameter of operational flexibility. The load range of a GT is given by the difference between its maximum output and the minimum load capability of the machine whilst being compliant with emissions of pollutants.²⁸³ When turning down the GT to its minimum load capability, the user can ramp-up the plant faster when output is required. Keeping the GT at its minimum stable generation also lowers the risks and costs associated with shutting the plant down (and restarting it when required), and it minimises the costs of keeping the GT on when electricity prices are low.²⁸⁴ Air emissions, such as CO₂ and NO_x, constrain the turndown levels that can be realized.²⁸⁵
- (324) A majority of respondents to the market investigation that are active in the EEA consider turndown to be very important.²⁸⁶ Moreover, evidence from GE's internal emails appears to confirm that turndown is very important to

²⁷⁸ In the replies to question 36 of Phase II Questionnaire Q7 to customers of Gas fired power plant, customers mention start-up 22, ramp-rate 18, turndown 15, part load 13, efficiency 11, and emissions 3 times.

²⁷⁹ See Minutes of the conference call with a customer of 23 March 2015 and reply to question 33.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant where they stated that "*start-up costs are an important element of competition between plants and overall profitability*".

²⁸⁰ See reply to question 33.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

²⁸¹ See minutes of the conference call held with customer of 19 March 2015, Recital 13.

²⁸² See reply to question 28.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

²⁸³ These constraints are often measured by CO₂ and NO_x emissions. See Annex 4874.

²⁸⁴ See minutes of the conference call with customer of 18 March 2015, minutes of the conference call with customer of 19 March 2015, and minutes of the conference call with competitor of 11 March 2015.

²⁸⁵ See Annex 5151.

²⁸⁶ See reply to question 33 of Phase II Questionnaire Q7 to customers of Gas fired power plant. If the respondents that were not active or were undecided about the importance of turndown are included, 55% of customers consider turndown capability to be very important.

customers in Europe: for instance, [internal GE discussions concerning turndown capability].²⁸⁷ Other examples include that [internal GE discussions concerning turndown capability],²⁸⁸ or the fact that [internal GE discussions concerning turndown capability].²⁸⁹

- (325) Situations where gas-fired power generation fluctuates to cover periods of sudden supply shortage or peak demands or of both, but also produces at lower utilisation rates, thermal efficiency under part-load operation is also an important parameter of flexibility.²⁹⁰ The higher the efficiency at part-load, the more cost-effective the production will be for a flexible generation profile.

8.2.3.2. A variety of authoritative public sources confirm the importance of operational flexibility associated with CCGT generation

- (326) Several authoritative public sources consulted by the Commission indicate a wide acceptance of the fact that CCGT generation is particularly well suited to provide flexibility, and that this will support a growing role for this type of generation in the future.
- (a) The IEA emphasises the role of flexibility in supporting demand for gas-fired generation in particular in Europe (as already noted in Recital (293)), and more generally stresses the complementarity between renewable generation and gas-fired generation in markets transiting to low-carbon generation. For example, in a recent publication, the IEA states as follows: *"In regions with ambitious deployment plans for renewable electricity, part-load efficiency, ramp rate, turndown ratio and start-up times are more relevant for gas-fired plants than full-load efficiency"*.²⁹¹ In another recent IEA study, the author notes as follows: *"Numerous studies have concluded that as the market share of wind increases, there will be a greater need for flexible instruments that can support its irregular character"*; and *"On the basis of both technical capabilities and costs, natural gas-fired generation technologies seem to be the best suited of the three studied technologies to supply flexibility. Due to low start-up cost, rapid start-up time and high ramp rate, natural gas technologies are well positioned to follow fast changes in wind output or to be used as a running reserve"*; and *"Due to its low production costs at low capacity factors and good technical capabilities to deliver flexibility, natural gas is the most attractive technology for future investments in generation capacity aimed at supporting a higher wind market share. This makes it likely that the role of natural gas in supporting wind will increase in the future. As a result, wind will also have a growing impact on natural gas demand in the power sector"*.²⁹²

²⁸⁷ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0011451_GE - Strictly Confidential - Contains Business Secrets msg".

²⁸⁸ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0007406_GE - Strictly Confidential - Contains Business Secrets msg".

²⁸⁹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0008232_GE - Strictly Confidential - Contains Business Secrets msg".

²⁹⁰ See Annex 4288, page 2.

²⁹¹ See IEA, "Energy Technology Perspectives 2014, Harnessing Electricity's Potential", IEA, 2014," page 167.

²⁹² See "The Impact of Wind Power on European Natural Gas Markets" by Irene Vos, International Energy Agency, Working Paper dated January 2012, page 9 and page 32.

- (b) The DECC in recent Strategy documents also notes the key role to be played by gas plants in supporting the decarbonisation of the electricity system, and in complementing the inflexibility and intermittency of other forms of generation coming online. For example, in the “Gas Security Strategy 2012”, the DECC states that *“New gas plants will play an important role in helping to replace those plants that retire and, increasingly, in helping to balance the intermittency and inflexibility of other forms of generation coming online”* and that *“Gas and coal currently provide flexibility in meeting the peaks and troughs of daily demand, which can vary as much as 20 GW. With less unabated coal as we decarbonise, gas will provide an increasing proportion of this flexibility. With significant increases in relatively inflexible and intermittent capacity on the grid, there will be a greater need for flexible capacity to ensure supply can meet demand at all times, which will further add to the short-term variability of generation from gas. Further, this could become more significant with daily peaks and troughs set to become more extreme as the level of electricity consumption increases with the expected electrification of heat and transport”*.²⁹³
- (c) In another recent strategy document, the DECC notes that *“The Government expects that gas will continue to play a major role in our electricity mix over the coming decades, alongside low-carbon technologies as we decarbonise our electricity system. The role gas plays will be determined by the market, whilst keeping emissions within the limits set out in the carbon budgets. Unabated gas will continue to play a crucial role in our generation mix for many years to come and the amount of gas capacity we will need to call on at times of peak demand will remain high”*.²⁹⁴
- (d) Commission publications on energy policy also state that CCGT technology is expected to be the power plant of choice as back-up for renewable generation (see further the material previously cited in Recital (296)).²⁹⁵

²⁹³ DECC, “Gas Generation Strategy 2012”, page 15 and page 26. In the same document, it is also noted that *“under all scenarios [over how the electricity sector will develop to 2030] we expect to see a continued need for new investment in gas plants to maintain adequate capacity margins, meet demand and provide supply side flexibility for an increasingly intermittent and inflexible generation mix”* (page 16); and *“There have been a number of welcome developments by equipment suppliers in both improving the flexibility of plant and in maintaining high efficiencies under more flexible conditions. The continuation of these technological development trends will be of further benefit in enabling new CCGTs to operate more efficiently as a flexible source of generation, well-suited to complementing an increasingly intermittent and inflexible generating mix and in maintaining a cost-effective, efficient and low-emissions system”* (page 26). See also DECC, Technical Assessment of the Operation of Coal and Gas Plants, December 2014: *“[...] in response to changes in power markets which have seen base load plants move to become mid-merit/intermediate load, the OEMs are developing machines that offer improved flexibility: - Fast start up and shut down; - Fast load changes and load ramps: - Start-up reliability and load predictability; -Grid system support”* (page 28); *“This requirement had initially emerged in the UK with requests for more frequent starts and then for faster starts but is becoming more widespread across Europe particularly in the face of increasing and/or fluctuating renewable supplies. Improved flexibility will allow the owner to respond to the market, both coming to synchronisation, and ramping up through the range, more quickly and more often. OEMs have sought to improve flexibility without compromising efficiency or plant life”* (page 28).

²⁹⁴ See DECC, “Energy Security Strategy 2012”, page 36.

²⁹⁵ European Commission, Impact Assessment 2030 DG Energy, 2014: *“Combined Cycle Gas Turbine (CCGT's) plants for example, which are expected to be the thermal power plant of choice in the future*

- (e) Other research institutes, specialists and industry bodies also regard gas-fired power plants as a key option to back-up the increasing share of variable energy in the power generation mix. For instance, Neumann and von Hirschhausen state that *"natural gas is poised to play an important role in the decarbonization of Europe's energy sector through 2050. That is, with the expected increase in electricity generation from intermittent renewables, the use of natural gas is also expected to increase, due to its flexibility in power generation."*²⁹⁶ Several other sources confirm this finding.²⁹⁷

8.2.3.3. The Commission confirms the significant requirement of operational flexibility for European customers.

- (327) The results of the Commission's market investigation indicate strongly the significant requirement of operational flexibility for European customers, also in comparison to requirements in other 50Hz regions of the world.

to act as back-up for renewable energy power plants" (page 176). "Power Perspectives 2030" by European Commission, page 10: "Gas-fired plants act both as flexible baseload (replacing coal-fired generation) and as back-up resource in support of increased shares of diverse, variable RES generation, while conforming to the EC's 2020 and 2030 power sector CO₂ emission reduction goals."

²⁹⁶ See "Natural Gas: An Overview of a Lower-Carbon Transformation Fuel" by A. Neumann and C. von Hirschhausen, Review of Environmental Economics & Policy, 2015 page 70.

²⁹⁷ See: (a) "Flexible gas markets for variable renewable generation", Eurelectric, dated May 2014, page 3: "Gas-fired generation is well suited to provide back-up for variable renewable generation: It has quick start-up and ramp rates. However, it will need to adopt ever more flexible modes of operation as renewable penetration increases"; (b) "A Global Perspective on the Future of Natural Gas: Resources, Trade and Climate Constraints", F. Holz, P. Richter and R. Egging, Review of Environmental Economics & Policy, 2015, page 85: "Natural gas can be used to improve the reliability of electricity systems that rely on intermittent renewable resources because gas-fired power plants can be ramped up quickly and provide flexible generation schedules"; (c) "Powering Europe: Wind Energy and the Electricity Grid", November 2010, A report by the European Wind Energy Association, page 40: "More flexible generation (for example OCGT, CCGT and hydropower) should be favoured when planning the replacement of ageing plants and considering the future generation mix, in order to enable the integration of large-scale variable generation"; (d) GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0006051_GE - Strictly Confidential - Contains Business Secrets msg/TR: GT developments", page 8: [internal GE discussions concerning flexibility].

- (328) Table 6 sets out the percentage of respondents who considered as “very important” a number of technical characteristics of HDGT, including several features of operational flexibility. As the table illustrates, a majority of EEA customers indicate that operational flexibility characteristics, such start up, ramp rate, turndown and part load, are “very important” (with particularly high weight given to start up speed/cost and turndown).²⁹⁸ By contrast, efficiency at base-load is not considered as important as operational flexibility (with less than 50% of customers stating that it is a very important feature). The table also compares the responses of customers located in the EEA to those in other 50 Hz regions in Asia (excl. China), the Middle East, or CIS. As the table shows, efficiency in base-load operation appears to be more important in these other regions compared to the EEA, whilst operational flexibility is given less weight (with each feature of operational flexibility deemed as “very important” by less than half of the respondents).
- (329) The market investigation also indicates that in the EEA a cycling operating profile is most likely, compared to a base-load profile in the other regions.²⁹⁹ This type of operating profile for the EEA is also confirmed by the Notifying Party: “*expectation for reduced capacity factors for CCGT (4000-4500 hrs) ... increased starts (200-250/yr)*”.³⁰⁰

²⁹⁸ Evidence from customers on specific elements of operational flexibility is discussed in Section 0

²⁹⁹ See replies to question 35.1-.35.5 of Phase II Questionnaire Q7 to customers of HDGTs. 90% of the customers indicate a base-load operating profile in 50Hz excl. EEA and China, whereas 50% of the active firms replying indicate that a cycling profile is most likely in the EEA. 28% of the customers believe that an intermediate profile will be mostly used in the EEA.

³⁰⁰ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0009079_GE - Strictly Confidential - Contains Business Secrets".

Table 6: The percentage of active firms that deem certain GT characteristics 'very important'

	EEA	Rest of the world 50Hz (excl. China)
Efficiency in base-load operation	42%	70%
Start up speed / cost	78%	23%
Ramp up/ ramp down rate	63%	22%
Turndown capability	72%	24%
Part load efficiency (below 50%)	56%	48%
Low emissions	66%	52%
Availability and reliability	79%	86%
Maintenance costs	63%	68%
Respondents active in this region	31-33	21-23

Source: replies to question 33, 37.1, 37.2, 37.3 and 37.4 of Phase II Questionnaire Q7 to customers.

8.2.3.4. Alstom internal documents show the increasing need for flexibility of HDGTs, in particular in Europe.

- (330) The Commission considers that the internal analysis of the Parties on the current role played by CCGT generation (as contained in documents prepared by the Parties, including documents only designed for internal use) confirms the fact that flexibility is an increasingly important feature of CCGT technology, and a key determinant of current and future demand for this type of generation. The internal documents of the Parties also indicate that this trend is particularly evident in Europe, and at this stage less prevalent in most other 50Hz regions.
- (331) In a series of papers on operational flexibility (including papers presented at Power-Gen Europe conferences), Alstom sets out in detail the greater requirements for flexibility of gas-fired generation, as a result in particular of the growth of renewable power.³⁰¹ These papers emphasise the growing importance of operational flexibility in terms of turndown capability, efficiency at part-load, number of starts, and variations of output between full and partial load.
- (332) For example, in "The Next Generation Alstom GT26 The Pioneer in Operational Flexibility", November 2011, Alstom states as follows:
- "In order to reduce the cost of electricity in today's challenging market environment and to reduce the CO2 emissions, high all-round efficiency (base-load and part-load) is one of the key drivers regarding today's gas turbine and in-turn combined cycle (CCPP) development. While introducing new products and/or upgrades, the market expectation is to maintain a high level of reliability and availability. The rapid push globally for CO2-free technologies*

³⁰¹

See Annexes 4367, 4288, 4363; Annex 4319. Similar conclusions are included in Annex 4317.

such as renewable power is seeing a significant change in the role of CCGTs. The servicing of the traditional "energy" markets is being replaced by serving more the "capacity" markets, providing an increasing role in grid load balancing support - with high cycling and part-load operation being more the norm" (page 1); and

"Power markets around the world are facing new challenges: Building new power generation plants to meet growing demand means also having to take into consideration more stringent global environmental standards. Increasing all-round efficiency is one of the main market drivers for gas turbine and combined cycle development, so as to lower fuel consumption, and at same time produce lower emissions (NOx, CO etc.) with the ultimate goal of having a reduction in the cost of electricity. Further market requirements arise by the trend-shift in structural set-up from one of regulated (closed) to deregulated (open) power markets: the result of this development is that many of the advanced gas-fired combined cycle power plants that were installed in the late 1990's and early 2000's were specified and designed based on base-load dispatch due to their relative high efficiencies. Today they are being called on to operate over a wide-ranging dispatch regime, including daily stop/starts and intermediate regimes, which were never foreseen at the outset.

Operational flexibility as a market requirement is therefore more and more important in the gas-fired power industry. OEM's and Operators alike are re-defining the way combined cycle power plants should be designed and the load regimes that have to be supported today and in the future. The emergence and growth of renewable power, in particular wind-farms, also brings new challenges and opportunities for power companies and grid operators. The increasing installation of power generation systems using renewable energies like wind power and their dependency on ambient conditions calls for a balance with the reliable and rapidly available power resources covering periods of sudden supply shortage, peak demands or simply following the automated generation control over a wide range of relative load. As a result, the efficiency under part-load operation is even more important than the efficiency at base-load in many cases." (page 3)

- (333) A summary of the flexibility requirements of CCGTs, and of the greater need for flexibility in the future as a result of intermittent renewable generation, are shown in Figure 17 and Figure 18 below.

Figure 17: Flexibility Goals of a Power Plant

[extract from internal ALSTOM document]

Source: Alstom's reply to Commission's Request for Information N°24, 25.03.2015, questions 13, 16, 22, 23, 26 and 30.

Figure 18: The importance of load compensation to ensure grid stability

[extract from ALSTOM document]

Source: Alstom's reply to Commission's Request for Information N°24, 25.03.2015, questions 13, 16, 22, 23, 26 and 30.

- (334) According to Alstom, the trend towards greater operational flexibility is particularly evident in Europe, as illustrated by the performance of its installed HDGTs in Europe. For example, Figure 19 shows the load variation of a GT26

in the Netherlands during two weeks of operation in January 2014, illustrating significant fluctuations between maximum output and minimum stable generation (whilst keeping emissions below their limit). Figure 20 compares the difference in performance in terms of average number of hours, starts, and the distribution of load ranges between European and non-European units, for the years 2008 and 2013. The European units are operating in a much more flexible modality than non-European plants, with fewer operating hours and a greater number of starts, and a significant number of hours at “standstill”.³⁰²

Figure 19: Load profile of a power plant in the Netherlands in January 2014

[extract from internal ALSTOM document]

Source: Competitor's reply to Commission's Request for Information, 20.03.2015.

Figure 20: Comparison of operating profiles of European and non-European GTs

[extract from internal ALSTOM document]

Source: Competitor's reply to Commission's Request for Information, 20.03.2015.

- (335) The trend towards greater operational flexibility, in particular in Europe, is confirmed in an extensive market study provided by Alstom.³⁰³ This study finds that flexibility is the primary evaluation criteria in markets where HDGT are used mainly in cycling mode, with a significant share of renewables (examples given are the Netherlands, Germany and Portugal).³⁰⁴ Flexibility is also reported to be the main evaluation criteria in France, where HDGT are mainly a complement to base load nuclear generation.³⁰⁵ By contrast, flexibility is less important as an evaluation criteria in other regions of the world (for instance it is reported as the 4th criterion in the US, out of 4; the 4th in Russia, out of 5; and the 5th in China, out of 5).
- (336) A wide-ranging number of Alstom documents produced for internal use confirm the importance of operational flexibility of CCGT, especially in Europe.³⁰⁶ These documents show that Alstom considers that flexibility is the number 1 customer requirement in Europe (followed by efficiency and output/start reliability),³⁰⁷ and that operational flexibility is in "*high need / typically evaluated*".³⁰⁸ In other 50Hz regions, operational flexibility is not considered as a high need, and is denoted as "*not an evaluation factor*" in

³⁰² See Annex 4363 page 6, in relation to the distribution of load ranges in Europe in 2013, Alstom notes as follows: "A further characteristic in the operation profile of European units is the increased part load operation or even standstill relative to base load operation. The potential to operate at lowest part load with high efficiency and within the emission limits is the pre-condition for an economic operation of the units and to avoid a complete shutdown".

³⁰³ See Annexes 1207, 3931 (market study conducted by mars & co on behalf of Alstom).

³⁰⁴ See Annex 1207, slides 29 and 35. Customer interviews with [name of ALSTOM customers] are reported in the mars & co. report in support of this view.

³⁰⁵ Ibid, slide 35.

³⁰⁶ See Annex 4285, page 125; Annex 4286, page 16; Annex 1262, page 14; Annex 1079 pages 3, 54-57 and 70; Annex 3935, slide 116; Annex 4318, page 1; Annex 1084 pages 10-12.

³⁰⁷ See Annex 3925, slide 116.

³⁰⁸ See Annex 1079, page 56.

China.³⁰⁹ Amongst the features of flexibility, part-load efficiency ("*driven by high gas prices*") and turndown capability ("*the lower the better, linked to OpFlex need*") are highly evaluated in Europe. The only other region where part-load efficiency is rated as a significant need is Asia (excluding China), whilst it is rated as a moderate/low need in the Gulf, ME/N. Africa and China. Turndown capability is not rated as a high need in any region other than Europe, and is denoted as "*Low expectation*" in China. In its documents, Alstom also projects that the operating regime in Europe is going to be intermediate in the short-term ([ALSTOM forecasts concerning operating regime]), and cycling over the longer term ([ALSTOM forecasts concerning operating regime]).³¹⁰

- (337) The fact that operational flexibility is not an important evaluation factor in China is also confirmed by evidence submitted by MHPS.³¹¹

8.2.3.5. GE internal documents confirm the importance of operational flexibility, particularly in Europe

- (338) A number of internal documents (including internal emails) of the Notifying Party also stress the importance of operational flexibility, with a particular focus on Europe.
- (339) In an article in "Modern Power Systems" published in June 2011, GE staff describe the key role to be played by operational flexibility for HDGTs, noting that (together with other factors) "*increasing adoption of renewables (wind and solar in particular) – with their intermittency and unpredictability – have significantly changed the operating duties required of combined cycle power plants*". Given this trend, GE notes that currently CCGTs are operated mainly cyclically (with a large number of shutdowns and start-ups) and that features like fast start, the ability to run at low loads and fast load ramping can provide commercial opportunities to make money, whilst minimising risk and life cycle costs.³¹²
- (340) Similarly, in its marketing of FlexEfficiency 50, GE promotes the flexibility feature of the product in the context of the growing need to complement and integrated renewable generation:

"the FlexEfficiency 50 plant will enable the integration of more renewable resources onto the power grid by combining flexibility and efficiency to rapidly ramp up when the wind is not blowing or the sun is not shining, and to efficiently ramp down when they are available"

³⁰⁹ Alstom considers instead that cost-efficiency is one of the prime considerations of Chinese customers purchasing HDGT, whilst flexibility is "no/limited investment driver" – see Annex 3761, page 16. This is also confirmed by Annex 1574, page 179.

³¹⁰ See Annex 1079, page 56.

³¹¹ See MHPS' reply to the Commission's Request for Information, 26.03.2015: "*With respect to China, MHPS considers that customers in China value the same key parameters underpinning a given GT as customers in the EEA. However, customers in China do not typically have a preference for operational flexibility as they typically operate at intermediate load. As such, customers tend to favour output and efficiency over other operational parameters*".

³¹² See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0011410_GE - Strictly Confidential - Contains Business Secrets msg/[subject of internal GE e-mail]".

*“Demand for renewable energy is growing. As additional renewable sources join the grid, reliable power generation and stress on the grid both become larger issues. GE’s new natural gas-driven plant can accelerate the widespread adoption of renewable power generation around the world. Its flexible, jet engine-based technology addresses variability, reliability, and the need for lower fuel use and operating costs. The FlexEfficiency 50 plant does this while simultaneously helping utilities take advantage of the growing trend to use abundant, cleaner-burning natural gas for power generation”.*³¹³

- (341) GE’s material on FlexEfficiency 50 stresses a number of elements of operational flexibility, including high part load efficiency, low turndown, fast ramping rate from turndown to base load, and fast start-up.³¹⁴ In a detailed internal report on the 9FB.05 turbine dated July 21 2010, GE identifies a “cyclic segment in the 50Hz market” as the market position to be targeted. This segment is identified as one with 4500 hours operating hours, of which a significant number (1113 hours) at Turndown.³¹⁵
- (342) In its internal analysis of European power markets, GE also recognises the growing importance of operational flexibility. For example, GE suggests that nearly [GE estimate of percentage of operating hours in part-load] of the European operating hours is at part-load, that European HDGTs are increasingly used for mid and cyclic operation schedules³¹⁶, and that in Western Europe it considers “*expectation of increased starts* ([GE estimates of starts per annum])”³¹⁷.
- (343) The importance of flexibility to capture revenues from ancillary services is also noted by GE.³¹⁸ This is also recognised in GE’s response to the Commission’s Request for Information N°34, Question 25, where the Notifying Party notes that “*during the last 3 to 5 years CCGT power plants have started focusing on the ancillary services market*”, that “*ancillary services markets [...] require running with very low capacity factors at partial load, and requires starting multiple times a day*”, and that “*ancillary services markets have grown as a result of the rise of renewable energy sources because of their instability, intermittence and low programming. Accordingly ancillary services are essential for the stability and sustainability of the electrical system*”. In this

³¹³ See GE’s reply to the Commission’s Request for Information N° 20, 12.03.2015, doc “GE_0011489_GE - Strictly Confidential - Contains Business Secrets”.

³¹⁴ See GE’s reply to the Commission’s Request for Information N° 20, 12.03.2015, doc “GE_0003972_GE - Strictly Confidential - Contains Business Secrets msg/[subject of internal GE e-mail]”.

³¹⁵ Annex 3895.

³¹⁶ See GE’s reply to the Commission’s Request for Information N° 20, 12.03.2015, doc “GE_0010830_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE e-mail]”, this document also notes the following relevant points: [quotes from internal GE e-mail]. Similar considerations are contained in GE’s reply to the Commission’s Request for Information N° 20, 12.03.2015, doc “GE_0002387_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE e-mail]”.

³¹⁷ See GE’s reply to the Commission’s Request for Information N° 20, 12.03.2015, doc “GE_0009079_GE - Strictly Confidential - Contains Business Secrets”, page 6.

³¹⁸ See GE’s reply to the Commission’s Request for Information N° 20, 12.03.2015, doc “GE_0010830_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE e-mail]”, (for instance [quotes from internal GE e-mail] “

context, GE has also noted the need for operational flexibility by CCGTs in order to guarantee back-up capacity.³¹⁹

- (344) GE also notes that European *"RFQ's call for more operation flexibility"*, such that an increasingly higher value is placed on a shorter starting time and higher start efficiency in this region.³²⁰ At the same time, GE notes *"minimum turndown [is] becoming more common in RFQs and evaluation models"* and that *"turndown capacity is now a major evaluation criteria in Europe given the load profile required by utilities/grids"*.
- (345) A summary of GE's assessment of the increasing complexity of the evaluation of bids by customers, with more prominence being placed on various forms of dispatch modelling, is shown in Figure 21.

Figure 21: GE's analysis of evaluation methodologies

[extract from internal GE document economic evaluation methodologies]

Source: GE's reply to Request for Information N° 20, 12.03.2015, doc "GE_0010830_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE e-mail],

- (346) For many specific tenders, GE recognises in its internal assessment that operational flexibility appears to play an important role. [GE internal assessment of tenders],^{321 322 323 324 325 326 327 328 329 330 331 332 333}

³¹⁹ The increasing importance of ancillary services for CCGT plant revenues is also noted by Alstom, for instance see [title of ALSTOM document], April 21 2015, pages 83-84 in the Alstom's reply to the Commission's Request for Information N° 34, 12.05.2015, doc "0007081551".

³²⁰ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0002385_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE e-mail]", ", pages 2, 12 and doc "GE_0014848_GE - Strictly Confidential - Contains Business Secrets", page 5. In the former GE also notes that "dispatch models...spreading in EU", that several utilities are calling for more operational flexibility (including [Names of EU utilities]), and that better turndown decreases operational losses.

³²¹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0001375_GE - Strictly Confidential - Contains Business Secrets msg", where GE thinks is can make a better offer because of its flexibility: "[quote from internal GE document]".

³²² See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0017052_GE - Strictly Confidential - Contains Business Secrets msg", "[quote from internal GE document]".

³²³ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, attached file to doc "GE_0016632_GE - Strictly Confidential - Contains Business Secrets.msg". Post-mortem feedback for this tender states that [quote from internal GE e-mail].

³²⁴ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0007344_GE - Strictly Confidential - Contains Business Secrets msg", where "[quote from internal GE document]".

³²⁵ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0007406_GE - Strictly Confidential - Contains Business Secrets msg": "[quote from internal GE document]".

³²⁶ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0001238_GE - Strictly Confidential - Contains Business Secrets msg": "[quote from internal GE document]".

³²⁷ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0000150_GE - Strictly Confidential - Contains Business Secrets msg", "[quote from internal GE document]".

³²⁸ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0008232_GE - Strictly Confidential - Contains Business Secrets msg".

³²⁹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0015220_GE - Strictly Confidential - Contains Business Secrets msg".

³³⁰ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0002338_GE - Strictly Confidential - Contains Business Secrets msg".

- (347) In an internal analysis of the future customer requirements in the United Kingdom markets, GE notes that [internal GE demand forecasts].³³⁴ Similarly, in Germany, for instance, a country with a high share of renewables, internal GE analysis indicates that [internal GE demand forecasts].³³⁵

8.2.3.6. Conclusion

- (348) The Commission concludes that demand for HDGTs is projected to continue in the future, both at worldwide 50Hz level (excluding China) and in the EEA. This reflects in part the fact that CCGT generation is expected to perform a key role in the European electricity system in the future, as flexible back-up capacity for intermittent renewable generation. Future demand for gas-fired generation in the EEA is therefore going to be characterised by an increasing need for operational flexibility. The evidence also suggests that, driven by the increasing need for operational flexibility, there will be demand in the EEA across all three segments of the market for 50 Hz HDGTs (Medium, Large and Very Large).

8.2.4. Conclusion on role of gas-fired generation and demand prospects for HDGTs

- (349) The Commission concludes that gas-fired generation plays an important role in the current power generation mix in the EEA and more broadly in 50 Hz regions, due to its technological advantages over competing forms of thermal generation (including lower emissions, higher thermal efficiency, lower capital costs, and greater operational flexibility). The technological advantages of generation based on HDGT also imply that demand for 50 Hz HDGTs is projected to continue in the future, both at worldwide level (excluding China and Iran) and in the EEA.

8.3. The market for 50 Hz HDGTs is an oligopolistic market with very high barriers to entry and expansion and high profit margins

- (350) As explained in paragraph 25 the Horizontal Merger Guidelines, *"generally, a merger giving rise to [...] non-coordinated effects would significantly impede effective competition by creating or strengthening the dominant position of a single firm, one which, typically, would have an appreciably larger market share than the next competitor post-merger. Furthermore, mergers in oligopolistic markets involving the elimination of important competitive constraints that the merging parties previously exerted upon each other together with a reduction of competitive pressure on the remaining competitors may, even where there is little likelihood of coordination between the members of the oligopoly, also result in a significant impediment to competition. The Merger Regulation clarifies that all mergers giving rise to such non-*

³³¹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0001238_GE - Strictly Confidential - Contains Business Secrets msg".

³³² See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0002338_GE - Strictly Confidential - Contains Business Secrets.msg", for second quote see doc "GE_0011545_GE - Strictly Confidential - Contains Business Secrets.msg".

³³³ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0014848_GE - Strictly Confidential - Contains Business Secrets" slide 5.

³³⁴ See Annex 4549, slide 4.

³³⁵ See Annex 1330, slide 30.

coordinated effects shall also be declared incompatible with the common market."

- (351) Also, as stated in the Horizontal Merger Guidelines *"an oligopolistic market refers to a market structure with a limited number of sizeable firms. Because the behaviour of one firm has an appreciable impact on the overall market conditions, and thus indirectly on the situation of each of the other firms, oligopolistic firms are interdependent"*.

8.3.1. *The market for 50 Hz HDGTs is an oligopolistic market with only four full technology competitors*

8.3.1.1. Introduction

- (352) The market for 50 Hz HDGTs is a concentrated market, with only four active full technology competitors, namely Alstom, GE, MHPS and Siemens. In addition some suppliers are also active in the market as licensees of the main OEMs. These cannot however be considered as independent competitors. There is also a fifth OEM, Ansaldo, whose competitiveness and technologic strength are weaker.
- (353) Customers share this view of the market. In fact, the large majority of customers stated that they characterise the markets for HDGTs and the associated servicing as concentrated with few alternative suppliers for a given project.³³⁶
- (354) The Notifying Party argues in its Reply to the Statement of Objections that the Commission has not demonstrated that the market for 50 Hz HDGTs is an oligopolistic market. According to the Notifying Party a concentrated market is not necessarily oligopolistic and there is a need to show that participants are interdependent, which is not the case in the market for 50 Hz HDGTs, given that the bidding nature of this market eliminates any potential interdependence and that the market is characterised by very large and sophisticated customers.
- (355) In that respect the Horizontal Merger Guidelines state that *"An oligopolistic market refers to a market structure with a limited number of sizeable firms"*. As a consequence firms are interdependent, a fact that is borne out in the statement in Recital (353).
- (356) In the case of 50 Hz HDGTs there are only a limited number of firms active in the market. The Notifying Party recognises this fact in the Reply to the Statement of Objections when stating: *"There are relatively few (that is, five) GT suppliers today"*. Moreover, there are very high entry barriers (Section 8.3.2) which the Notifying Party does not contest. Although some buyers may be large, there are significantly more buyers than potential suppliers of HDGTs.
- (357) As regards the bidding nature of the market, in Recitals (252) to (263) it is explained why under these type of auctions the pricing incentives of competing bidders closely resemble ordinary markets with differentiated products, where the number of alternatives is relevant to determine the competitive outcomes.

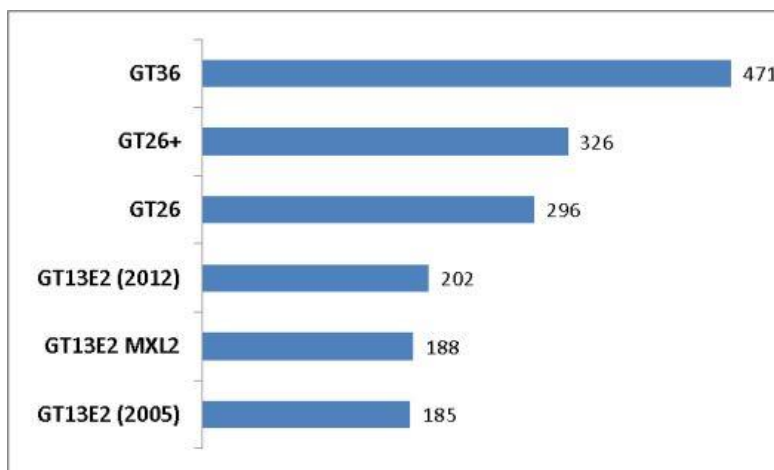
³³⁶

See replies to question 23 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

8.3.1.2. Alstom

- (358) Alstom provides several 50 Hz HDGTs with output ranging from 185 MW to 326 MW. This includes the various GT13E2 in the Medium segment and the GT26 in the Large segment. It recently also added to the portfolio a Very Large HDGT, GT36, with an output of 471 MW. The Figure below presents Alstom's current portfolio of 50 Hz HDGTs.

Figure 22: Alstom's portfolio of 50 Hz HDGTs (ordered by MW)



Source: Form CO.

- (359) Alstom has also an offer of a Large HDGT in the 60 Hz market (GT24). Moreover, Alstom had pre-merger plans to try to develop: (i) "GT16": new Large 50Hz HDGT better suited for simple cycle operations, (ii) "GT14": new Large 60Hz HDGT better suited for simple cycle operations, (iii) "GT12": new Small/Medium 50/60Hz HDGT (described as "small" but with output above 90MW, so part of the "Medium" segment as defined in Recital (112)).
- (360) Alstom also manufactures equipment for gas and steam power plants, more specifically, STs, generators, boilers, HRSGs, emission control systems, mills for coal and minerals grinding, CO₂ capture and storage systems, heat exchangers, pumps, etc., supplied either as stand-alone components or as pre-engineered packages. In addition, Alstom supplies automation and control solutions for individual equipment and for the entire power plant (part of the Balance of Plant "BoP"). One of the main strengths of Alstom is its capability to offer turnkey solutions for steam power plants and CCGT plants, as well as EPC solutions.³³⁷
- (361) Alstom also offers repair and maintenance services for its own and for third-party OEM GT, ST, generator units, boilers and HRSGs.

8.3.1.3. GE

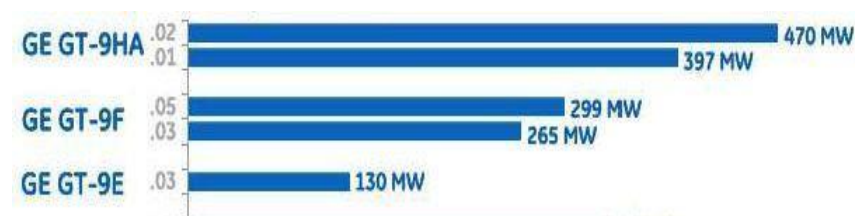
- (362) GE provides several 50 Hz HDGTs with output ranging from 130 MW to 470 MW. GE is present in the Medium segment with its 9E.03. In the Large segment GE offers two HDGTs, one in the lower end, the 9F.03, and one in the upper end of the Large segment, the 9F.05. GE has also two HDGTs in the

³³⁷

See replies to question 102 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

Very Large segment, the 9HA.01 and the 9HA.02. The Figure below presents GE' portfolio of 50 Hz HDGTs. GE has also recently started offering a new Medium HDGT, designated 9E.04, which has a higher output and efficiency than the 9E.03.

Figure 23: GE's portfolio of 50 Hz HDGTs (ordered by MW)



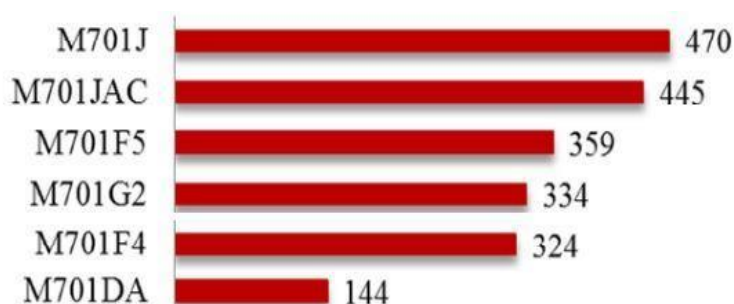
Source: Form CO.

- (363) GE also has a wide range of 60 Hz HDGTs. In the Very Large segment it is active with the 7HA.02 AND 7HA.01, in the Large segment with the 7F.05 and 7F.04 and in the Medium segment with the 7E.03. In fact, GE is particularly strong in 60 Hz where its installed base corresponds to [60-70]% of the total installed base.³³⁸
- (364) GE's manufactures STs and generators, for gas and steam power plants. In addition, GE offers maintenance and repair services for its own GTs, STs and generators fleet. GE also produces automation and control systems for turbines and generators. GE does not have the capability to offer turnkey power plant solutions on its own, which constitutes one of its main weaknesses.³³⁹

8.3.1.4. MHPS

- (365) MHPS is a Japanese producer that provides GTs, STs, generators, HRSG, boilers, control systems, pumps and other elements of power plants. MHPS provides several 50 Hz HDGTs with output ranging from 144 MW to 470 MW. The Figure below presents MHPS' portfolio of 50 Hz HDGTs.

Figure 24: MHPS' portfolio of 50 Hz HDGTs (ordered by MW)



Source: Form CO.

- (366) In the Medium segment, MHPS offers the M701DA. According to the bidding data provided by GE, this HDGT has only been offered in China, and two times in Japan. This is confirmed by MHPS information according to which its "business strategy has been such that it has concentrated its design and

³³⁸

Source: Commission's services calculations based on Annex 2499.

³³⁹

See replies to question 103 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

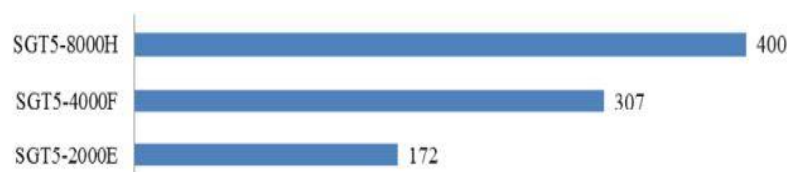
manufacturing resources in the Large and Very Large HDGTs area".³⁴⁰ MHPS also offers a previous Hitachi machine, the H100 which has an output of 112 MW.

- (367) According to the Notifying Party, as regards the Large segment, MHPS offers the M701F4, and for the Very Large segment MHPS has available the M701G2, the M701F5, the M701JAC and the M701J. The air-cooled model, M701JAC, has not yet been offered in any tender.
- (368) MHPS is also a provider of services for thermal power plants: conversion from simple cycle to combined cycle, monitoring, inspection, field services, conversions and upgrades, parts for boilers, GTs and STs.

8.3.1.5. Siemens

- (369) Siemens is a globally operating technology company organized into four business sectors: Energy, Healthcare, Industry and Infrastructure & Cities. Through its Energy sector, Siemens offers a comprehensive range of HDGTs in the power output range up to 400 MW for use in simple cycle or combined cycle power plants, as presented in the Figure 25 below. These include the SGT5-20000E in the Medium segment, the SGT5-4000F in the Large segment and the SGT5-8000H in the Very Large segment. Siemens also offers a de-rated version of the SGT5-4000F, the SGT5-3000E whose output is in the range of the Medium segment.

Figure 25: Siemens' portfolio of 50 Hz HDGTs (ordered by MW)



Source: Form CO.

- (370) Customers consider Siemens to have a strong advanced technology and a large presence in the market. They also consider Siemens' HDGTs to be very efficient.³⁴¹ On the other hand, Siemens is seen as weak in terms of customer engagement and the HDGTs included in its portfolio generally have high maintenance costs.³⁴²
- (371) Siemens offers service programs, maintenance solutions, modernizations and upgrades and power diagnostics.

8.3.1.6. Licensees are not regarded as independent competitors

- (372) In certain countries OEMs develop contractual relationships with third parties to manufacture and sell their own-technology power equipment (for instance GTs, STs, generators) under a license agreement. These additional channels help OEMs' technology to be deployed in countries that would otherwise not be easily accessible.

³⁴⁰ See competitor's reply to the Commission's Request for Information, 26.03.2015.

³⁴¹ See replies to question 102 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

³⁴² See replies to question 103 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

- (373) The contractual relationships with these licensees vary substantially. GE refers to its third-party independent licensees with the generic term “Business Associates” to describe a group of companies with whom GE has developed these types of contractual agreements. GE has classified its Business Associates either as [types of GE business associates].
- (374) [description of GE's business relationship with business associates]. A [description of GE's business relationship with business associates] does not develop or produce the most complex parts of the HDGT and is thus highly dependent of the OEM.[description of GE's business relationship with business associates].
- (375) The Notifying Party explains that all Business Associates bid on projects in accordance with their respective agreements with GE. In fact, although they make sales on their own account and determine the pricing to the customers, they have to pay GE a license fee or consideration or both for components used in manufacturing the relevant GE technology. Moreover, GE’s Business Associates generally do not compete against GE in deploying the GE technology.
- (376) According to the Notifying Party the various licensees of the OEMs are restricted and limited to using the technology in a reduced number of countries. GE’s Business Associates for HDGT are [GE business associates]. Alstom has a licencing agreement with Harbin Electric and Beijing Beizhong in China. Siemens’ third-party licensees for HDGTs are BHEL, Mapna Turbine in Iran, Power Machines in Russia and Shanghai Electric in China. MHPS’ third-party licensees are Dongfang Turbine Co. in China and Doosan Heavy Industries in Korea. In the EEA, no third-party licensees of HDGT equipment are active, and thus OEMs always participate in tenders and sell equipment directly.
- (377) The license agreements between the OEMs and the licensees involve only some frames of HDGTs, and not the whole spectrum of HDGTs of each licensor. Moreover, almost all of the agreements assume the form of “manufacturing associate” agreements, which are the ones creating more dependences from the licensor (see Recital (371)). Licensee agreements also create some dependence. In fact, licensees are often subject to disputes with the OEM on the restriction imposed in the license agreements. This limits even more their ability to develop new technologies.
- (378) During the market investigation, competitors explained that licensees of GE, Siemens and MHPS are not independent competitors exerting a competitive constraint also on their licensors.³⁴³ According to competitors: *"Usually the License Technology Agreement define specific areas in which the licensees can compete", "Usually the major OEMs restrict their licensees from participating in projects they are working on" and "Although licensees typically develop their own skills and therefore certainly bring about additional competition, they may not have all the advantages of an OEM. Furthermore, licensees are often restricted in their competitive reach (geographically, technology etc.)"*.³⁴⁴

³⁴³ See replies to question 86 of Phase I Questionnaire Q2 to competitors on the gas business.

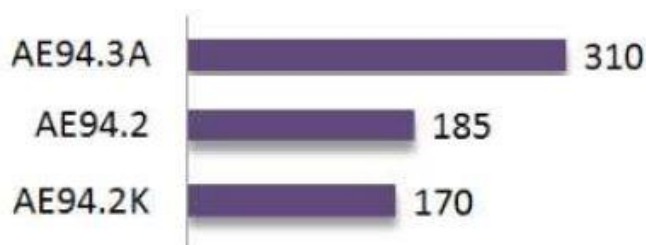
³⁴⁴ See replies to question 86 of Phase I Questionnaire Q2 to competitors on the gas business.

- (379) This justifies why according to customers, although licensees may have some role in the market, they typically use more mature technologies and have low technical development capabilities, which limit their degree of freedom.³⁴⁵
- (380) Alstom in its internal documents only considers GE, MHPS, Siemens and, occasionally, Ansaldo when analysing the competition offering in the market for gas.³⁴⁶ The Notifying Party also often only considers the four main OEMs in its internal documents.³⁴⁷

8.3.1.7. Ansaldo as a former licensee of Siemens

- (381) Ansaldo is an Italian supplier, installer and service provider for power generation plants and components. Until December 2013, Ansaldo was a Finmeccanica Group (“Finmeccanica”) company. In December 2013, Fondo Strategico Italiano acquired an 85% stake in Ansaldo (with Finmeccanica retaining a 15% stake). In May 2014 Fondo Strategico Italiano signed a long term strategic agreement with Shanghai Electric (“SEC”) — a Chinese manufacturer of power generation equipment and other machinery— whereby SEC took a 40% share in Ansaldo. SEC and Ansaldo will form two JVs for the manufacturing of GTs for Asian markets and the creation of a R&D centre in Shanghai. Ansaldo also recently signed a partnership with Doosan Heavy Industries, of Korea, for the development of joint R&D in relation to HDGTs.
- (382) Ansaldo’s current offering of HDGTs is based on Siemens technology, for which Ansaldo previously had a license for full intellectual property rights. This agreement was terminated in October 2004. However, according to information available to the Commission, Ansaldo appears to be subject to certain restrictions resulting from this license agreement.³⁴⁸ Ansaldo explains that *“Siemens granted Ansaldo with a non-exclusive, royalty bearing license to use certain technical information and patents to manufacture Contract Products in Italy and sell and service such Contract Products worldwide except for [US] and Canada”*.³⁴⁹
- (383) Ansaldo’s portfolio of 50 Hz HDGTs is represented in Figure 26. Ansaldo has a relevant presence in the Medium segment with two HDGTs, the AE94.2K and the AE94.2. In the Large segment Ansaldo is present with the AE94.3A. Ansaldo does not have any HDGT in the Very Large segment.

Figure 26: Ansaldo’s portfolio of 50 Hz HDGTs (ordered by MW)



Source: Form CO.

³⁴⁵ See replies to question 60 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

³⁴⁶ See Annex 223, slide 284.

³⁴⁷ See Annex 3759, slides 12 and 14.

³⁴⁸ See competitor’s reply to the Commission's Request for Information, 22 January 2015, question 6.

³⁴⁹ See competitor’s reply to the Commission's Request for Information, 19 December 2014, question 8.

8.3.2. *The market for 50 Hz HDGTs is a market with high entry and expansion barriers*

- (384) The market for 50 Hz HDGTs is characterized by very high barriers to entry, resulting from several factors.³⁵⁰
- (385) First, and according to both customers and competitors, the technology development of HDGTs requires very large investments and important research capabilities. The R&D costs of the industry are significant and there is a significant need for highly specialized engineers. The Notifying Party explained that *"R&D and innovation is essential for OEMs to sustain their competitive position and relevance in the market"*.³⁵¹
- (386) According to information provided by the Notifying Party, the average annual R&D spending on HDGT in the period 2013-2015 amounted to almost EUR [GE R&D spend] for GE and to around EUR [ALSTOM R&D spend] for Alstom. The development of a new HDGT is very expensive. Considering the case of the GT36, the most recent HDGT of Alstom, the costs of its program is around USD [ALSTOM R&D spend for the GT36 program]. This includes not only development costs but also investments in testing facilities.
- (387) The headcount dedicated to the R&D programmes for HDGTs are also very high. According to the Notifying Party, GE has close to [GE R&D headcount] Full Time Equivalent (FTE) personnel fully dedicated to all HDGT-related R&D programmes. When the headcount for the upgrades and servicing programmes of GE's HDGTs are accounted for this value reaches [GE R&D headcount] FTE headcount. As regards Alstom, the total headcount corresponds to approximately [ALSTOM R&D headcount] FTE.
- (388) Secondly, the market for 50 Hz HDGTs is also characterized by a high importance of intellectual property ("IP") rights and know-how. OEMs develop new technologies which are then protected by IP rights. Although some competitors may obtain some licenses from OEMs, these impose several restriction that conditioned their independence and capability for future investment.
- (389) Thirdly, since HDGTs are usually sold with an LTSA, in order for OEMs to be able to effectively compete in the market for 50 Hz HDGTs they need to have service business capabilities, which imposes an additional barrier to overcome on a potential entrant.
- (390) Fourthly, successful participation in the market for 50 Hz HDGTs also requires a proven track record, which is difficult and takes long time to accumulate. According to information provided by the Notifying Party, the validation of HDGT is difficult and costly, especially for the HDGTs at the higher end of the output range. In fact, *"before deploying a new HDGT to the field, customers typically requires a validation test on a "Test Stand" assessment at the factory (i.e., manufacturer). To build such a test stand requires an investment of about USD [spend required for a test stand]. It will also take [time required for a test*

³⁵⁰ See replies to question 24 of Phase II Questionnaire Q7 to customers of Gas fired power plant and question 5 of Phase II Questionnaire Q10 to competitors on the gas business.

³⁵¹ Form CO, paragraph 1289.

stand] to build such a facility".³⁵² In addition, the Notifying Party also explained that "many customers today require at least 8,000 hours (i.e., nearly one year) of successful GT unit operation. Therefore, a new supplier of any HDGT technology will have to qualify their units at the field before the new HDGT would become commercially viable. This adds at least one more year to the overall time frame. Finding a customer to do this field validation test, also typically requires concessions with the customer because of the risks associated with failure. This is why the "Test Stand" validation at the factory is a really important part of the whole HDGT development process".³⁵³

- (391) In fact, an OEM needs to have a good reputation in terms of the reliability of its HDGT and servicing capabilities. According to one competitor "OEM must have the trust of the customer".³⁵⁴
- (392) Fifthly, the lack of an existing installed fleet of HDGTs represents a major obstacle for a newcomer,³⁵⁵ since customers are generally not willing to take the risk to buy machines that have not been proved by others before.³⁵⁶
- (393) Moreover, the installed fleet of HDGTs is important for the viability and competitiveness of an OEM since it constitutes a:
 - (a) *Source of scale*: According to the Notifying Party and their competitors a large installed fleet allows the supplier to have more negotiation power with input suppliers, thus benefiting from competitive prices. In the Form CO the Notifying Party mentions that "Alstom estimates that its procurement costs tend to be higher than its larger competitors. Its more limited scale of production and lower sales volumes do not enable Alstom to obtain more advantageous volume discounts from its suppliers. This increases the cost of a set of hot gas parts (a major driver of gas turbine) by approximately [Alstom sourcing cost]".
 - (b) *Source of information*: According to the Parties and their competitors, the installed fleet is also a source of information for innovation since it allows suppliers to access information on: (a) the detailed site conditions in the case of plant upgrades or site extensions and; (b) the future needs in terms of operational behaviour of its existing customers. Suppliers can thus use their installed base to better understand their customers' needs and thus better fit their bid to new tenders organised by those customers. According to the Notifying Party, GE's global installed base database contains information such as the operational status and the duty cycle of GE units in service which is constantly updated by GE's service and sales managers. GE uses the information for high-level planning purposes. For example, GE is able to verify if customers use their GTs at base load or cycling (mid-merit) duty. This helps GE to assess the likely size of market opportunities, and to identify areas of focus. According to the Notifying Party, the installed fleet data can be used in two ways: (i) they can be collected and processed as part of the development

³⁵² See GE's reply to the Commission's Request for Information N° 18, 06.03.2015, question 14.

³⁵³ See GE's reply to the Commission's Request for Information N° 18, 06.03.2015, question 14.

³⁵⁴ Reply to question 5 of Phase II Questionnaire Q10 to competitors on the gas business.

³⁵⁵ See replies to question 106 of Phase I Questionnaire Q2 to competitors on the gas business.

³⁵⁶ See replies to question 118 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

process to build upgrades; (ii) they can be collected as part of monitoring and diagnostics services offered to the customer. Monitoring tools allow GE to monitor the operation of the power equipment, detect and troubleshoot problems by proposing relevant services to the customer.

- (c) *Source of innovation:* The Parties and other OEMs also explained that a supplier uses its installed fleet to perform tests regarding innovations and develop pilot projects. The installed base also allows a supplier to access an additional source of revenue for upgrades and thus to achieve a sufficient scale to profitably develop new upgrades. Therefore, without an installed base innovation might be significantly more difficult.³⁵⁷ One OEM explains that *"It is common practice in this industry to approach repeat customers to test new innovations as part of project upgrades and/or by collaborating in pilot projects. A supplier with a large customer base and a large installed fleet can approach a greater number of customers, perform a larger number of tests, and develop many more pilot projects than a smaller competitor"*.³⁵⁸
- (d) *Source of sales opportunities:* A large number of customers responding to the market investigation confirm that they see an advantage to buy from those suppliers from whom they have a higher installed base. Suppliers also confirmed that they can more easily sell new HDGTs associated to brownfield projects, in other words projects for the substitution of an already existing HDGT. In fact, one OEM also explains that it is relatively easy for an incumbent to win a contract *"in case of existing customer, [...] of greenfield or brownfield projects such as existing plant expansion projects and/or replacement projects as these projects heavily depend on lower cost of plant engineering. An existing supplier has the knowledge of locations and plant specifications to help him bring down the cost according to customer building strong trust for long term"*.³⁵⁹ A significant number of customers confirmed that there are advantages in replacing a HDGT that has reached the end of its lifecycle with a new HDGT from the same OEM.³⁶⁰ There are also several examples where GE benefited from some advantages because of the relationship with the customer. [contents of internal GE document].³⁶¹ In another internal document it is mentioned that [contents of internal GE document].³⁶²
- (e) *Source of revenues:* The services and upgrades sold to the installed base generate high margins that cross subsidize the lower margins in selling the HDGT. In fact, although the sales of newly-built HDGTs often generate negative free cash flow, the servicing of the installed fleet of HDGTs generates positive cash flow which over-compensates that negative cash flow.

³⁵⁷ See competitor's reply to the Commission's Request for Information, 19.12.2014, question 1.

³⁵⁸ See competitor's reply to the Commission's Request for Information, 19.12.2014, question 1.

³⁵⁹ See competitor's reply to the Commission's Request for Information, 19.12.2015, question 3.

³⁶⁰ See replies to question 109 of Phase II Questionnaire Q7 to customers Gas fired power plant.

³⁶¹ See Annex 3681, slide 13.

³⁶² See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE-US-0000744_GE - Strictly Confidential - Contains Business Secrets". Other GE internal documents present the relationship of an OEM with customers as an advantage to win a tender. For instance, Annex 1913 and GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0013340_GE - Strictly Confidential - Contains Business Secrets msg/[title of internal GE e-mail]".

- (394) According to one OEM, *"Suppliers with no existing customer base will find it difficult to operate sustainably in this market. While they will be able to compete effectively for the new gas turbines demanded by new customers (i.e. customers with no installed fleet); that will not be true for the trade of existing customers. This places suppliers with no existing customer base at a competitive disadvantage in the long run. This competitive disadvantage vis-à-vis existing customers limits the size of their business and, therefore, their ability to profitably monetize their investments in new and/or improved designs. Gas turbine suppliers must invest considerable amounts of money to improve their designs and/or bring new designs to the market in order to address their customer changing needs. Those investments are needed to remain competitive in the market place. However, those investments are economically viable only if they can be monetized profitably or, in other words, only if the upgraded/new designs can be sold to a sufficiently large number of customers"*.³⁶³
- (395) This is also true for the expansion of an already active supplier. According to the same OEM *"suppliers with relatively small installed fleets will also struggle to remain competitive. In fact, [...] a multi-source repeat customer will likely concentrate its purchases with one single supplier when the installed fleet share of the largest incumbent supplier is substantially larger than the shares of other incumbents – i.e. when one incumbent “dominates” the installed fleet of that customer. Smaller suppliers anticipating the one-stop shopping advantage enjoyed by the largest supplier may even decide, and they often do, not to bid for the business of repeat customers for which the largest incumbent dominates that customer’s installed fleet"*.³⁶⁴
- (396) The large majority of customers and competitors confirmed that compared with other power generation equipment markets, the market for 50 Hz HDGTs is more concentrated, with less alternatives and higher entry barriers.³⁶⁵
- (397) According to one competitor *"Compare to other PG areas, GT typically is more concentrated business because of complex technology, requirement of well-trained engineers and high standards of quality controls make it a business with fewer suppliers, barriers to intellectual property rights"*.³⁶⁶
- (398) A customer also explained that *"From experience and latest market evaluations the gas turbine area is one of the most limited competitive areas – in comparison to steam turbines, generators, electrical components etc. there is from our perspective a very limited competitive landscape in HDGT sector (new build as well as services/parts)"*.³⁶⁷
- (399) Some competitors estimated that a newcomer would need between 5-12 years and an investment of several hundred million to enter the market for 50 Hz

³⁶³ See competitor's reply to the Commission's Request for Information, 19.12.2014, question 1.

³⁶⁴ See competitor's reply to the Commission's Request for Information, 19.12.2014, question 1.

³⁶⁵ See replies to question 42 of Phase I Questionnaire Q1 to customers of Gas fired power plant, to question 41 of Phase I Questionnaire Q2 to competitors on the gas business and to question 26 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

³⁶⁶ See reply to question 41 of Phase I Questionnaire Q2 to competitors on the gas business.

³⁶⁷ See reply to question 26 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

HDGTs with no previous experience.³⁶⁸ With the exception of Ansaldo, which until 2004 was one of Siemens' licensees and between 1949-1989 one of GE's licensees³⁶⁹, there have been no recent new entries and no new entry is in sight in the next few years.³⁷⁰

8.3.3. *The market for 50 Hz HDGTs is a market with high profit margins*

- (400) As discussed in Section 7.2.3, at the time of contracting a HDGT, customers usually also purchase the associated services for maintaining the machine operational. These services are usually purchased by customers in the form of packages including different types of services over a long time period. Therefore, usually the commercial conditions of the LTSA enter in the HDGT tender evaluation process as they have an impact on the overall lifecycle cost assessment of the project.
- (401) Although the nature, form or timing of the servicing sale might be different, as a matter of fact the supplier of those services will almost always remain the supplier of the primary product, namely the HDGT OEM. In fact, customers suggested that in most instances there is no real choice but to buy the HDGT together with the initial servicing from the same OEM.
- (402) This implies that when looking at the profit margins of selling a newly built HDGT, the relevant values include not only the margin with the direct sale of the newly built HDGT but also the margins with the sale of the associated servicing.
- (403) By way of illustration, Alstom's IFO³⁷¹ margin in 2014 was negative on the sale of HDGTs, at ([ALSTOM IFO margin])%, and on the sale of new equipment for combined cycled power plants, at ([ALSTOM IFO margin])%. In contrast, the IFO margin on the servicing of Alstom's installed base was as high as [ALSTOM IFO margin]%. Overall, the combined IFO margin on both the sale of new equipment for combined cycle power plants and the servicing of Alstom's installed base amounted to [ALSTOM IFO margin]%.
- (404) Comparatively with other power generation equipment markets, the market for 50 Hz HDGTs enjoys significantly high operating margins. This is evidenced in Alstom's own margins, which are much higher in its gas business (approximately [ALSTOM IFO margin]% IFO margin in 2014) compared to other Thermal power equipment ([ALSTOM IFO margin]% IFO margin for Thermal Power as a whole) as well as compared to other power generation/transmission equipment ([ALSTOM IFO margin]% IFO margin for renewables and [ALSTOM IFO margin]% for grid).
- (405) The high margin values in the market for 50 Hz HDGTs are caused by several factors including the very high entry barriers and the very concentrated nature of this market.

³⁶⁸ Replies to question 105 of Phase I Questionnaire Q2 to competitors on the gas business.

³⁶⁹ Reply to question 3.1 of Phase I Questionnaire Q2 to competitors on the gas business.

³⁷⁰ Replies to questions 116 and 117 of Phase I Questionnaire Q1 to customers of Gas fired power plant, to questions 103 and 104 of Phase I Questionnaire Q2 to competitors on the gas business and to question 4 of Phase II Questionnaire Q10 to competitors on the gas business.

³⁷¹ A measure of operating profit.

- (406) In fact, Alstom in its internal documents³⁷² regards the market for 50 Hz HDGTs as highly attractive based on market growth, but also on "*competition intensity*", which is defined by Alstom as "*limited competition; high barriers of entry (techno, installed base...)*".

8.3.4. Conclusions

- (407) In view of the above, the Commission considers that the market for the supply of 50 Hz HDGTs is an oligopolistic market with only four full technology competitors active Alstom, GE, MHPS and Siemens. In addition, outside the EEA, other suppliers are also active in the market as licensees of the main OEMs. These cannot however be considered as independent competitors. There is also a fifth OEM, Ansaldo, whose competitiveness and technologic strength are weaker also as a result of its previous role as a licensee of Siemens.
- (408) The market for 50 Hz HDGTs is also characterized by very high barriers to entry, resulting primarily from the high investment and important research capabilities required, the high importance of IP rights and know-how, the need to have service capabilities, the need to have a proven track record, the need to have a sufficiently large installed fleet, and the need to have a good reputation.
- (409) The high degree of concentration and very high barriers to entry contribute to the very high margins for the OEMs, when considering the sale of new equipment for CCPP and the associated servicing.

8.4. The Transaction leads to market-leading and often very large market shares

8.4.1. Principles

- (410) In this section the Commission analyses the market shares of the Parties and their competitors in the relevant market for 50 Hz HDGT both at a worldwide (excluding China and Iran) and EEA level. The market shares presented are based on the five year period, immediately prior to the announcement of the Transaction, in other words they comprise the period from the second quarter of 2009 to the first quarter of 2014. In the particular case of the EEA, and given the reduced number of tenders organised in the last five years, the Commission will focus its analysis on a 10 year period.
- (411) In their reply to the Article 6(1)(c) Decision and in their Reply to the Statement of Objections, the Notifying Party argues that in the presence of bidding competitions, the Commission should not rely heavily on market shares or on counting the number of competitors. In their opinion such an approach ignores the dynamic nature of the marketplace and the complexity of bidding competitions through which customers achieve competitive outcomes.
- (412) According to the Notifying Party, the Commission's analysis fails to address closeness of competition in any meaningful way since the highly differentiated nature of the market in question implies that structural metrics like market shares cannot provide an adequate substitute for assessing the likely competitive effects of a horizontal transaction involving differentiated products. Indeed, one cannot assume that all participants in a bidding contest

³⁷² See Annex 826, slides 6 and 7.

are equally close and that structural metrics are therefore a valid indicator of market power.

- (413) The Notifying Party also argues in its Reply to the Statement of Objections that the time frame for the analysis of market shares used in the Statement of Objections distorts the results, and suggests instead that the correct time frame should be the period between the second half of 2009 and the first half of 2014. That would indicate that Alstom's market shares in the EEA had suffered a significant drop.
- (414) As explained in paragraph 17 of the Horizontal Merger Guidelines, "*according to well-established case law, very large market shares – 50% or more – may in themselves be evidence of the existence of a dominant market position. [...] A merger involving a firm whose market share will remain below 50% after the merger may also raise competition concerns in view of other factors such as the strength and number of competitors, the presence of capacity constraints or the extent to which the products of the merging parties are close substitutes. The Commission has thus in several cases considered mergers resulting in firms holding market shares between 40% and 50%, and in some cases below 40%, to lead to the creation or the strengthening of a dominant position*".
- (415) Moreover, and as explained in paragraph 27 of the Horizontal Merger Guidelines, "*the larger the market share, the more likely a firm is to possess market power. And the larger the addition of market share, the more likely it is that a merger will lead to a significant increase in market power*".
- (416) The Courts of Justice of the European Union have confirmed that although the importance of market shares may vary from one market to another, very large shares are in themselves, and save in exceptional circumstances, evidence of the existence of a dominant position. Furthermore, the General Court confirmed the relevance of market shares for assessment of a company's market position in bidding markets. In particular, in bidding markets the fact that a company maintains its market share over a number of years in succession, in spite of bidding opportunities during that period, is an indication of market strength.³⁷³
- (417) The market shares of GE, Alstom and their competitors are the result of numerous real purchasing decisions by many customers over the period in question. They also reflect the decisions of competitors to make a bid for a certain tender. Assuming maximisation of profit, the decision to make a bid or not is based on a weighing-up of the costs which would be incurred and the probability of having a real chance with a given customer. In view of the large number of tenders, the Commission assumes the market structure observed did not come about by chance but is the result of the product portfolios offered by the different OEMs, their installed base, their cost structure, as well as customer preferences. The market shares therefore contain considerable information about the market strength of the different suppliers, for instance their ability to take part successfully in future tenders as credible bidders. Moreover, in markets where there are very high barriers to entry and

³⁷³

Case T-210/01 General Electric v Commission [2005] ECR II-5575, paragraph 115.

expansion, as it is particularly the case of the market for 50 HZ HDGTs, market shares are generally correlated with market power, given their long lasting and stable structure.

- (418) In a subsequent step the Commission analyses bidding data in order to obtain further information about the closeness of the competitive relationship between GE, Alstom, Ansaldo, MHPS and Siemens (see Section 8.5). An examination of the bidding participation suggests that GE and Alstom are frequently in competition with each other in tenders. If this were not the case, the competitive impact of the merger would be limited (absent concerns about product discontinuation) despite the large market share increment. In other words, while the merging parties would have high combined market shares, they would not supply close substitutes. This could lead to the conclusion that the market share addition observed exaggerates the actual effect on competition. By contrast, frequent interactions of the Parties over a large number of tenders would instead be an indication that the merging parties are likely to offer close substitutes and, thus, to exert significant competitive pressure on each other, especially in light of the evidence on a high combined market share. The analysis is based on the assumption that companies take part in particular in those tenders which they think they have a chance of winning, for instance because they are able to meet the tender specifications.
- (419) According to paragraph 15 of the Horizontal Merger Guidelines, the Commission may use historic data where, as in the present case, market shares are volatile. In particular, the markets for 50 Hz HDGTs are characterised by a volatile demand, with significant peaks and troughs ('lumpy' orders) which are due to the fact that contracts are awarded relatively infrequently.³⁷⁴ Consequently, the market position of one company may change substantially depending on the particular contracts awarded during one year. Therefore, the Commission relies on market shares based tenders taking place in a longer period, namely the five years before the announcement of the Transaction.
- (420) The Notifying Party argues that the relevant period should be the five years between the second half of 2009 and the first half of 2014, therefore already including a period post-announcement of the Transaction (that is to say the second quarter of 2014). This would have a significant impact on Alstom's market shares in the EEA (they would decrease from [20-30]% to [10-20]%) given that they would not include Alstom's sales in the second quarter of 2009.
- (421) First, the Commission considers that the relevant period for the analysis should not include any period after the announcement of the Transaction given that after this moment Alstom's ability to make new sales could diminish given that customers are less likely to choose a supplier subject to such kind of uncertainty, in particular in cases of products with long-life utilisation as HDGTs. Therefore only market shares from the period before the announcement of the Transaction are normally more representative of Alstom's

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This approach is consistent with: Case M.1404 – General Electric/ALSTOM (1999), paragraph 19; Case M.1484 – ALSTOM/ABB (1999), paragraph 31; Case M.3148 - Siemens/ALSTOM Gas & Steam Turbines, paragraph 30.

expected competitive strength in the market for 50 Hz HDGTs absent the merger.

- (422) Secondly, the Commission recognises that the inclusion or not of a given quarter in the relevant period can make a significant difference in the calculation of the market shares in the EEA. This is because of the small number of tenders in the EEA in the last five years (for example [number of tenders] projects were tendered between 2009Q2 and 2014Q1). In order to address the Notifying Party's concern and the fact that there are very few bids in the EEA, the Commission has used a longer period for the particular case of the EEA market shares, namely a 10 years period between 2004Q2 and 2014Q1. This would be a more meaningful representation of the OEMs market strength in the EEA since instead of including [number of tenders] projects it comprises [number of tenders] projects.
- (423) The market shares over this 10 year period do not differ significantly from the market shares of the 2009Q2-2014Q1 period, which may justify also the relevance of that period. Moreover, the consideration of a 10 year period also does not overstate Alstom's recent market strength as its market share in the last two years of the period, admittedly on the basis of very few observations, would be even larger than the 10 year average. For the 10 year period, Alstom's market share is [20-30]% at the EEA-level, whilst for the last two years Alstom's market share amounts to [40-50]% at the EEA-level.
- (424) Given the differentiation that characterises the market for 50 HDGTs, the Commission considers not only market shares on the overall market for 50 Hz HDGTs, but also shares in the different segments (in terms of output ranges Medium, Large and Very Large; and CC vs. SC). This reflects the different positioning of the competitors in the overall spectrum of HDGTs.
- (425) As regards the source for the calculation of market shares in this section, the Commission uses McCoy's reports submitted by the Notifying Party. This database captures and presents historic power generation equipment sales based on surveys provided by project participants (manufacturers/licensees and OEMs/technology owners).
- (426) Market shares are presented both in terms of MW installed and of number of HDGTs sold. The Commission is of the view that MW is the best available approximation of sales in value, which are more relevant to measure market power in a highly differentiated market.³⁷⁵ In contrast, market shares by number of projects won appears to have less relevance, as they do not take into account the fact that some projects involve the award of a large number of HDGTs (four or more) at once. For example, the Notifying Party won a tender [GE order]. In 2009, the Notifying Party sold 4 units of its 9F.03 Large HDGT in Bahrain. Market shares by number of projects won would thus underestimate the market strength of those OEMs able to win such tenders.
- (427) In Annex I, the Commission conducts a parallel and complementary exercise by analysing bidding data. The methodology used in this complementary exercise is based on the number of projects and not on MW. In the bidding data

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See Guidelines on the definition of relevant market, paragraph 55.

analysis the main objective is not to evaluate market power but focuses on the competitive interactions between the different OEM. This is better captured by considering bidding wins/losses based on the number of projects since each project constitutes one interaction between the OEMs.

- (428) After analysing market shares the Commission also analyses shares in terms of capacity, installed base and R&D efforts. These are also very important variables of competition between OEMs in the market for 50 Hz HDGTs and a high share on these variables would also be an indication of market power.

8.4.2. *Post-Transaction the merged entity would have large or very large market shares in already highly concentrated markets*

8.4.2.1. Overall market for 50 Hz HDGT

- (429) In the EEA, the combined market shares of the Parties in the market for 50 Hz HDGTs (in case all projects or only CC projects are included) are in the range of [50-60]% to [50-60]% in the period 2004Q2-2014Q1, with an increment of [20-30]%. Post-Transaction the merged entity would be the clear leader in terms of market shares in the EEA, with Siemens as its largest competitor with a market shares in the range of [20-30]% to [20-30]%. Considering the shorter period of the most recent five years (2009Q2-2014Q1), the combined market shares of the Parties are similar (around [50-60]%).
- (430) Post-Transaction, Ansaldo would be well behind the two main competitors with market shares equal to [10-20]% in the EEA. MHPS would be by far the smallest player in the EEA with market shares of [0-5]%. MHPS has similar market shares when considering either the 2009Q2-2014Q1 period or the 2004Q2-2014Q1 period, which contradicts the argument by the Notifying Party about an alleged tendency for the increase of MHPS' position in the EEA market.
- (431) As regards SC projects, there were only [number of tenders] projects in the EEA in the last 10 years.³⁷⁶ The market share values are thus less meaningful. Even so, it is possible to see in the Table 7 below that the combined market share of the Parties would be, in this case, equal to [70-80]%.

³⁷⁶ There was only one SC project in the EEA in the period 2009-2014Q1 won by Ansaldo.

Table 7: Shares in the market for 50 Hz HDGTs in the EEA

	SC&CC (2009Q2- 2014Q1) [[...]] projects]		CC (2009Q2- 2014Q1) [[...]] projects]		SC&CC (2004Q2- 2014Q1) [[...]] projects]		CC (2004Q2- 2014Q1) [[...]] projects]		SC (2004Q2- 2014Q1) [[...]] projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[20-30]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[20-30]%	[40-50]%	[30-40]%
Alstom	[20-30]%	[20-30]%	[20-30]%	[20-30]%	[20-30]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[30-40]%
GE+Alstom	[50-60]%	[50-60]%	[50-60]%	[50-60]%	[50-60]%	[50-60]%	[50-60]%	[50-60]%	[70-80]%	[70-80]%
Ansaldo	[10-20]%	[10-20]%	[5-10]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%
MHPS	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Siemens	[30-40]%	[30-40]%	[30-40]%	[30-40]%	[20-30]	[20-30]%	[20-30]%	[20-30]%	[10-20]%	[10-20]%
Total	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]

Source: McCoy.

- (432) According to paragraph 16 of the Horizontal Merger Guidelines, "*in order to measure concentration levels, the Commission often applies the Herfindahl-Hirschman Index (HHI)*". In fact, "*while the absolute level of the HHI can give an initial indication of the competitive pressure in the market post-merger, the change in the HHI (known as the 'delta')* is a useful proxy for the change in concentration directly brought about by the merger".
- (433) The Horizontal Merger Guidelines define some minimum thresholds below which a merger is not likely to raise concerns. The General Court has confirmed the Commission's view that "*exceeding those thresholds does not give rise to a presumption of the existence of competition concerns*" while noting "*that the greater the margin by which those thresholds are exceeded, the more the HHI values will be indicative of competition concerns*".³⁷⁷
- (434) As can be seen in Table 8 below, the Transaction would lead to a significant increase of the HHI levels in the EEA. Considering either all projects or the CC projects only, the delta associated to the Transaction is between 1308 and 1418. These very high levels are even more relevant given the already highly concentrated nature of the market structure (HHI pre-merger between 2471 and 2747). The post-Transaction HHI levels would thus be in the range of 3835 to 4150.

³⁷⁷

Case T-282/06 Sun Chemical Group and Others v. Commission [2007] ECR II-2149, paragraph 138.

Table 8: HHI indexes under the possible definitions of the market for 50Hz HDGTs in the EEA³⁷⁸

	Pre	Post	Delta
SC+CC in the EEA (2009Q2-2014Q1)	2625	3933	1308
CC in the EEA (2009Q2-2014Q1)	2747	4150	1403
SC+CC in the EEA (2004Q2-2014Q1)	2476	3894	1418
CC in the EEA (2004Q2-2014Q1)	2471	3835	1364
SC in the EEA (2004Q2-2014Q1)	2929	5525	2556

Source: Commission's services calculations based on McCoy.

- (435) As regards the worldwide (excluding China and Iran) market for 50 Hz HDGTs, GE is already pre-merger the clear market leader, with market shares above [40-50]%. This is caused by, in part, GE's large installed base which results in advantages in terms of sourcing, customer contacts (with a predominant presence in non-competitive tenders) as well as in advantages resulting from information and innovation economies.
- (436) The combined market shares of the Parties on the worldwide (excluding China and Iran) market for 50 Hz HDGTs would be equal to [50-60]% in case all projects or only CC projects are included. The overlap resulting from the Transaction would be of approximately [10-20]%. The Transaction would thus bring together the number one and number three competitors in the market. Siemens would be the second largest player with more than [20-30] percentage points behind the Parties (with a market share of [20-30]%). Ansaldo and MHPS would be even further behind, with shares in the range of [0-5]% to [10-20]%.
- (437) If China and Iran were to be included in the relevant geographic market, the combined market shares of the Parties would still be above [40-50]% for any possible product market configuration (see Annex II).
- (438) As regards the SC segment, the combined market share of the Parties would be [50-60]%. However, MHPS would be almost absent, with negligible market shares. Ansaldo, on the contrary, would have a market share of [10-20]%, but still significantly lower than that of the merged entity.

³⁷⁸

The HHI levels presented in this Table and in the following ones are calculated based on market shares for capacity. It is relevant to mention also that the US Horizontal Mergers Guidelines present a similar view and define as "Highly Concentrated Markets" those markets having an HHI of or above 2500. Transactions that increase the HHI by more than 200 points in highly concentrated markets are presumed likely to enhance market power.

Table 9: Market shares in the market for 50 Hz HDGTs worldwide, excluding China and Iran (2009Q2-2014Q1)

	SC+CC [[...] projects]		CC [[...] projects]		SC [[...] projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[50-60]%	[40-50]%	[40-50]%	[40-50]%	[50-60]%	[40-50]%
Alstom	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%	[10-20]%
GE+Alstom	[60-70]%	[50-60]%	[50-60]%	[50-60]%	[60-70]%	[50-60]%
Ansaldo	[5-10]%	[5-10]%	[0-5]%	[0-5]%	[10-20]%	[10-20]%
MHPS	[5-10]%	[5-10]%	[5-10]%	[10-20]%	[0-5]%	[0-5]%
Siemens	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[10-20]%	[20-30]
Total	[...]	[...]	[...]	[...]	[...]	[...]

Source: McCoy.

- (439) The pre-merger HHI levels in the worldwide (excluding China and Iran) market are very high (above 3000 for any possible segmentation), arising out of the highly concentrated nature of the market. In fact, these HHI levels are even higher than in the EEA due to the market leadership of GE. The delta associated to the Transaction would be higher than 900 for any possible segmentation. Thus, for all possible market segmentations, the Transaction is likely to significantly enhance market power.

Table 10: HHI indexes under the possible definitions of the market for 50Hz HDGTs worldwide

	Pre	Post	Delta
SC+CC worldwide (2009Q2-2014Q1)	3073	4030	957
CC worldwide (2009Q2-2014Q1)	3137	4098	961
SC worldwide (2009Q2-2014Q1)	3118	4060	942

Source: Commission's services calculations based on McCoy.

8.4.2.2. Large segment

- (440) In this section the Commission analyses the structure of the Large segment of the market for 50 Hz HDGTs assuming a range between 200 and 330 MW. In that segment Alstom is present with the GT26, GE offers the 9F.03 and the 9F.05, Ansaldo offers the AE94.3A, Siemens offers the SGT5-4000F and MHPS offers the M701F4.
- (441) The assumption about the upper threshold of the Large segment favours the Parties' position. Alstom, in its internal documents, considers 320 MW as an upper threshold for the Large segment.³⁷⁹ This would exclude MHPS M701F4

³⁷⁹

See Form CO, paragraph 592.

from the Large segment and include it in the Very Large segment instead, which would result in a very residual presence of MHPS and a stronger position of the Parties in the Large segment (Annex II presents market shares based on Alstom's segmentation).

- (442) In the Large segment most of the projects are for CC.³⁸⁰ Therefore the conclusions for the overall market are quite similar to the conclusions for the CC segment.
- (443) In the EEA, the combined market shares of the Parties in the Large segment of market for 50 Hz HDGTs correspond to [50-60]% in the period 2004Q2-2014Q1 (comprising [number of tenders] projects), with an increment of [20-30]%. Before the Transaction GE and Alstom represent two of the three biggest competitors. Post-Transaction the merged entity would be the clear market leader, with Siemens as its largest competitor with a market share of [20-30]%. Taking into account the period of 2009Q2-2014Q1, therefore comprising only a total of [number of tenders] projects, the combined market shares of the Parties are even higher ([50-60]%).
- (444) Ansaldo would appear well behind the two main competitors with market shares of [10-20]% in the EEA. MHPS would be by far the smallest player in the EEA with a market share of [0-5]%.

Table 11: Segment shares in the Large segment of the market for 50 Hz HDGTs in the EEA

	CC (2009Q2-2014Q1)		CC (2004Q2-2014Q1)	
	[[...] projects]		[[...] projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[20-30]%	[20-30]%	[20-30]%	[20-30]%
Alstom	[20-30]%	[20-30]%	[20-30]%	[20-30]%
GE+Alstom	[50-60]%	[50-60]%	[50-60]%	[50-60]%
Ansaldo	[5-10]%	[5-10]%	[10-20]%	[10-20]%
MHPS	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Siemens	[30-40]%	[30-40]%	[20-30]%	[20-30]%
Total	[...]	[...]	[...]	[...]

Source: McCoy.

- (445) The pre-merger levels of concentration in the Large segment of the EEA market for 50 Hz HDGTs are in the range of 2452 to 2704, depending on the period considered. The delta associated to the Transaction would be in the range of 1383 to 1637. This implies that the Large segment of the market for 50 Hz HDGTs in the EEA is concentrated and that the Transaction would have a significant impact in terms of market shares. In fact, post-Transaction, the Large segment of the market for 50 Hz HDGTs in the EEA would be characterised by the presence of two significant competitors (GE and Siemens) and two minor competitors (Ansaldo and MHPS).

³⁸⁰

In the EEA, no Large HDGT was sold for SC in the period 2004Q2-2014Q1, while worldwide SC projects correspond to only 6% of the total number of projects.

Table 12: HHI indexes under the possible definitions of the Large segment of the market for 50Hz HDGTs in the EEA

	Pre	Post	Delta
CC (2009Q2-2014Q1)	2704	4341	1637
CC (2004Q2-2014Q1)	2452	3835	1383

Source: Commission's services calculations based on McCoy.

- (446) As regards the Large segment of the worldwide (excluding China and Iran) market for 50 Hz HDGTs, the combined market shares of the Parties would be in a range between [50-60]% and [50-60]% if all projects or only CC projects alone are included. The overlap would amount to [10-20]%. The Transaction would bring together the number one and number three competitors in the market, thus strengthening the market leadership of GE. Siemens would be the second largest player with more than [20-30] percentage points behind (with a market share between [30-40]% and [30-40]%). Ansaldo and MHPS would be well behind, with shares in the range of [5-10]% to [5-10]% and [5-10]% to [5-10]%, respectively.
- (447) If China and Iran were to be included in the relevant geographic market, the combined market shares of the Parties would still be above [40-50]% if all projects or only CC projects alone were included (see Annex II).
- (448) As regards the SC segment, there are very few observations (only nine projects were tendered), and thus market shares are less meaningful. Despite this, the Commission observes that the combined market share of the Parties is equal to [30-40]%.

Table 13: Segment shares in the Large segment of the market for 50 Hz HDGTs worldwide, excluding China and Iran (2009Q2-2014Q1)

	SC+CC		CC		SC	
	[[...]] projects		[[...]] projects		[[...]] projects	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[40-50]%	[40-50]%	[40-50]%	[40-50]%	[20-30]%	[20-30]%
Alstom	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%	[10-20]%
GE+Alstom	[50-60]%	[50-60]%	[50-60]%	[50-60]%	[40-50]%	[30-40]%
Ansaldo	[5-10]%	[5-10]%	[5-10]%	[5-10]%	[10-20]%	[10-20]%
MHPS	[5-10]%	[5-10]%	[5-10]%	[5-10]%	[0-5]%	[0-5]%
Siemens	[30-40]%	[30-40]%	[20-30]%	[30-40]%	[40-50]%	[40-50]%
Total	[...]	[...]	[...]	[...]	[...]	[...]

Source: McCoy.

- (449) The pre-merger HHI levels in the worldwide market are very high (above 3000 for any of the possible segmentations), as a result of the highly concentrated

nature of the market. In fact, these HHI values are even higher than in the EEA given the very strong presence of GE at the worldwide level. The deltas associated to the Transaction are above 950 when considering all projects or only CC projects. Thus, the Transaction is likely to enhance market power, and in particular for the CC segment, which is the most relevant and increasing segment of the Large HDGTs.

Table 14: HHI indexes under the possible definitions of the Large segment of the market for 50Hz HDGTs worldwide (excluding China and Iran)

	Pre	Post	Delta
SC+CS	3121	4092	971
CS	3206	4181	975
SC	3035	3770	735

Source: Commission's services calculations based on McCoy.

8.4.2.3. Very Large segment

- (450) In line with the previous section on the Large segment, the Commission considers that the Very Large segment of the market for 50 Hz HDGTs comprises the HDGTs with an output range above 330 MW. The Very Large segment thus includes GE with the 9HA.01 and 9HA.02, Siemens with the SGT5-8000H and MHPS with the M701J and M701F5.
- (451) The Very Large HDGTs constitute a new segment. Over the period 2009-2014Q1, only 13 Very Large HDGTs were sold at worldwide level (excluding China and Iran), and only 3 at the EEA level. Segment shares are provided in Table 15 for the sake of completeness but are not yet meaningful, and in particular do not properly reflect the competitive pressure exerted in the segment by GE's and Alstom's new HDGTs.
- (452) In fact, aside from the existence of very few observations, the market shares also do not reflect the strength of the recent entries.
- (453) Alstom has entered this segment only very recently and only commenced approaching customers to offer its new GT36 HDGTs in the last few months.
- (454) GE, despite having also entered recently, has already significant market shares (above [30-40]% in the EEA and approximately [20-30]% worldwide), which may constitute evidence of its market power. This is even more apparent when the twelve month period of 2014 is considered. In that case GE's market share is equal to [40-50]% while MHPS drops to [10-20]%, at a worldwide level (see Table 64 in Annex I).

Table 15: Segment shares in the Very Large segment of the market for 50 Hz HDGTs (2009Q2-2014Q1)

	CC EEA ³⁸¹ [[...]] projects]		SC+CC worldwide (excl. China and Iran) [[...]] projects] ³⁸²		CC worldwide (excl. China and Iran) [[...]] projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[30-40]%	[30-40]%	[20-30]%	[10-20]%	[20-30]%	[20-30]%
Alstom	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
GE+Alstom	[30-40]%	[30-40]%	[20-30]%	[10-20]%	[20-30]%	[20-30]%
Ansaldo	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
MHPS	[0-5]%	[0-5]%	[40-50]%	[40-50]%	[30-40]%	[30-40]%
Siemens	[60-70]%	[60-70]%	[40-50]%	[40-50]%	[40-50]%	[40-50]%
Total	[...]	[...]	[...]	[...]	[...]	[...]

Source: McCoy.

8.4.2.4. Medium segment

- (455) The Medium segment of market for 50 Hz HDGTs includes the 50 Hz HDGTs with an output range between 90 and 200 MW. In the Medium segment of the market for 50 Hz HDGTs Alstom is present with the GT13E2, GE offers the 9E.03, Ansaldo offers the AE94.2 and the AE94.2K, MHPS offers M701DA and Siemens offers the SGT5-2000E. GE's 9E.04 is still not reflected in the market shares since it has only started to be offered in 2014.
- (456) Given the small number of tenders for Medium HDGTs in the EEA in the last five years,³⁸³ the Commission's analysis focuses only on the 2004Q2-2014Q1 period. However, even on that basis there are only [number of tenders] projects overall, [number of tenders] in CC and [number of tenders] in SC. Therefore, the analysis of market shares in the Medium segment in the EEA is less meaningful. Despite this, the Commission still considers it relevant to present the market shares of the Parties and its competitors at the EEA level.
- (457) In the EEA, the combined market share of the Parties in the overall Medium segment of the market for 50 Hz HDGTs is equal to [60-70]% in the period 2004Q2-2014Q1, with an increment of [20-30]%. Post-Transaction the merged entity would be the leader, with Ansaldo and Siemens behind. MHPS is not present in the EEA in the Medium segment.

³⁸¹ There was no Very Large HDGT sold in the EEA in the period 2004Q2-2009Q1 and no SC Very Large project was tendered between 2004Q2 and 2014Q1 in the EEA.

³⁸² There were only two SC projects worldwide in the Very Large segment, both won by MHPS.

³⁸³ In the period 2009-2014Q1 only two Medium HDGT were sold in the EEA, both by Ansaldo.

- (458) As regards CC only, there is no overlap in the EEA since Alstom has not sold any CC Medium HDGT in the last 10 years. As regards SC only, the combined market share of the Parties is equal to [70-80]% in the period 2004Q2-2014Q1, with an increment of [30-40]%. Post-Transaction the merged entity would be the clear leader, with Ansaldo and Siemens behind.

Table 16: Segment shares in the Medium segment of the market for 50 Hz HDGTs in EEA (2004Q2-2014Q1)

	SC+CC [[...] projects]		CC [...]8 projects]		SC [[...] projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[50-60]%	[40-50]%	[70-80]%	[60-70]%	[40-50]%	[30-40]%
Alstom	[10-20]%	[20-30]%	[0-5]%	[0-5]%	[30-40]%	[30-40]%
GE+Alstom	[70-80]%	[60-70]%	[70-80]%	[60-70]%	[70-80]%	[70-80]%
Ansaldo	[10-20]%	[10-20]%	[20-30]%	[20-30]%	[10-20]%	[10-20]%
MHPS	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Siemens	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%
Total	[...]	[...]	[...]	[...]	[...]	[...]

Source: McCoy.

- (459) More projects have been completed in the overall Medium segment of the worldwide (excluding China and Iran) market for 50 Hz HDGTs. The market share data for the Medium segment can thus be considered more meaningful.
- (460) Worldwide, the Transaction would result in the merger of the first and fourth player in the Medium segment. The combined market share of the Parties would be equal to [60-70]%, with an overlap of [10-20]%. Siemens would be the second largest player with a market share equal to [20-30]% and Ansaldo the third player with [10-20]% market share. MHPS would be well behind with a [0-5]% market share.
- (461) As regards the CC segment, the combined market share of the Parties would be equal to [60-70]%. Siemens would be the second largest player with [20-30]% market share. Ansaldo and MHPS would have smaller market share in the range of [0-5]% to [5-10]%.
- (462) As regards the SC segment, the combined market share of the Parties would be equal to [60-70]%. Ansaldo and Siemens would be the second and third largest player with a market share equal to [20-30]% and [10-20]%, respectively. MHPS would be absent from this segment.
- (463) In case China and Iran would be included in the relevant geographic market combined market shares of the Parties would still be above [40-50]% for any product market configuration (see Annex II).

Table 17: Segment shares in the Medium segment of the market for 50 Hz HDGTs worldwide, excluding China and Iran (2009Q2-2014Q1)³⁸⁴

	SC+CC		CC		SC	
	[[...]] projects]		[[...]] projects]		[[...]] projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[50-60]%	[50-60]%	[50-60]%	[40-50]%	[60-70]%	[50-60]%
Alstom	[5-10]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%	[5-10]%
GE+Alstom	[60-70]%	[60-70]%	[60-70]%	[60-70]%	[60-70]%	[60-70]%
Ansaldo	[10-20]%	[10-20]%	[0-5]%	[0-5]%	[10-20]%	[20-30]%
MHPS	[0-5]%	[0-5]%	[5-10]%	[5-10]%	[0-5]%	[0-5]%
Siemens	[10-20]%	[20-30]%	[20-30]%	[20-30]%	[10-20]%	[10-20]%
Total	[...]	[...]0	[...]	[...]	[...]	[...]

Source: McCoy.

- (464) The pre-merger concentration levels of the Medium segment of the worldwide market for 50 Hz HDGTs are above 3000 across all possible segmentations. The delta associated to the Transaction would be above 950. This implies that the Medium segment of the market for 50 Hz HDGTs is highly concentrated and that the Transaction would have a significant impact in terms of market shares.

Table 18: HHI indexes under the possible definitions of the Medium segment of the market for 50Hz HDGTs worldwide, excluding China and Iran

	Pre	Post	Delta
SC+CC	3774	4759	985
CC	3307	4882	1575
SC	3471	4708	1237

Source: Commission's services calculations based on McCoy.

8.4.3. Post-Transaction the merged entity would have large shares on production capacity

- (465) While production capacities should not be regarded as market shares, several respondents to the market investigation stress their relevance where the demand is high. In fact, although there were no capacity constraints in recent years, it has already occurred periodically in the past. For instance an Alstom internal document, shown in Figure 19, shows that production reached maximum capacity in the last quarter of 2011.

³⁸⁴

In the period 2009Q2-2014Q1 only two Medium HDGT were sold in the EEA, both by Ansaldo.

Figure 19: OEM's annual GTs capacity and production per quarter

[extract from internal document including ALSTOM's estimates of competitor capacity shares]

Source: Annex 225, slide 17.

- (466) Competitors also mention periods of capacity constraints: "[...] and its competitors enjoyed a boom time with respect to GTs between 2007 and 2008 since the economy was booming across the globe. Approximately 320 large GTs were ordered in two years. [...] therefore found it difficult to meet demand".³⁸⁵
- (467) During the periods of high demand, an OEM subject to capacity restrictions may not be able to participate in all tenders it would normally participate in. These capacity restrictions would become particularly relevant for the participation of an OEM in tenders involving the award of a large number of HDGTs (four or more) and in projects with a short delivery time. In times of high demand for HDGTs, capacity limitations are also leading to higher prices, according to certain customers.³⁸⁶
- (468) According to Alstom's figures, GE is already the leader in terms of capacity shares. The combined share of the Parties would be [50-60]%, with an overlap of [10-20]%. The merged entity share of production capacity would be substantially higher than the share of its largest competitor: more than double the capacity of Siemens (with [20-30]%), and even more than the capacity of Ansaldo (with [5-10]%) and MHPS (with [10-20]%).

Table 20: Worldwide HDGT annual production capacity shares, based on Alstom's values

	HDGTs capacity	%
GE	[...]	[40-50]%
Alstom	[...]	[10-20]%
GE+Alstom	[...]	[50-60]%
Ansaldo	[...]	[5-10]%
MHPS	[...]	[10-20]%
Siemens	[...]	[20-30]%
Total	[...]	100%

Source: Annex 225, slide 17.

- (469) To check the accuracy of the previous values, the Commission conducted a market reconstruction exercise. Based on this exercise, the combined share of total production capacity of the Parties would reach [50-60]%. This is similar to the value estimated by Alstom in its internal document.

³⁸⁵ See competitor's reply to the Commission's Request for Information, 26.03.2015, question 18.

³⁸⁶ See replies to question 178 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

Table 21: Worldwide HDGT annual production capacity shares

	Maximum capacity in #GT	Capacity shares %
GE	[...]	[30-40]%
Alstom	[...]	[10-20]%
GE+Alstom	[...]	[50-60]%

Source: Commission's services calculations based on information provided by the Parties (in reply to questions 16 and 17 of the Commission's Request for Information N° 13,23.01.2015) and competitors³⁸⁷.

8.4.4. Post-Transaction the merged entity would have very large shares on installed base increasing the difference to the second largest OEM

- (470) The Commission has previously considered market shares of the merging parties on the basis of their installed base as a relevant complementary indicator for market strength "[g]iven the lumpy nature of the market and the variations in market demand, and as a significant proportion of the total gross profits in this business are generated by aftermarket services provided by the [...] OEMs".³⁸⁸
- (471) The shares in terms of installed capacity are a good indication of OEMs positioning in the market given the high importance of long-term reputation and track record in the market for 50 Hz HDGTs. Moreover, the installed base is of high relevance, as described in Recital (390), namely as a source of scale for sourcing, information, innovation, sales opportunities and money. This was particularly mentioned by one OEM during market investigation.
- (472) GE already accounts for [50-60]% of the total installed base of worldwide 50 Hz HDGTs, leaving its largest competitor far behind (Siemens with [20-30]%). Alstom will add another [10-20]% to the installed base, with the combined share of the Parties reaching [60-70]%, more than three times the installed base of Siemens, and MHPS and Ansaldo having only limited installed bases in 50 Hz.³⁸⁹
- (473) As regards the EEA, GE accounts for [40-50]% of the total installed base to which it would add [10-20]% from Alstom. The combined share of the Parties would reach [60-70]%, leaving its largest competitor far behind (Siemens with [20-30]%). MHPS and Ansaldo have only limited installed bases in the EEA.

³⁸⁷ See competitors' replies to Commission Request for Information, 19.12.2014.
³⁸⁸ Case M.3148 - Siemens/Alstom Gas and Steam Turbines, paragraph 34.
³⁸⁹ These figures relate to 50Hz HDGTs (aeroderivative GTs and unknown projects excluded).

Table 22: Installed base of 50 Hz HDGTs shares

	EEA	Worldwide
GE	[40-50]%	[50—60]%
Alstom	[10-20]%	[10-20]%
GE+Alstom	[60-70]%	[60-70]%
Ansaldo	[5-10]%	[0-5]%
MHPS	[0-5]%	[5-10]%
Siemens	[20-30]%	[20-30]%

Source: Commission's services calculations based on Annex 2499.

8.4.4.1. Impact of the increase in the installed base on the likelihood of GE winning future tenders

- (474) During the Commission's investigation some competitors argued that by reinforcing the advantages already enjoyed by GE in having the largest installed base and in distinguishing itself even further from the competition, the Transaction would increase the likelihood of GE winning over repeat customers and enjoying more success with all other customers.
- (475) Firstly, competitors argued that the increase of the merged entity dimension is likely to result in worse sourcing conditions for competitors arising from the deterioration of their negotiation position vis-à-vis input suppliers when compared with GE's negotiation position.
- (476) In fact, the main drivers of sourcing needs are the spare parts for the installed base. This implies that GE is the OEM with higher scale in the sourcing of inputs. The majority of competitors confirmed that GE is able to access inputs at better conditions, although only few customers stated that GE has a clear advantage in sourcing inputs for HDGTs.³⁹⁰
- (477) One OEM explains that *"GE is of an order of magnitude bigger than [...]. This implies high differences in prices of sourcing materials"* and that it *"estimates a delay caused by suppliers not giving priority to the OEM in the order of 1 to 5 months and a possible costs increase of 10-15% of such component"*.³⁹¹ Another OEM explains that *"GE's high demand in turbine blades and vanes already enables it to benefit from preferential treatment by Doncasters, Alcoa Howmet and PCC Airfoils. GE may indeed be capable of effectively fully blocking the capacity of one of the suppliers for extended periods of time (indeed, up to a year)"*.³⁹²

³⁹⁰ See replies to question 113 of Phase II Questionnaire Q7 to customers Gas fired power plant and to question 50 of Phase II Questionnaire Q10 to competitors on the gas business.

³⁹¹ See competitor's reply to the Commission's Request for Information, 27.03.2015, questions 15 and 26.

³⁹² See competitor's reply to the Commission's Request for Information, 26.03.2015, question 19.

- (478) On the other hand, another OEM also explains that it *"has never been in a position whereby it has not been able to obtain inputs or only obtained them at worse conditions as a result of its size"*.³⁹³
- (479) One input supplier did not confirm that prices are lower for bigger OEMs. According to this supplier *"the prices for products are negotiated on share-based agreements, namely customers commit on the share of their total purchases that will be made with a specific supplier (rather than on volumes)"*.³⁹⁴ However, another input supplier confirms the statements of the OEMs, namely that *"typically the customer that demands a lower volume is required to pay a higher price per unit"*.³⁹⁵
- (480) As regards the impact of the Transaction, competitors suggest they might be subject to worse market conditions post-Transaction. One OEM explains that *"Post transaction GE will have considerably enhanced powers of negotiation vis-à-vis vendors because of the scale up of purchasing volume following the transaction. This means that in relative terms compared to GE, [...] and other OEMs would have weaker powers of negotiation with a vendor and would be disadvantaged in terms of contractual terms, such as delivery lead time, prices of inputs, etc"*.³⁹⁶
- (481) Another OEM explains that post-Transaction *"an even larger part of the demand would be in the hands of GE and Alstom. Turbine blades and vanes are not only required for new units but also for servicing and replacement parts. The increase in demand from GE will lead to higher prices, and likely longer delivery times or even delays in delivery of turbine blades and vanes for other OEMs"*.
- (482) Not all input suppliers confirmed this potential behaviour post-Transaction. While one input supplier states that *"smaller customers might be indirectly affected [by the Transaction] in the sense that they will have to accept longer delivery times, given [...] capacity constraints and considering the expected enhancement in the ability of GE and Alstom to negotiate shorter delivery conditions. The new GE/Alstom entity may "move up the queue" and other suppliers move "down". Moreover, it is also realistic that possible negative effects will exist on certain other commercial terms and conditions for smaller customers"*,³⁹⁷ the other input supplier does not concur: *"the increased size of GE will not have any impact on the commercial conditions offered by [...]to other OEMs or on their supply relationships"*.³⁹⁸
- (483) An increase in the level of restrictions in capacity experienced by input suppliers will result in delays that affect the Terms of Delivery for other OEMs. In fact, capacity restrictions force input suppliers to prioritise some OEMs requirements. With this respect, one of the input suppliers states that it *"is currently utilizing less than 75% of its production capacity in the gas turbine*

³⁹³ See competitor's reply to the Commission's Request for Information, 26.03.2015, question 19.

³⁹⁴ See minutes of the conference call held with a supplier of 8 April 2015.

³⁹⁵ See minutes of the conference call held with a supplier of 1 April 2015.

³⁹⁶ See competitor's reply to the Commission's Request for Information, 26.03.2015, question 21.

³⁹⁷ See minutes of the conference call held with a supplier of 1 April 2015.

³⁹⁸ See minutes of the conference call held with a supplier of 8 April 2015.

segment"³⁹⁹, while the other confirms that "has capacity constraints with respect to the amounts of parts that it can supply to HDGT OEMs".⁴⁰⁰

- (484) In the Reply to the Statement of Objections the Notifying Party argues that European-based input suppliers currently have significant free capacity and some of them have recently increased their capacity for high-precision metal parts (such as turbine blades and vanes) or are in the process of doing so. Moreover, MHPS produces the majority of its requirements regarding HDGT turbine blades and vanes through affiliated companies. Therefore, according to the Notifying Party, no negative effects would result regarding the sourcing of inputs.
- (485) On balance, the Commission found insufficient evidence supporting the claims of some competitors as regards the impact of the Transaction in terms of deterioration of their sourcing conditions.
- (486) Secondly, competitors argued that the increase in GE's installed base would lead to a higher likelihood of the merged entity winning tenders with repeat customers, in particular those that have both GE and Alstom's HDGTs in their installed base.
- (487) According to the Commission's investigation, the majority of customers maintain HDGTs of at least two OEMs in their fleet.⁴⁰¹ However, a large number of customers also confirmed that having bought a HDGT from a given OEM in the past constitutes an important criterion for the selection of that OEM in a future tender.⁴⁰² Competitors shared this view.⁴⁰³
- (488) Some customers explain that every competition is evaluated on a stand-alone basis, but many others state that experience with the existing HDGT supplier would definitely play an important role when considering procuring a new plant. Competitors explain that "*customer will gain more internal knowledge about the equipment applied and can make use of scale advantages as for example with spare part management*"⁴⁰⁴, "*such selection enables for customers to reduce the cost for products and supply parts. With purchasing many turbines and the spare parts, discounts will also be applied*"⁴⁰⁵ and that "*customers are more comfortable with what they know. Even with a new built HDGT, they will have a comfort with the service and reliability of the GTs from their current fleet*".⁴⁰⁶
- (489) The addition of Alstom's installed base to GE's installed base would increase the number of HDGTs in the installed fleet of many customers, who had bought from both GE and Alstom in the past.

³⁹⁹ See minutes of the conference call held with a supplier of 8 April 2015.

⁴⁰⁰ See minutes of the conference call held with a supplier of 1 April 2015.

⁴⁰¹ See replies to question 103 of Phase I Questionnaire Q1 to customers Gas fired power plant.

⁴⁰² See replies to question 104 of Phase I Questionnaire Q1 to customers Gas fired power plant and to question 107 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁴⁰³ See replies to question 46 of Phase II Questionnaire Q10 to competitors on the gas business.

⁴⁰⁴ See reply to question 46.2 of Phase II Questionnaire Q10 to competitors on the gas business.

⁴⁰⁵ See reply to question 46.2 of Phase II Questionnaire Q10 to competitors on the gas business.

⁴⁰⁶ See reply to question 46.2 of Phase II Questionnaire Q10 to competitors on the gas business.

- (490) On the one hand, the majority of customers do not consider that the likelihood of them selecting the merged entity in a future tender would increase after the Transaction.⁴⁰⁷
- (491) On the other hand, an OEM argues that the Transaction will have the following three effects on the likelihood of the merged entity being the successful bidder⁴⁰⁸:
- (a) Installed-base effect: the merged entity will have a larger installed base with some multi-sourcing customers than the stand-alone competitors, which may consequently increase the likelihood of gaining additional business from these customers;
 - (b) Brand effect: GE might have a stronger brand reputation than Alstom, which, in combination with other attributes of Alstom's offer, may allow the merged entity to win more projects; and
 - (c) Competition effect: the merger reduces the number of competitors in the market, which may make winning projects easier.
- (492) Given these three effects, the OEM presented an econometric study that estimates that the merged entity combined post-Transaction market share on the market for 50 Hz HDGTs in the Member States would be [60-70]%. This corresponds to a higher share of project wins representing an increase of [5-10] percentage points over the sum of the stand-alone values of GE and Alstom pre-merger ([50-60]%). At a worldwide 50 Hz (excluding China and Iran) level, the study estimates that the merged entity combined post-Transaction market share would be [50-60]%, instead of [40-50]% corresponding to the sum of the Parties current market shares.
- (493) However, although a larger installed base can bring advantages in terms of increased scale, source of information, source of innovation, sales opportunities and revenues, as described in Section 8.3.2, some of these effects would be weaker in the current case given the fact that the Transaction would result in the sum of installed bases of very different platforms.
- (494) The Notifying Party argues that each tender is a new contest and that the installed base does not guarantee future success in a dynamic competition setting. It also argues that the revenues derived from the aftermarket do not guarantee future success and that there are few advantages associated to a larger installed base. Therefore, it argues that the Commission's claims on the advantages in competing for repeat customers are unfounded.
- (495) In the Reply to the Statement of Objections the Notifying Party also explains that a prediction of a market share increase beyond the joint pre-merger market share of the Parties does not indicate that the Transaction would have an anticompetitive effect. Furthermore, the Notifying Party argues that the analysis included in the above mentioned study presented by the OEM does not establish the claimed market share result. The claim is instead based on an

⁴⁰⁷ See replies to question 108.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.
⁴⁰⁸ See studies submitted by competitor.

unsubstantiated assumption on the impact of the Transaction on the installed base of the merged entity.

- (496) On balance, the Commission could not find sufficient evidence supporting the claims of some competitors as regards the impact of the Transaction on their likelihood of winning a future tender as a result of the increase in the installed base of the merged entity.

8.4.5. *GE and Alstom have significant shares in R&D*

- (497) The market for 50 Hz HDGTs is R&D and capital intensive given the high importance of innovation.⁴⁰⁹ Therefore, the Commission also analyses the shares of the Parties in terms of the total R&D investment and headcount in the industry.
- (498) According to the market reconstruction conducted by the Commission, GE and Alstom have particular importance as innovators in the market for 50 Hz HDGTs given their levels of R&D spend and headcount. In fact, total R&D spend by the Parties represents [60-70]% of total HDGT-related spend by all OEMs over the period 2013 to 2015. As regards R&D headcount, the Parties combined share also corresponds to [60-70]% of the total headcount.

Table 23: HDGT-related R&D spend⁴¹⁰ (in EUR million) and headcount (in full time equivalent number of employees) by OEM

	Headcount 2014	% of all OEM's headcount	Spend 2013	Spend 2014	Spend 2015	Average 2013/15	Average 2013/15 % of all OEMs' spend
GE	[GE R&D headcount]	[30- 40]%	[GE R&D spend]	[GE R&D spend]	[GE R&D spend]	[GE R&D spend]	[30- 40]%
Alstom	[ALSTOM R&D headcount]	[20- 30]%	[ALSTOM R&D spend]	[ALSTOM R&D spend]	[ALSTOM R&D spend]	[ALSTOM R&D spend]	[30- 40]%
GE+Alstom	[combined R&D headcount]	[60- 70]%	[combined R&D spend]	[combined R&D spend]	[combined R&D spend]	[combined R&D spend]	[60- 70]%

Source: Commission's services calculations based on information provided by the Parties⁴¹¹ and competitors⁴¹².

⁴⁰⁹ See replies to question 43 of Phase I Questionnaire Q2 to competitors on the gas business.

⁴¹⁰ R&D spend includes R&D costs and investments.

⁴¹¹ See GE's reply to the Commission's Request for Information N° 1, 04.08.2014, questions 34 and 35; see GE's reply to the Commission's Request for Information N° 13, 23.01.2015, questions 30, 21, 32 and 33.

⁴¹² See Competitors' replies to Commission's Request for Information, 22.01.2015.

8.4.6. Conclusions

- (499) In view of the above, the Commission concludes that pre-merger GE is already the market leader in terms of market shares in the worldwide (excluding China and Iran) market for 50 Hz HDGTs as well as in its different segments (with market shares above [40-50]%). The Very Large segment is an exception given that GE only entered very recently, but also even there GE has already gained a significant share in that segment. The worldwide market for 50 Hz HDGTs is currently very concentrated pre-merger, the same being true for each of its segments.
- (500) In the EEA, GE and Siemens have similar positions, Alstom being very close. The market is also very concentrated, although to a lesser extent than worldwide.
- (501) The Transaction would add significant market share from Alstom: around [10-20] percentage points at the worldwide level and more than [20-30] percentage points in the EEA. The delta associated to the Transaction is thus significant, which in turn implies that the Transaction is likely to enhance market power. Post-Transaction, GE would have very large shares (almost always above [50-60]%, with the exception of the Very Large segment where Alstom has no sales yet), with a large difference for the second player, in already highly concentrated markets.
- (502) As regards the production capacity and the installed base, the Transaction would also lead to very large market shares for GE and a significant increase of the differences to the second player in the market.
- (503) In conclusion, and given the very large post-Transaction market shares of the merged entity and the very high barriers to entry and expansion that characterize the market, the Transaction is likely to give significant market power to the merged entity and thus provide it with the ability and incentives to significantly impede the conditions of competition in this market. This is particularly true in view of the fact that GE and Alstom are close competitors in the Large and Very Large segments, as discussed in the next Section.
- (504) The Transaction would also imply the elimination of a strong competitor as regards R&D spend (accounting for more than 30% of total industry R&D spend) and headcount (accounting for more than 20% of total R&D headcount) with a significant negative impact on the industry innovation.

8.5. The Transaction eliminates a significant and close competitor of GE

- (505) As already explained, according to paragraph 24 of the Horizontal Merger Guidelines *"mergers in oligopolistic markets involving the elimination of important competitive constraints that the merging parties previously exerted upon each other together with a reduction of competitive pressure on the remaining competitors may, even where there is little likelihood of coordination between the members of the oligopoly, also result in a significant impediment to competition"*.
- (506) According to paragraph 28 of the Horizontal Merger Guidelines, *"the higher the degree of substitutability between the merging firms' products, the more likely it is that the merging firms will raise prices significantly. [...] the fact*

that rivalry between the parties has been an important source of competition on the market may be a central factor in the analysis".

- (507) In addition, according to paragraph 29 of the Horizontal Merger Guidelines, "*in bidding markets it may be possible to measure whether historically the submitted bids by one of the merging parties have been constrained by the presence of the other merging party*".
- (508) Section 8.3.1 includes a description of the current HDGT product portfolios of the various OEMs active in the market for 50 Hz HDGT.
- (509) This section concentrates on showing that (i) Alstom is a significant player and a close competitor of GE (and Siemens), both from a technological and commercial point of view, in the Large and Very Large segments of the market for 50 Hz HDGTs; (ii) MHPS is a more distant competitor; and (iii) Ansaldo is an even more distant competitor.
- (510) The market for 50 Hz HDGTs is a highly differentiated market. Whilst there are five large competitors in the overall market for 50 Hz HDGTs, depending on the output range considered by a customer, there may be only two, three or four OEMs with a machine able to compete. As such, closeness of competition will need to be analysed in greater details separately for each segment (Large, Very Large and Medium). This will be done through both qualitative and quantitative (bidding data) analysis. Although a segment analysis is warranted, OEMs present certain typical characteristics that allow for some differentiation to be drawn between them in the overall market for 50Hz HDGTs across segments.

8.5.1. The Transaction eliminates a significant and close competitor of GE in the overall market for 50 Hz HDGTs

8.5.1.1. GE and Siemens are market leaders, offering broad product portfolios globally, with strong performance across most technical criteria, including operational flexibility

- (511) Both GE and Siemens have a large portfolio of HDGTs and a worldwide market presence. Both GE's and Siemens' machines are typically regarded as very reliable and based on proven technology.⁴¹³
- (512) As regards operational flexibility performances, GE and Siemens have developed machines which are relatively close to Alstom's machines in terms of part-load efficiency and emissions. As such, Alstom, GE and Siemens are largely targeting the same profile of customers. Importantly, internal documents of Alstom show that Alstom typically benchmarks its own models (in terms of technical performance and cost) against those of GE – and to a lesser extent those of Siemens.
- (513) GE, in order to react to customers' demand for more HDGT operational flexibility, developed the FlexEfficiency50 package. The FlexEfficiency50 package stresses a number of elements of operational flexibility, including high part-load efficiency, low turndown, fast ramping rate from turndown to base-load, and fast start-up. On GE's FlexEfficiency50, Alstom, in its internal documents, considers that "*GE launched in 2011 its latest 9F product for the*

⁴¹³ See replies to question 102 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

50 Hz, packaged into a single-shaft CCPP it calls FlexEfficiency50, which virtually looks identical from a design concept and arrangement to our KA26-1", showing that Alstom perceived GE as a player targeting operational flexibility in a similar way as Alstom did.

- (514) GE, in its internal emails, considered Alstom as a close competitor from a technical performance point of view: [contents of GE internal emails concerning Alstom]. The fact that Alstom, GE and Siemens are close competitors emerges also from the bidding analysis described in details in Section 4-6 of Annex I.
- (515) In its internal documents, Siemens benchmarks GE, MHPS and Alstom's HDGTs (whereas Ansaldo is not listed among the competitors).⁴¹⁴

8.5.1.2. Alstom is a significant global player, offering a full portfolio of HDGTs with best in class operational flexibility performances and best in class CCPP equipment

(i) Alstom offers a full portfolio of 50Hz HDGTs and is active globally

- (516) The Notifying Party argues that although historically Alstom has had some success in the EEA, its global position remains small.⁴¹⁵
- (517) The Notifying Party also claims that Alstom's performance has deteriorated over the last few years in that Alstom's share of sales has been declining⁴¹⁶
- (518) Finally, the Notifying Party argues that Alstom is a relatively small competitor in the market due to gaps in its portfolio (lack of a Very Large offering so far) and absence from significant portions of the market (weakness in the US and recent entry in China).
- (519) The Commission firstly notes that, over the period 2009Q2-2014Q1, Alstom was the number three player by market share both in the worldwide market ([10-20]% share) and EEA market ([20-30]%) for 50 Hz HDGT, following GE and Siemens (see Section 8.4.2 for details).
- (520) Contrary to the Notifying Party's claims, Alstom's market shares have not been declining over the recent years, but remained stable or even increased. Alstom's market shares (in MW) in the overall market for 50 Hz HDGTs were [10-20]% over 2012-2014 at global level⁴¹⁷ (the same as the [10-20]% share over 2009Q2-2014Q1) and [40-50]% at EEA level (against [20-30]% over 2009Q2-2014Q1).
- (521) It should be noted that the fact that Alstom has been able to seize a considerable shares of the EEA market is itself a sign of strong competitiveness. EEA customers have historically represented the high end of the market and their sophisticated demand has been driving the need for innovation in the industry (for instance recent higher demand for flexibility). As confirmed by the majority of customers and competitors, Alstom is one of

⁴¹⁴ See competitor's reply to the Commission's Request for Information, 20.03.2015, Annex 1.6, pages 11, 18.

⁴¹⁵ See Form CO, paragraphs 412-413.

⁴¹⁶ See Form CO, paragraph 399.

⁴¹⁷ Excluding China and Iran.

the OEMs whose offering in the Large and Very Large segments is particularly well suited for the typical needs of EEA power generation customers.⁴¹⁸

- (522) Contrary to other competitors, Alstom's business development efforts do not have any specific regional focus as Alstom tries to be active on a worldwide level. When comparing OEMs, significant differences emerge in terms of their geographic outreach.
- (523) Alstom has the ambition to be a global player and this is reflected in its bid participation patterns in the Large segment. As discussed in Annex I, for competitive tenders in the Large segment, Alstom won in 11 countries whereas MHPS and Ansaldo won in 6 and 2 countries respectively. Therefore Alstom seems to have a broader reach of countries than MHPS and even broader than Ansaldo.
- (524) Alstom, whose natural focus market is Europe, achieved [90-100]% of its business outside of Europe in the last 5 years ([number of projects] projects). Alstom was for instance successful in Asia, where it was awarded ([number of projects] projects over the last 5 years ([20-30]% of its global business in number of projects).
- (525) By contrast, MHPS, whose domestic markets are in Asia, achieved less than 10% of its overall business outside of Asia over 2009-2014 ([number of projects]).
- (526) Finally, as regards the Notifying Party's claim that Alstom's portfolio has significant gaps, the Commission notes that Alstom had several product development projects pre-merger that would have allowed Alstom to cover "*about 70-75% of the total worldwide HDGT markets*" (including 60Hz regions as well as small gas turbines), but as high as [90-100]% of the market for 50Hz HDGTs over 2014-2017 and 2018-2022.⁴¹⁹
- (527) As illustrated by the analysis of market shares above, Alstom is not as big as its competitors GE and Siemens, which occupy either the first or second positions in the market for 50 Hz HDGT and related segments. However, Alstom is a significant third player, on average well ahead of Ansaldo and MHPS.

(ii) Alstom's HDGTs offer best in class operational flexibility and pollutant emission performances in the Large and Very Large segments

- (528) Alstom's unique double combustion chamber technology places Alstom in a unique position in the Large segment as it allows Alstom to offer machines with the highest operational flexibility and lowest pollutant emissions. Alstom's HDGTs are typically used in cycling operation, in markets where the penetration of renewables is high and where gas prices are also high.
- (529) As explained in further detail in Section 8.5.2.2, customers regard Alstom's HDGTs as very flexible and having high power output and high efficiency.⁴²⁰

⁴¹⁸ See replies to question 79 and 98 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴¹⁹ See Annex 1229, slide 13.

⁴²⁰ See replies to question 102 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

- (530) [information on GE's assessment of competition].⁴²¹ [information on GE's assessment of competition]⁴²² [information on GE's assessment of competition],⁴²³: [information on GE's assessment of competition].

Figure 27: CCPP (1x1 configuration) 50Hz plant load time

[extract from internal GE document showing F-class CCGT 50HZ plant load V. time]

Source: Annex 4069, slide 8.

- (531) The same GE document considers the turndown emissions ability and compliance limits in terms of NOx and CO of competitors. GE's internal analysis confirms that [GE findings on competitors in internal GE document]("[quote from internal GE document]") and (iv) [GE findings on competitors in internal GE document].⁴²⁴

Figure 28: Part load emissions competitive landscape

[extract from internal GE document. Chart showing turndown emissions ability / compliance limits NOx & CO]

Source: Annex 4069, slide 48.

- (532) Moreover and as explained in Section 8.5.3, with its new Very Large frame, Alstom is targeting to be the best-in-class in terms of operational flexibility also in the Very Large segment.
- (533) In view of the technological excellence that Alstom has achieved in terms of operational flexibility, its offering focuses on high-tech CCPP applications rather than lower tech SCPP applications.

(iii) Alstom offers market leading complements for CCPP and strong EPC capabilities

- (534) Alstom is one of the few competitors with a strong offering throughout the gas-fired power plant equipment range. In particular, as confirmed also by the majority of customers,⁴²⁵ Alstom has a particularly strong offering of generators and STs in comparison to its competitors. As explained in Section 8.3.1, Alstom can supply the entire power island, namely HDGT, ST, generator and HRSG, as well as the remaining components of the power plant outside the power island (which fall under the BOP). As illustrated in Figure 29, generator and ST, together with the HDGT, account for approximately two thirds of the total cost of the CCPP. In addition to that, Alstom has also capabilities in the BOP and HRSG. As a consequence, Alstom's portfolio covers the entire product scope of a CCPP.

Figure 29: Alstom's scope of activities for CCPP

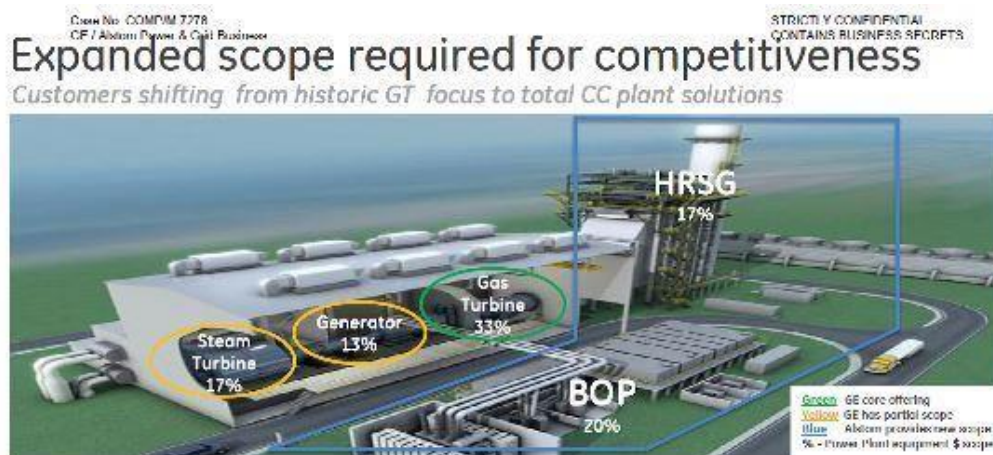
⁴²¹ See Annex 4069.

⁴²² See Annex 4069, slide 8.

⁴²³ See Annex 4069, slide 9.

⁴²⁴ See Annex 4069, slide 48.

⁴²⁵ See replies to questions 131 and 146 of Phase I Questionnaire Q1 to customers of Gas fired power plant.



Source: Annex 9, page 6.

- (535) Apart from Siemens, Alstom is the only other OEM with full EPC capabilities. One of Alstom's main strengths is its capability to offer turnkey solutions for steam power plants and CCGT plants, as well as EPC solutions.⁴²⁶
- (536) GE itself praised Alstom for its global (total power plant and project) capability, its large installed base and its leading fossil and nuclear ST technology when assessing the potential for the deal.⁴²⁷
- (537) A large majority of customers and competitors indicated during the Commission's investigation that Alstom is an important competitor in the overall HDGT area given, among other reasons, the quality of its offering of other components for CCPPs and its EPC and turnkey solution capabilities.⁴²⁸
- (iv) Alstom's significance also stems from a large installed base across the power sector and from a global servicing network**
- (538) Alstom is a significant player not only in the market for 50 Hz HDGTs, but also in the overall power generation markets. As Alstom indicates on its website, "close to 25% of the world's power production capacity depends on Alstom technology and services".⁴²⁹
- (539) Even taking 50 Hz HDGTs on their own, Alstom has an important worldwide installed base of 50 Hz HDGTs ([10-20]%), which is the third largest after those of GE and Siemens and approximately three times bigger than those of MHPS and Ansaldo ([5-10]% and [0-5]% respectively).
- (540) Internal documents from Alstom show the relevance of its installed base for sales opportunities for new products/upgrades. For instance, Alstom's documents show that continuous product development carried out by Alstom can be potentially applied to both the GT26 2011 and its earlier versions. This is the case for example for: (i) a new maintenance scheme discussed by Alstom

⁴²⁶ See replies to question 102 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴²⁷ See competitor's reply to the Commission's Request for Information, 19.12.2014, Annex 1, pages 11 and 18.

⁴²⁸ See replies to question 83 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 72 of Phase I Questionnaire Q2 to competitors on the gas business.

⁴²⁹ <http://www.alstom.com/microsites/power/about-us/>.

[ALSTOM strategic plans. Information concerning time of internal discussions and target customers], and was based on field data analysis from the 2006 rating and earlier rating)⁴³⁰; and (ii) the [name and information on ALSTOM pipeline project].⁴³¹

- (541) As explained above, successful participation in the market for 50 Hz HDGTs also requires a proven track record, which is difficult to achieve and requires a long time to build. One example is the 2011 version of the GT26, which according to Alstom *"Is still lacking the critical 8000OH experience required by certain markets, customers, insurers"*⁴³².
- (542) Access to installed base is a way to gain credibility/reputation to develop new products. For instance, an internal document from Alstom mentions that the retrofit of the MXL2 in [date of order and name of power plant], which has a GT26 HDGT, was an important order to get and improve credibility (in other words achieving 8000 operating hours and 91 starts without incident as of June 4, 2011).⁴³³
- (543) Another Alstom document concludes that GT26 is *"well accepted and recognized, with a steady fleet growth"*, *"issues that have affected the GT26 fleet have been recognized and addressed"*, and *"the continuous development of the GT26 platform fosters the fleet growth and guarantees the competitiveness of the installed base (Flexibility suite, MXL2 upgrade)"*.⁴³⁴
- (544) In fact, Alstom regularly produces reports internally and for GT26 users on the operational data across its entire fleet (including specifically for the fleet-leaders of each rating) to demonstrate that the GT26 is a "proven technology". Data reported in this context includes general operational data (for instance the number of hours of operation, and number of starts), maintenance data (for example the number of major inspections performed), and in some cases very detailed dispatch data [details of information contained in Alstom's GT26 reports.].⁴³⁵
- (545) Alstom can rely on a high-tech broad portfolio of products in the power generation area, which spans across renewables, nuclear and thermal equipment and services. In its internal documents, Alstom estimates that its portfolio covers [70-80]% of the total needs of the overall power market generation. This also implies that Alstom's thermal business can rely on an extensive global sales network, which facilitates its access to customers.

⁴³⁰ See Annex 4893, pages 51-52.

⁴³¹ See Annex 5834, page 37.

⁴³² See Annex 1079.

⁴³³ See Annex 1433.

⁴³⁴ See Annex 4359.

⁴³⁵ See Annex 4360, pages 4-5; see Annex 4361, page 13; see Annex 4358, pages 5, 9, 10-13, 15; see Annex 4359, pages 6-7, 12-17, 20., see Annex 4335.

Figure 30: Alstom's power portfolio covering [70-80]% of the Total Power Market in 2013

[extract from internal ALSTOM document. Chart illustrating the share of various sources of energy (e.g. ST, GTSC, GTCC, nuclear distributed energy) in terms of total GW of total energy market in 2013]

Source: Annex 822, page 21.

8.5.1.3. MHPS focuses on power output and efficiency, offering machines best-suited for base-load operation, and is commercially focused on 60Hz markets and Asia

(i) MHPS focuses on delivering strong output and efficiency, with machines best suited for base load operation

- (546) MHPS' HDGTs typically have high power output and efficiency, thanks to MHPS' success in developing high firing temperature HDGTs. Such turbines are typically used for base-load power generation, including in countries where gas prices are high.
- (547) A HDGT competitor stated that "*MHPS portfolio of engines is very advanced in the steam-cooled direction, achieving high efficiencies. Yet, MHPS' gas turbines are mostly suited to base-load operations*".⁴³⁶
- (548) Customers stress the reliability and high efficiency of the machines as one of the main strengths of MHPS. One major European customer presents MHPS strengths as the following: "*An industry leader in pushing firing temperatures to achieve higher power output and efficiency, though often at the expense of time between major outage intervals on HDGTs.*"⁴³⁷ Another customer explains that MHPS is "*a top in the material technology that allows very high performances at 100% load*".⁴³⁸
- (549) Accordingly, and as also explained by the Notifying Party,⁴³⁹ MHPS made significant efforts to enter the US 60 Hz region, where base-load is the prevailing operational mode. Thanks to the technological characteristics of its machines, MHPS was successful and managed to establish itself as a significant player in that region. MHPS' focus on the market for 60 Hz HDGTs is also evidenced by the fact that MHPS only has one testing facility for 60 Hz machines.

(ii) Bidding analysis shows that MHPS has a strong focus on Asian markets and a scarce presence in the EEA

- (550) MHPS is strategically focused on the 60 Hz market, primarily the 60Hz Asian and North American regions. MHPS for instance only has a full scale testing facility for 60 Hz HDGTs.
- (551) Within 50 Hz regions, MHPS achieved less than 10% of its overall business outside of Asia, its domestic region, over 2009-2014.

⁴³⁶ See minutes of the conference call held with a competitor of 20 March 2015.

⁴³⁷ See reply to question 87.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁴³⁸ See reply to question 87.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁴³⁹ See Form CO, paragraphs 534 – 538.

- (552) Although in absolute terms MHPS' participation in the EEA has increased over the last 5 years, primarily driven by an increased participation in tenders for Very Large HDGTs, the bidding analysis shows that in the EEA MHPS represents a limited competitive constraint in the Medium, Large and even the Very Large segments of the market for 50 Hz HDGTs (see Sections 8.5.2, 8.5.3, 8.5.4).
- (553) The analysis of bidding data in the Large segment shows that MHPS is the number 4 in terms of participations in tenders in the EEA, with a participation rate of [20-30]%, while Alstom participates in [60-70]% of tenders in the EEA. Instead, MHPS seems to focus mainly on China where it participates in [90-100]% of tenders in the Large segment.
- (554) The analysis of bidding data also shows that MHPS has limited interactions with the Parties in the EEA. For the period 2009-2014, Alstom participates in [60-70]% of tenders where GE is participating, while MHPS lags significantly behind with a participation rate of [20-30]%. In addition, for the [number of tenders] where Alstom participates, MHPS participates in [30-40]% of those tenders, while GE and Siemens participate in almost all of those tenders.
- (555) GE submits that the characterization of MHPS as a player with a limited presence in the EEA minimises and understates the global competitive weight of MHPS. Moreover, GE submits that MHPS has been very successful and has been significantly expanding in China, which is the fastest growing market for 50 Hz HDGTs in the world. In the last years, MHPS has become the leading OEM in China. When taking this into account, GE submits that MHPS becomes the number three global player in the market for 50 Hz HDGTs. In any event, according to GE, MHPS is a global player both in the eyes of customers and competitors and should thus be considered as such.⁴⁴⁰
- (556) However, MHPS' advantage linked to the commercial and operational experience in China is limited since it operates there through a licensee in charge of dealing with customers, submitting tenders and managing contractual relationships.⁴⁴¹ Moreover, the fact that MHPS has been successful in China does not necessarily imply that MHPS can likely be successful in other regions. As explained in Section 7.2.3, the market for 50 Hz HDGTs is a highly geographically differentiated market. The characteristics of demand in China are very different from those in the EEA. In China, the preferred operation mode is base-load and thus customers appreciate and require high efficiency and high output machines. As illustrated also in Recital (333), operational flexibility is denoted as "not an evaluation factor" in China, whereas on the contrary it is a very important requirement for EEA customers. Therefore, MHPS' competitiveness and strong position in China cannot be a proxy of MHPS' future competitiveness and likelihood to succeed in other regions, such as the EEA.

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See Reply to the Statement of Objections paragraphs 265-299.

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See MHPS' reply to the Commission's Request for Information, 26.03.2015, question 11.

(iii) Due to its lower performance in operational flexibility, MHPS' offering is less suited for the typical requirements of European customers

- (557) Another explanation of MHPS' limited success in the EEA is linked to the technological characteristics of its products. In fact, MHPS' current offering does indeed not match the typical needs of EEA customers in terms of high operational flexibility requirements. MHPS' machines focus on achieving high efficiency/firing temperature and are intended to be the most suitable for base-load operation. As seen in Section 8.2.3, Europe' predominant operation mode in the next years will likely not be base-load.
- (558) One European customer flags: *"From the technological point of view, MHPS turbines have a very good reputation; the turbines are very reliable and well designed but they are not suited for intermediate/cycling operations"*⁴⁴²
- (559) According to Siemens, *"Mostly because of the environment in the EU in terms of customer demands (flexibility of the technology with high efficiencies), MHPS has in the past not been very successful in bids."*⁴⁴³ and *"MHPS presence in the European market is very limited, because its offering is not competitive in relation to flexibility parameters such as turndown, start-up speed (hot) and ramp-up rate"*.⁴⁴⁴
- (560) MHPS's HDGTs however have shorter maintenance intervals (and thus higher maintenance costs) and are less flexible than other machines, which make them less suitable for mid-merit or peaking operations. A European utility confirmed that *"From the technological point of view, MHPS turbines have a very good reputation; the turbines are very reliable and well designed but they are not suited for intermediate/cycling operations. [...] estimates that it would take MHPS several years to improve its start-up and ramp-up capabilities"*.⁴⁴⁵
- (561) As way of illustration, MHPS' M701F4 start-up speed (hot, CC) is 60 minutes and turndown capacity is 50% of maximum output, while Alstom's GT26's are respectively 30 minutes and 20%.⁴⁴⁶
- (562) A HDGT competitor stated that *"MHPS' M701F4 [...] would probably be the most limited operational flexibility offered currently by OEMs. Given the size of the MHPS machine, its turndown capability of 50% still implies a relatively high level turndown capacity in MW terms, which further limits its flexibility. If MHPS' M701F4 was operated below 50% turndown capability, it would probably not fulfil the emissions requirements in Europe"*.⁴⁴⁷
- (563) These technical characteristics explain to a certain extent MHPS' limited focus on and low penetration in the European market. A HDGT competitor confirmed that *"MHPS presence in the European market is very limited, because its offering is not competitive in relation to flexibility parameters such*

⁴⁴² See minutes of the conference call with customer of 18 March 2015.

⁴⁴³ See competitor's reply to question 78.4 of Phase I Questionnaire Q2 for competitors.

⁴⁴⁴ See minutes of the conference call with competitor of 20 March 2015, paragraph 27.

⁴⁴⁵ See minutes of a conference call with a customer on 18 March 2015.

⁴⁴⁶ See Form CO, paragraph 651, Table 37 and see competitor's reply to the Commission's Request for Information, 26 March 2015, question 40.

⁴⁴⁷ See minutes of a conference call held with a competitor on 20 March 2015 2015.

*as turndown, start-up speed (hot) and ramp-up rate. MHPS' offering is not competitive for cycling operating mode. MHPS' HDGT are primarily designed for base-load operations, which make it a good fit in Asian countries. The sales of MHPS are mainly driven by the high gas prices in Asia so Baseload efficiency is the main driver in the development of the machines. [...] In order to improve the operational flexibility of its machines, even its air-cooled machines, MHPS would have to redesign its machines very significantly. This is expected to take at least 5 years and significant costs".*⁴⁴⁸

- (564) Furthermore GE, in its internal emails considers that MHPS's technological advantages do not lie in its operational flexibility, but are instead based on size, base-load efficiency, or other considerations. Looking at the three MHPS wins in 50Hz outside China and Japan,⁴⁴⁹ the only tender where MHPS won due to technological features of its HDGT is [name of project and location] and the decisive criteria in that tender was [GE internal assessment of competitor] ([GE internal assessment of competitor]).⁴⁵⁰ [GE internal assessment of competitor].⁴⁵¹
- (565) In relation to [name of project] (MHPS's only win in a competitive tender in the EEA since 2009), GE internal documents include a detailed post-mortem assessment of this bid, based on feedback given by the customer ([name of customer]) after the award of the bid. The main factor highlighted by GE to explain MHPS's win appears to be [name of customer] strategy to "de-risk" its position with MHPS, given that this customer already had a MHPS unit in [location of unit], following an earlier transaction with [name of customer].⁴⁵² Awarding the [name of project] bid to MHPS would have therefore helped MHPS build a better service presence in [location of unit] given its currently very limited installed base (with the closest other machines in Europe being in Turkey and Spain). This allegedly would have given "more confidence" to [name of customer] (that is, presumably more confidence in MHPS's ability to support its existing unit in [location of unit], thus "de-risking" [name of customer] position with MHPS). [contents of internal GE documents concerning internal assessment of project].⁴⁵³ There is no evidence in GE's post-mortem on technical parameters used by [name of customer] to decide on the winning bidder, and in particular no evidence that operational flexibility played an important role in determining the award. It is apparent that [name of customer] decision to award the tender to MHPS was driven to a significant extent by its unique position vis-à-vis MHPS, due to the situation at [location of unit].

⁴⁴⁸ See minutes of a conference call held with a competitor on 20 March 2015.

⁴⁴⁹ The only other win outside China and Japan in 50 Hz is [name of project], which is described in the subsequent Recital.

⁴⁵⁰ See GE's reply to the Commission's Request for Information N°20, 12.03.2015, doc "GE_0003955_GE - Strictly Confidential – Contains Business Secrets msg".

⁴⁵¹ See GE's reply to the Commission's Request for Information N°20, 12.03.2015, doc "GE_0016657_GE - Strictly Confidential - Contains Business Secrets.msg ", and doc "GE_0000872_GE - Strictly Confidential - Contains Business Secrets.msg".

⁴⁵² See minutes of conference calls with customers on 20 March 2015 and 23 March 2015.

⁴⁵³ See GE's reply to the Commission's Request for Information N°20, 12.03.2015, doc "GE_0014138_GE - Strictly Confidential - Contains Business Secrets msg".

- (566) A report prepared in August 2012 for Alstom's Management also indicates that from MHPS point of view the key requirements for customers are higher efficiency and low specific Capex, while flexibility is considered as less important and not to be therefore one of the main focus of the company. The same slide shows, on the contrary, that operational flexibility is the second most important for GE.⁴⁵⁴
- (567) The Commission notes that MHPS does not consider Alstom as one of its close competitors and it instead perceives GE and Siemens as its main competitors in the HDGT area.⁴⁵⁵
- (iv) Market participants consider that MHPS' European sales and servicing network is not on par with that of other OEMs**
- (568) Several customers explained that MHPS servicing network in the EEA is a major competitive disadvantage for MHPS when competing with other OEMs for bids in the EEA.
- (569) MHPS explains that *"MHPS has a maintenance team in EU so it is not hard for EU customers to repair products. MHPS has recently acquired 'Maintenance Partners', a Belgian company. MHPS also has acquired 40% share of ATLA which has a GT hot components shop in Italy and a service center for GT in the UK."*⁴⁵⁶
- (570) MHPS also points out that: *"The European service hub for HDGTs is located in the UK and headed by Mitsubishi Hitachi Power Systems Europe, Ltd. ("MHPSE"). MHPSE has full service capabilities in the EEA except that it does not manufacture hot gas path parts in the EEA (this is mainly done in the manufacturing facility of MHPS in Japan). Therefore, in order for MHPS to provide combustion parts repair services in the EEA some parts must be sourced from outside the EEA. MHPSE therefore supplies non-capital parts, repairs hot gas path parts, components and rotors. It also provides field services etc. These services are performed both by itself and through its network which include MHPS Group and third-party supply chains"*.⁴⁵⁷
- (571) Therefore, in terms of a spectrum of service capabilities, the major shortcoming of MHPS appears to be the lack of manufacturing facilities for hot gas parts in the EEA. Spare parts thus need to be shipped from facilities located outside Europe.
- (572) The lack of manufacturing facilities for the hot gas parts represents a disadvantage in terms of additional shipment costs and time associated to maintenance of the machines in the EEA. Ansaldo for instance pinpoints MHPS' perceived long delivery times as one of MHPS' weakness.⁴⁵⁸ Moreover, this appears also to be a problem because due to their technological characteristics, MHPS' machines are characterized by shorter maintenance intervals. One customer explains that *"Most of their HDGTs have short*

⁴⁵⁴ See Annex 2540 A, slide 80.

⁴⁵⁵ See minutes of a conference call with competitor of 20 October 2014, paragraph 4.

⁴⁵⁶ See replies to question 85.1 of Phase I Questionnaire Q2 to competitors on the gas business.

⁴⁵⁷ See competitor's reply to Commission's Request for Information of 26 March 2015, question 17.

⁴⁵⁸ See replies to question 78.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

*durations between major inspections, primarily driven by their higher firing temperatures. This results in a higher number of planned outages and higher planned unavailability compared with their competitors. The majority of their technical support staff are situated in Japan or North America resulting in limited support in EEA compared to that offered by GE, Alstom and Siemens."*⁴⁵⁹ Another customer confirms that *"Non local service provision and shorter HGP intervals, few proven units as reference cases in EEA"*⁴⁶⁰ are a major weakness.

- (573) The higher costs associated to maintenance of MHPS' machines might be linked to some customers' impression that MHPS' services are particularly expensive. *"With respect to F-class machines, MHPS provides the maintenance service at significantly high costs. It is difficult to predict whether it would access successfully the European market."*⁴⁶¹
- (574) One European customer flags that, *"from the service point of view, MHPS is very weak in Europe. Because MHPS does not have a good service network in Europe, a lot of servicing activities are happening in Japan. This is time consuming for customers and the communication with Japan is not that easy. The servicing in Japan adds an extra week to the timing of the repair, shipping the component forth and back. In contrast, Siemens, GE and Alstom have much better servicing in Europe."*⁴⁶² Several customers consider MHPS' weakness relate to its servicing capabilities in the EEA: *"Slight presence of resources in EEA with limited capability for local services. Too much dependency of its Head Quarter for all kind of issues"*⁴⁶³; and *"European service capability is not as extensive as others"*⁴⁶⁴.
- (575) In the Commission's questionnaires, customers were invited to compare MHPS' servicing capabilities for HDGT in the EEA with other OEMs. The majority of customers considered MHPS' servicing capabilities to be below average as compared to the other OEMs and of those, the majority considered this to represent a significant disadvantage for MHPS for competitive tenders for new-built HDGTs in the EEA.⁴⁶⁵ For instance one customer explains: *"Less below average because actual no facility for strategic components in the EEA market"*.⁴⁶⁶
- (576) Another European customer explains that MHPS does not have its own facilities for reconditioning and repair in the EEA but rather relies on external partners. *"We have no experience of MHPS's service capability, however as far as we know, MHPS use local partners (some of which it may have equity stakes in) for field services, combustion and hot gas path component repairs. These arrangements appear less extensive than the EEA based OEMs which have much larger fleets to support."* *"It is definitely a different model and could be*

⁴⁵⁹ See replies to question 88.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁴⁶⁰ See replies to question 81 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁶¹ See minutes of the conference call with customer of 20 March 2015, paragraph 8.

⁴⁶² See minutes of the conference call with customer of 18 March 2015.

⁴⁶³ See replies to question 88.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁴⁶⁴ See replies to question 88.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁴⁶⁵ See replies to question 105 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁶⁶ See replies to question 105.2.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

*disadvantage, but perhaps not a significant one if MHPS can demonstrate that the partnerships are durable and will support the operation and maintenance requirements".*⁴⁶⁷ In general *"this can be a negative evaluation point for MHI."*⁴⁶⁸

- (577) In conclusion, MHPS appears to have some deficiencies in terms of servicing capabilities in the EEA when compared to OEMs. MHPS's relatively weaker servicing network results in a competitive disadvantage.

(v) Customers consider that MHPS lacks experience of and does not have a strategic focus in the EEA

- (578) According to the Notifying Party, MHPS is now increasing its presence in the EEA as regards servicing. It established a subsidiary in Austria (MHI Vienna) which will be responsible for EPC in the power systems business sector, more specifically for CCGT plants. MHPS has additional service locations in the UK, Belgium, the Netherlands, Italy, Spain and Germany. The Notifying Party adds that MHPS offers turnkey CCGT plants to European customers and a full range of services for all CCGT plant components, for both its own installed base and the installed base of third party OEMs.
- (579) Ansaldo also considers that *"MHPS has a broad product portfolio for 50 Hz and 60 Hz regions. MHPS, as an international company, has the ability to bid everywhere even if is much more localized in Asia/pacific region."*⁴⁶⁹
- (580) However, during the Phase I investigation several European customers explained that MHPS is *"not very familiar with the European market"*, *"the majority of their technical support staff are situated in Japan or North America resulting in limited support in EEA"* and its *"European service capability is not as extensive as others"*, and has an *"unclear long term focus"* on European regions.⁴⁷⁰
- (581) During the Phase II investigation customers indicated that MHPS servicing capabilities in the EEA are below average.⁴⁷¹ Customers explain that *"Less below average because actual no facility for strategic components in the EEA market"* and that MHPS is *"difficult to do business with and lacks strong local capability"*. In fact customers mention that while its HDGTs are reliable and have an advanced technology with high efficiency and base-load output, MHPS is weak in the EEA.⁴⁷² According to EEA customers, MHPS is *"not willing to enter certain market regions"*⁴⁷³, is *"absence within Europe"*⁴⁷⁴ or has a *"weak basis in EEA"*⁴⁷⁵, *"some supplies have a very long lead time"*⁴⁷⁶

⁴⁶⁷ See replies to question 105.2.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁶⁸ See replies to question 105.2.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁶⁹ See reply to question 84.1 of Phase I Questionnaire Q2 to competitors on the gas business.

⁴⁷⁰ See replies to question 88.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁴⁷¹ See replies to question 105 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁷² See replies to questions 102 and 103 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁷³ See reply to question 103 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁷⁴ See reply to question 103 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁷⁵ See reply to question 103 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁷⁶ See reply to question 103 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

and it *"only has a limited number of stations where their technology is planted"*⁴⁷⁷.

- (582) In the course of the market investigation, customers were asked to explain the reasons why MHPS has won fewer bids in the EEA than in other regions.⁴⁷⁸ European customers mainly pointed to MHPS' *"Regional focus, lack of interest and/or capability in the region"*⁴⁷⁹.
- (583) Customers further elaborate: *"Europe doesn't seem to be a priority."*⁴⁸⁰; *"Lack of strong local presence"*⁴⁸¹; *"Because MHI does not focus on the EEA"*⁴⁸²; *"MHPS does not have a significant presence in the EEA and does not actively market their products in the same way as their competitors"*⁴⁸³; *"No technical reasons - good engine! Sales force is weak (traditionally low in numbers) - Weak EPC links in EEA - they seem to focus on Asian and other stronger growing markets"*⁴⁸⁴.
- (584) Some customers also suggest that weak regional presence might also have been a disadvantage for MHPS when competing for bids in the EEA.
- (585) In fact, customers identified lack of interest/focus in the EEA as one of the main weaknesses of MHPS. One European customer indicates as weakness that *"Weak regional organization - Unclear of long term focus on region"*.⁴⁸⁵ On the same line, Ansaldo indicates that: *"Limited installed base in Europe and North Africa compared to other OEMs"*⁴⁸⁶ is one MHPS' main weaknesses.
- (586) Lack of regional focus was pointed out by several customers who reported that in the past MHPS often did not respond to invitations to bid. Another major European utility points to the fact that *"They are not willing to bid."*⁴⁸⁷. Another customer informs that *"In our case, MHPS did not submit any offer."*⁴⁸⁸ On the same line, another customer reports *"MHPS did not reply to the last bid request"*⁴⁸⁹. This is also confirmed by customers as often MHPS did not respond to bids and demonstrated a certain lack of interest in competing for tenders in the EEA. One customer indicates that MHPS is *"Difficult to do business with and lack of strong local capability."*⁴⁹⁰ However, one customer reports that *"MHI has become more active in the past five years, at least in the tendering phase"*.⁴⁹¹ Competitors were not in a position to confirm this.⁴⁹²

⁴⁷⁷ See reply to question 103 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁷⁸ See replies to question 81 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁷⁹ See reply to question 81 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁸⁰ See reply to question 81 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁸¹ See reply to question 81 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁸² See reply to question 81 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁸³ See reply to question 81 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁸⁴ See reply to question 81 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁸⁵ See reply to question 88.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant.
⁴⁸⁶ See reply to reply to question 78.4 of Phase I Questionnaire Q2 for competitors.
⁴⁸⁷ See reply to question 81 of Phase I Questionnaire Q2 to competitors on the gas business.
⁴⁸⁸ See reply to question 81 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁸⁹ See minutes of the conference call with customer of 24 March 2015, paragraph 5.
⁴⁹⁰ See reply to question 105 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
⁴⁹¹ Minutes of a conference call with Total of 18 September 2014, paragraph 9.
⁴⁹² See replies to question 85 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

(587) One ISP for instance explains that "*MHI and now MHPS have been aggressively growing capability, especially in the 60 Hz markets.*"⁴⁹³

(588) Therefore, the qualitative evidence suggest that the lack of focus on the EEA region and, thus, the fact that MHPS has not been actively bidding in the EEA until recently is one of the reasons for MHPS' lack of success in the EEA.

(vi) Conclusions

(589) MHPS' offering does not appear to be a good technological fit for EEA customers, given MHPS' focus on high firing temperature machines for base load operation. Moreover MHPS does not appear at this moment in time to have the necessary set up in terms of servicing capabilities to effectively compete in the EEA. Finally, MHPS has significantly focused on improving its market position in the 60 Hz market and in the US particularly, where indeed the main operational mode required is base load and, thus, MHPS' machines are a good fit. As regards the 50 Hz market, MHPS' bid participation show that MHPS' strategic focus has been mainly on Asia rather than the EEA.

8.5.1.4. Ansaldo is a "niche" player with a low-price strategy, a more limited product portfolio, significantly more limited R&D capabilities and a more limited geographic focus

(i) Ansaldo's strategy is to offer a limited number of low-priced products

(590) Ansaldo considers its major weaknesses to be: "*No post-F (very large HDGT) gas turbine products; No 60Hz commercially available products; Less Financial resources compared to competitors (e.g. GE, Siemens, MHI, Alstom)*"⁴⁹⁴. Ansaldo is indeed the only OEM without an offering in the market for 60 Hz HDGTs. As regards the lack of a Very Large frame in its offering, Ansaldo has entered recently into a cooperation agreement with Shanghai Electric and Doosan for the development of a Very Large 50 Hz and 60 Hz HDGTs respectively. However, as explained by Ansaldo, these projects are still at their inception and Ansaldo does not expect to have a new offering ready in the next 4 years.⁴⁹⁵

(591) The majority of customers considered price competitiveness as the main strength of Ansaldo.⁴⁹⁶ Other customers appreciate Ansaldo for the fuel flexibility and low emissions of its machines and for its attention to customers' needs. Ansaldo is good for: "*Low emissions and fuel flexibility*"⁴⁹⁷. Ansaldo's other strengths are described as: "*Economically very competitive, combustion improvement and tuning, attention to specific issues/needs of each client*".⁴⁹⁸ Another customer sees Ansaldo with "*A limited product offering but at very competitive prices compared to similar product offered by other OEMs. Limited engineering support and development capabilities as a result of their*

⁴⁹³ See reply to question 84.1 of Phase I Questionnaire Q2 for competitors.

⁴⁹⁴ See reply to question 78.2 of Phase I Questionnaire Q2 to competitors on the gas business.

⁴⁹⁵ See competitor's reply to the Commission's Request for Information, 27.03.2015

⁴⁹⁶ See replies question 87.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant and replies to 102.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁹⁷ See replies to question 87.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁴⁹⁸ See replies to question 87.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

*history of manufacturing HDGTs under licence, though they are very strong in developing low emission burners. Ansaldo are excellent at tailoring a solution to a customer's needs vs. designing a 'one size fits all' approach for HDGT modifications and upgrades."*⁴⁹⁹

(ii) As a former Siemens licensee, Ansaldo has significantly more limited R&D capabilities

- (592) Ansaldo is a former Siemens licensee. According to information in the Commission's file, Ansaldo seems to be subject to some restrictions resulting from this license agreement.⁵⁰⁰ Ansaldo explains that *"Siemens granted Ansaldo with a non-exclusive, royalty bearing license to use certain technical information and patents to manufacture Contract Products in Italy and sell and service such Contract Products worldwide except for [US] and Canada".*⁵⁰¹
- (593) Ansaldo has currently limited R&D capabilities relative to its competitors. In fact, Ansaldo is considered a less credible innovator by most competitors and customers, and by the Parties themselves. According to one competitor *"It's gotten the license from Siemens, which means that it has not so high level technology for developing new HDGT".*⁵⁰² A customer adds that *"it seems to operate mainly as a licensee of Siemens equipment".*⁵⁰³
- (594) Another HDGT competitor confirms that Ansaldo *"is still a small player, experiencing an extremely high entry barrier from the expensive technology of HDGT. [...] the engine Ansaldo currently offers in the Large segment is not tested and validated yet at full load".*⁵⁰⁴ Ansaldo itself indicated that it *"does not have a testing facility for the full GT. It only has the possibility to test occasionally the improvements in existing power plant after having negotiated with customer. New GT model were never developed so far due to lack of such test facility".*⁵⁰⁵
- (595) In its internal documents, Alstom regards Ansaldo as a *"niche player in 50 Hz medium and large classes, focusing on certain regional markets"* and identify its weakness in the fact that *"efficiency is too low to compete in many markets and does not have own GT technology as what they are offering is limited to upgrade of 'old' Siemens E and F-class engines".*⁵⁰⁶
- (596) GE indicates that *"Ansaldo lacks indigenous validation facilities, necessitating field-retrofitable product development packages that can be validated at customer sites."*⁵⁰⁷
- (597) The other OEMs have similar views about Ansaldo. As regards GE, Ansaldo rarely appears in its internal competitive assessments or analysis. Ansaldo is only taken into account in the analysis of the Medium segment.

⁴⁹⁹ See replies to question 87.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁵⁰⁰ See competitor's reply to the Commission's Request for Information, 19.12.2014.

⁵⁰¹ See competitor's reply to Commission Request for Information, 19.12.14, question 8.

⁵⁰² See reply to question 42.1 of Phase II Questionnaire Q10 to competitors on the gas business.

⁵⁰³ See reply to question 93.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁵⁰⁴ See minutes of a conference call held with a competitor on 20 March 2015.

⁵⁰⁵ See Ansaldo's reply to Commission's Request for Information of 27.03.2015, question 18.

⁵⁰⁶ Annex 822, p. 292.

⁵⁰⁷ Annex 1863, slide 12.

- (598) MHPS considers Ansaldo as a Siemens' licensee of GTs.⁵⁰⁸ Moreover, *"MHPS does not see Ansaldo competing often in Europe. MHPS considers Ansaldo as basically strong in Middle East and North Africa"*⁵⁰⁹
- (599) According to Siemens, Ansaldo *"is an ex-licensee of Siemens. The license for Ansaldo expired, so they have been cut off of Siemens innovation track. Ansaldo did not scale up in the meantime. Hence, it is still a small player, experiencing an extremely high entry barrier from the expensive technology of HDGT."*⁵¹⁰ As for Ansaldo's weaknesses, Siemens considers that *"Ansaldo has low individual innovation potential, limited financial backing and limited access to world markets"*⁵¹¹
- (600) A number of customers still see Ansaldo as a licensee of Siemens and, thus, link Ansaldo's technology to Siemens' old technologies. *"In general, Ansaldo's current machines are very similar to the slightly older versions of Siemens. From a technical perspective, Ansaldo is offering a machine very similar to Siemens, but it is trying to compete with Siemens on price. Ansaldo is often present in countries which are not the main target of Siemens."*⁵¹² Another customer describes Ansaldo as a *"Small player with financial challenges, recent announcement that other companies are investing in them. Has always been on the fringe of major markets, not a direct participant due to its technology licensing restrictions."*⁵¹³
- (601) As regards Ansaldo's weaknesses, customers seem to perceive Ansaldo as a small player with limited technological capabilities and low innovation drive. From a technological point of view, they position Ansaldo in a different league in comparison to the other OEMs. Ansaldo is *"Not developing a new platform to compete with VLGTS from Siemens, GE, Alstom, etc. due to size of organisation"*⁵¹⁴. Compared to the other OEMs, it has *"Slower product evolution"*⁵¹⁵, *"Lowest engineering capacity and experience"*⁵¹⁶ and *"Lack of technology - Lack of corporate capability - Small player"*⁵¹⁷. Moreover, Ansaldo is believed to have *"Limited economical resource to develop a real technology jump (up to now)"*⁵¹⁸.

(iii) Ansaldo has a geographic focus only on specific regions

- (602) Ansaldo acknowledges that it has focused its business on certain geographic regions and thus does not have the drive to be a truly global player. *"Ansaldo is targeting mainly Africa and Middle East and, on opportunity basis, Asia and Russia."*⁵¹⁹

508 See replies to question 77.2 of Phase I Questionnaire Q2 to competitors on the gas business.
509 See minutes of the conference call with competitor of 20.10.2014, paragraph 19.
510 See minutes of the conference call with a competitor of 20 March 2015, paragraph 31.
511 See reply to question 78.2 of Phase I Questionnaire Q2 to competitors on the gas business.
512 See minutes of a conference call with a customer of 25 March 2015, paragraph 14.
513 See replies to question 88.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.
514 See replies to question 88.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.
515 See replies to question 88.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.
516 See replies to question 103.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
517 See replies to question 103.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
518 See replies to question 88.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.
519 See competitor's reply to Commission's Request for Information of 19 December 2014, question 7.

- (603) A number of customers confirmed that Ansaldo lacks global reach as it appears to have strategic focus on certain regions only. A customer explains that *"Ansaldo currently offers smaller HDGTs and is active in Europe, concentrated in the Mediterranean region. It seems like such a geographical targeting is a matter of company's strategy, rather than technical offering constrains. [name of customer] considers that Ansaldo is not that active in Central and North Europe"*⁵²⁰
- (604) According to customers, Ansaldo's business proposition is to offer solutions tailored to client's needs as well as very competitive pricing. Ansaldo thus typically targets clients looking for limited initial capital expenditure, even at the cost of considerably lower efficiency, for instance in Middle East countries where gas is relatively cheap.⁵²¹ Ansaldo explains that its priority target markets are currently in the Mediterranean region.⁵²² Alstom, in internal documents, describes Ansaldo as a *"niche player in 50Hz medium and large classes, focusing on certain regional markets"*, underlining that *"efficiency is too low to compete in many markets"* and that Ansaldo *"does not have own GT technology. Technology is limited to upgrade of "old" Siemens engines"*.⁵²³
- (605) Ansaldo typically targets clients looking for limited initial capital expenditure, even at the cost of somewhat lower efficiency, for instance in Middle East countries where gas is relatively cheap. Ansaldo explains that its priority target markets are currently in the Mediterranean region.⁵²⁴ A European utility confirmed that Ansaldo is *"concentrated in the Mediterranean region. It seems like such a geographical targeting is a matter of company's strategy. [...] considers that Ansaldo is not that active in Central and North Europe"*.⁵²⁵ Several customers also indicated that from an overall technological point of view they consider Ansaldo's Large HDGT not to be as competitive as Alstom's GT26.⁵²⁶
- (606) The analysis of bidding data for the Large segment also shows that Ansaldo wins competitive tenders in a limited number of countries, namely in Tunisia and Turkey. Therefore, based on its record with competitive tenders, Ansaldo seems to have a limited reach of countries. Ansaldo has also the lowest market share for competitive tenders in the Large segment, around [5-10]%. Last, Ansaldo did not win any competitive tenders in the EEA since 2009.
- (607) In the Medium segment, Ansaldo appears to have mainly focused on SC applications, where it has been more successful than in the Large segment.
- (608) A substantial number of customers declared that they did not have direct experience with Ansaldo's machines and could not express any opinion on the

⁵²⁰ See minutes of a conference call with customer of 18 March 2015, paragraph 41-42.

⁵²¹ Replies to question 102 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁵²² See minutes of a conference call held with a competitor on 10.11.2014.

⁵²³ See Annex 223, page 292.

⁵²⁴ See minutes of a conference call held with a competitor of 10 November 2014.

⁵²⁵ See Minutes of a conference call with a customer on 18.03.2015.

⁵²⁶ See replies to question 82 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

matter.⁵²⁷ For instance, "*Marubeni does not aware of Ansaldo in the market. It is only active in certain limited countries, where its brand is recognized*"⁵²⁸

8.5.1.5. Conclusion

- (609) GE and Siemens are market leaders in the overall market for 50Hz HDGTs, competing globally and offering a wide range of products with a strong performance in most technical criteria.
- (610) Alstom:
 - (a) is competing on par with GE and Siemens in the EEA;
 - (b) is also a global player and is a significant challenger to GE and Siemens also in the 50 Hz market outside the EEA;
 - (c) offers best in class operational flexibility and pollutant emissions performances, which are matched to a certain extent only by GE and Siemens, and are well suited to meet the requirements of EEA customers;
 - (d) offers cutting edge complementary equipment for CCPPs (in particular generators, STs, HRSGs), as well as strong EPC capabilities;
 - (e) benefits from a worldwide large installed base of HDGTs, smaller than that of GE and Siemens, but well ahead of that of MHPS and Ansaldo; and
 - (f) benefits from a wide product portfolio and globally installed base across all power generation equipment.
- (611) Alstom and GE are close competitors, *inter alia*, because both (i) have a large portfolio of HDGTs addressing the same segments; (ii) have a worldwide market presence covering the same regions; (iii) offer in 50 Hz regions HDGTs which are typically regarded as comparably reliable by customers and based on proven technology; (iv) are largely targeting the same type of customers. In addition, as regards operational flexibility performances, GE developed machines which have become relatively close to Alstom's in terms of part-load efficiency and emissions. Moreover, Alstom's internal documents show that Alstom typically benchmarks its own models, in terms of technical performance and cost, against those of GE.
- (612) Therefore, the Commission considers that Alstom is a significant and close competitor of GE in the overall market for 50 Hz HDGTs.
- (613) MHPS is primarily focused on the market for 60 Hz HDGTs. Within the market for 50 Hz HDGTs, MHPS focuses mainly on Asian regions. MHPS machines are best suited for base load operations and typically less well suited for the requirements of EEA customers. Due to both MHPS' strategic focus on other regions and the relative lack of operational flexibility of its machines, MHPS is not a significant player in the EEA.
- (614) Ansaldo has a lower cost strategy, a more limited product portfolio, significantly more limited R&D capabilities compared to its competitors, and focuses on a limited number of geographic markets.

⁵²⁷ See replies to question 103.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁵²⁸ See minutes of a conference call with customer of 10.12.2014, paragraph 10.

- (615) The Commission concludes that, in the overall market for 50Hz HDGTs:
- (a) Alstom is a significant and close competitor of GE and Siemens;
 - (b) MHPS is a more distant competitor;
 - (c) Ansaldo is an even more distant competitor.

8.5.2. *The Transaction eliminates a significant and close competitor of GE in the Large 50Hz HDGT segment*

- (616) In this section the Commission analyses the closeness between the 50 Hz HDGTs of the Large segment assuming a range between HDGT 200 and 330 MW power output. Given that segmentation, in the Large segment, Alstom is present with the GT26, GE offers the 9F.03 and the 9F.05, Ansaldo offers the AE94.3A, Siemens offers the SGT5-4000F and MHPS offers the M701F4.
- (617) The inclusion of the M701F4 in the Large segment is in favour of the Parties' position. In fact, Alstom, in its internal documents, considers 320 MW as an upper limit for the Large segment.⁵²⁹ Such segmentation would exclude MHPS' M701F4 from this segment; instead, that HDGT would be classified as a Very Large HDGT, and have as a consequence a very residual presence of MHPS in the Large segment and a stronger position of the Parties. The Commission considers MHPS' M701F5 as a Very Large HDGT as its power output in SC is significantly above the 330 MW threshold.

8.5.2.1. The Notifying Party's views

- (618) In a paper submitted on 30 April 2015 entitled "*Note on OEMs' and in particular MHI's flexibility parameters*", the Parties claimed, *inter alia*, that MHPS' M701F4 and M701F5 are the machines that compete most closely with the GT26 in terms of flexibility (particularly part load efficiency and ramp-up rate) in a similar size range. In particular, the Parties claimed that (i) the ramp-up rates for both the M701F4 and M701F5 [assessment of MHPS GTs]; (ii) although the GT26 has an advantage in turndown, customers either do not place any, or place very little value on turndown capabilities; (iii) MHPS's M701F4 and M701F5 are [assessment of MHPS GTs] in terms of part load efficiency, [assessment of MHPS GTs].
- (619) The Notifying Party, in a paper submitted on 30 April 2015, "*GE/Alstom: An analysis of competition for high-flexibility gas turbine projects*", argues that "*for each flexibility feature [...], more than half of the projects that MHI and Ansaldo did not bid for had no such requirements, implying that it could not have been flexibility requirements that prevented MHI and Ansaldo from participating in these bids*".
- (620) The Notifying Party, in its Reply to the Statement of Objections, claims that the Statement of Objections does not take into account the fact that Alstom will discontinue the rating GT26 2006. The Notifying Party also argues that historical bidding largely reflects Alstom's activities with the GT26 2006.

⁵²⁹

See Form CO, paragraph 592.

8.5.2.2. The Transaction eliminates a significant and close competitor of GE in the Large 50Hz HDGT segment from a technological point of view

- (621) The Commission during the Phase II investigation asked customers which HDGT is the most similar HDGT to Alstom's GT26 in terms of overall technical performance parameters. Based on their experience and taking into account the predominant demand requirements in the EEA, in the Large 50 Hz segment, 6 customers indicated that Siemens 4000F is the most similar HDGT to Alstom's GT26 and 5 customers indicated GE's 9F.05 remarking that *"By introduction of Opflex performance upgrade package which nowadays is a standard feature on all 9F.05 new machines, GE aims to achieve flexibility values close to Alstom's GT26"*⁵³⁰. Only one customer indicated that MHPS' 701F4 is the most similar HDGT to Alstom's GT26 and none indicated Ansaldo's AE94.3A.⁵³¹

(i) Alstom's Large HDGT's main features

- (622) Alstom's presence in the Large segment in 50 Hz is driven by the GT26. The main features of the GT26 are the unique sequential combustion technology, its high efficiency, its strong operational flexibility, very low emissions over CCPP load range and strong turndown capability.
- (623) Alstom, in a paper written by Alstom and presented in June 2014 at the conference *Power Gen Europe 2014* in Cologne, gives the following description of the GT26: *"The KA26/GT26 technology has been introduced in the market in 1998 and is the only compact industrial gas turbine product with the sequential combustion technology. The GT24/GT26 sequential combustion gas turbine family is favourable for the new European market demands on high operation flexibility. Worldwide there are 135 of the 142 sold GT24/GT26 units in commercial operation, which have accumulated more than 5'900'000 operating hours and 98'000 starts. The fleet leaders exceeded 110'000 operating hours and 3'000 starts operating experience"*.⁵³²

⁵³⁰ See Replies to question 80 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁵³¹ See replies to question 80 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁵³² See competitor's reply to the Commission's Request for Information, 20.03.2015, Annex 1.2, entitled "GT26 Operational Experience under Changing Market Condition", page 4.

Figure 31: History of the GT26 fleet size and upgrade introduction



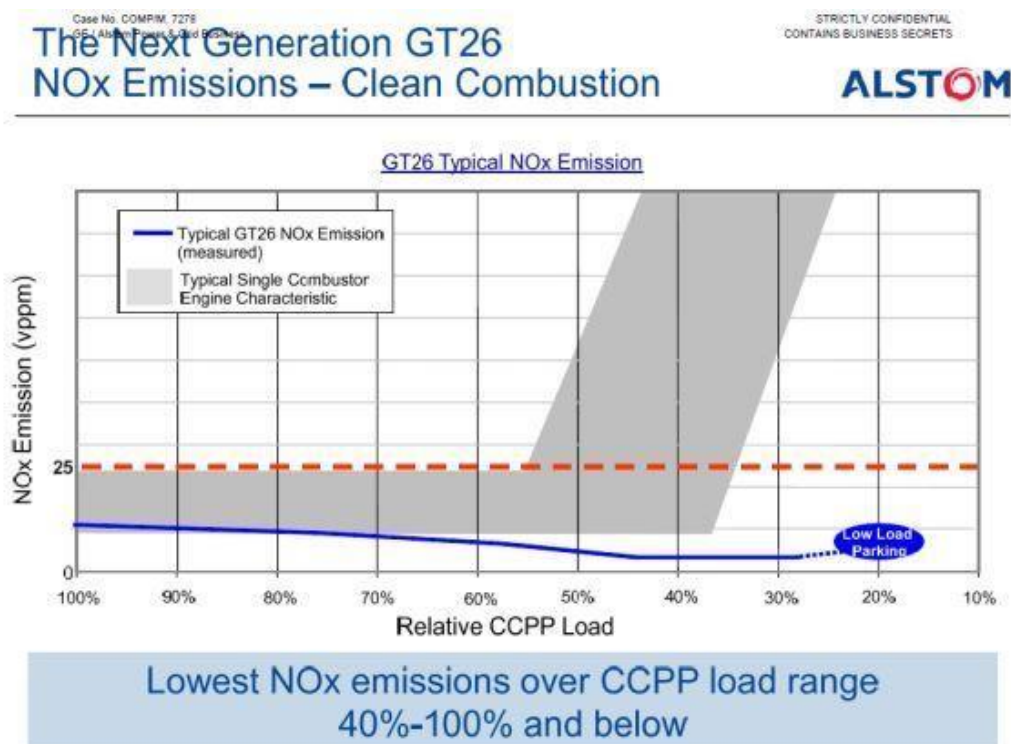
Source: Annex 4363, page 4.

- (624) Alstom in the same paper describes some operational flexibility improvements of the GT26: *"The GT26, the core component of the KA26 CCPP, has been evolutionarily developed since its introduction in 1998. The focus [...] has been set to a continuous improvement of power and efficiency over the entire operation range combined with a high operational flexibility. The sequential combustion system is the basis of this development and provides best opportunities. The operational flexibility of the KA26/GT26 is characterized by following main features: (i) Wide load range for load [...] operation while keeping low emissions within environmental limits, (ii) Flexible start-up concepts in relation to the thermal state of the unit and power demand, (iii) Dynamic operation, e.g. high loading gradients for grid support, (iv) Optimized maintenance concept, e.g. flexible inspection intervals for performance and maintenance optimized operation, (v) High fuel flexibility. The GT26 (2011) is the last evolutionary upgrade development, which has passed several validation phases in the Alstom Power Plant Birr in Switzerland and is based on the broad experience of the upgrade 2006".*⁵³³
- (625) Alstom, in its presentation to *Power Gen Europe 2011*, Milan, describes the the GT26 2011 as a HDGT characterized by "superior operational flexibility", being "industry leader on part load efficiency", having inter alia "nearly constant efficiency down to 80% load".⁵³⁴ It emerges that due to the double combustor, the GT26 is significantly "greener"/cleaner compared to the other HDGTs of its class, as illustrated in Figure 32.

⁵³³ See competitor's reply to the Commission's Request for Information, 20.03.2015, Annex 1.2, entitled "GT26 Operational Experience under Changing Market Condition", page 8.

⁵³⁴ See Annex 4072, entitled "The Next Generation GT26 from Alstom, the Pioneer in Operational Flexibility".

Figure 32: GT26 typical NOx emission – lowest emissions over CCPP load range



Source: Annex 4072, slide 9.

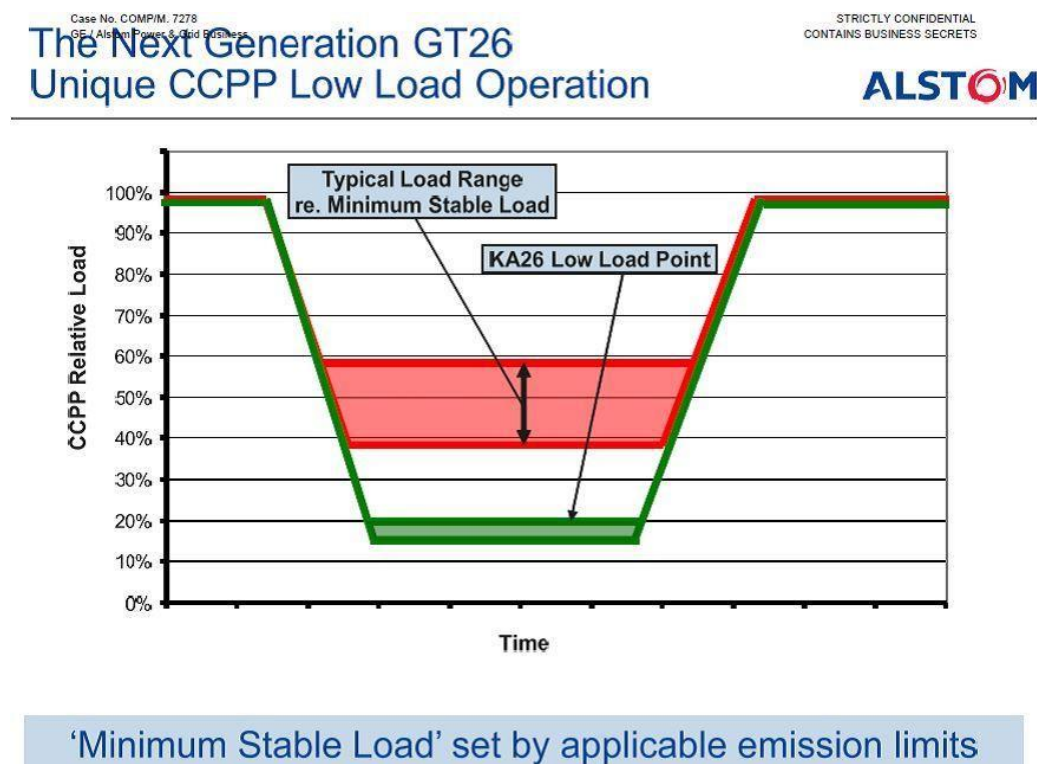
- (626) According to a competitor "In terms of turndown capabilities the best in class is Alstom's GT26 with a 20 percent turndown capability. [...] is aware that Alstom is working to lower the turndown capability to single digit numbers. It is driven by Alstom's Sequential Combustion technology, which is an advantage in part-load use allowing better compliance with carbon monoxide emissions. Sequential (dual) combustion, as implemented in the GT26, has three strong advantages: (i) parking: the second combustion chamber can in effect be turned off, which enables emissions-compliant part-load / turndown to very low loads (15% of CCPP baseload). It allows customers to react very quickly to fluctuating requirements in the grid: the provider can essentially "park" the engine (emission-compliant) on low load; (ii) fuel flexibility: the GT26 is well-equipped to handle situations in which different types of fuel with different calorific values (such as shale gas, LNG etc.) are being fed into the machine. The dual combustion system allows the operator to individually control and adapt two firing temperatures at the same time while conventional gas turbines may be prone to outages if the type of fuel is suddenly changed; and (iii) efficiency: Alstom's GT26 is able to achieve nearly base-load efficiency down to an 80% load.⁵³⁵ Alstom confirms that competitor statement, characterizing the GT26 by "unique CCPP low load operation"⁵³⁶ (see Figure 33).

⁵³⁵ See minutes of a conference call held with a competitor on 20 March 2015.

⁵³⁶ See Alstom's reply to the Commission's Request for Information N° 23, 21.03.2015, question 2 (i), Annex 4072, entitled "The Next Generation GT26 from Alstom, the Pioneer in Operational Flexibility".

- (627) Customers confirm that Alstom's GT26 is best in class in terms of turndown capability, remarking that *"In combined water and power plants, the GT26 can be turned down to 10%, running on one set of burners. In this scenario, it is still compliant with environmental regulation. Alstom is the only OEM that can come down to this very low load for overnight parking mode. This is mostly due to Alstom's unique double combustion chamber technology"*.⁵³⁷

Figure 33: GT26 turndown capabilities



Source: Annex 4072, slide 14.

- (628) According to several customers⁵³⁸ and GE internal documents,⁵³⁹ the GT26 is the HDGT with one of the highest efficiency ratings and with the highest flexibility in the Large segment. This means that the GT26 has a competitive advantage in regions characterized by high gas prices and a large share of renewables, for example in the EEA.

(ii) Power output and CC efficiency benchmark

- (629) Figure 34, extracted from Alstom's internal documents, describes the positioning of 50 Hz HDGTs in CCPP (1x1 configuration, which means 1 HDGT and 1 ST) in the Large and Very Large segments in terms of CC power output and CC base-load efficiency. Ansaldo's Large HDGT is not even considered in that Alstom's internal document.

⁵³⁷ See minutes of a conference call with a customer on 25.03.2015.

⁵³⁸ See replies to question 51.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁵³⁹ See Annex 2501, slide 11.

Figure 34: CCPP 50Hz Competitive Positioning (1x1 configuration) Large & Very Large

[extract from ALSTOM internal presentation chart showing positioning of competing GTs in terms of output and efficiency in 1X1 configuration]

Source: Annex 1586, slide 23.

- (630) According to Alstom internal documents,⁵⁴⁰ the latest version of the GT26 2011 is positioned at the upper-end of the Large segment (see Figure 34),⁵⁴¹ closely competing with GE's 9F.05. That is confirmed by GE internal document where it is mentioned that there are only "*few differentiating characteristics*" between GT26 and 9F.05.⁵⁴² According to several customers,⁵⁴³ and GE internal documents,⁵⁴⁴ the GT26 is the HDGT with one of the highest efficiency and with the highest flexibility in the Large segment. A European customer stated that Alstom's "*GT26 has an excellent performance in cycling and peaker mode, mainly thanks to their double combustion chamber, which allows operating lower loads, ramping-up the machine quite fast and parking at very low loads. At the moment, these characteristics of GT26 are an advantage in the market*".⁵⁴⁵ That means that the GT26 has a competitive advantage in regions characterized by high gas prices and a large share of renewables, for example in the EEA.
- (631) In the Large segment, according to Alstom internal documents, in terms of power output and efficiency in CC, it seems that (i) Siemens' 4000F performances are behind Alstom's GT26 and GE's 9F.05, and (ii) GE's 9F.05 is behind Alstom's GT26 2011.⁵⁴⁶ GE's internal emails concerning certain tender procedures comment that "[quote from GE internal e-mail]", and "[quote from GE internal e-mail]".⁵⁴⁷
- (632) MHPS' 701F4 in terms of power output and base-load efficiency in CC is also relatively similar to Alstom's GT26 (see Figure 34 above). Customers indicated that from an overall technological point of view they consider MHPS' Large HDGT to be as competitive as Alstom's GT26,⁵⁴⁸ with similar base-load efficiency "*While the MHPS machine is the closest in terms of overall efficiency, the current GE machine 9F.05 is the most likely competition for the GT26*".⁵⁴⁹ At the same time, according to the evidence in the file, in terms of operational flexibility (see more details in below sections on the main operational flexibility characteristics: ramp-up rate, start-up speed, part-load

⁵⁴⁰ See Annex 223, slide 298.

⁵⁴¹ The Notifying Party defines the upper-end of the Large segment in the range of 270-330 MW output.

⁵⁴² According to Annex 2476, "GE-Alstom Alliance Synergies update PGP – Thermal Products Business Model hypothesis".

⁵⁴³ See replies to question 51.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁵⁴⁴ See Annex 2501, slide 11.

⁵⁴⁵ See Minutes of a conference call with a customer on 18 March 2015.

⁵⁴⁶ See Annex 223, slide 298.

⁵⁴⁷ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0000626_GE - Strictly Confidential - Contains Business Secrets.msg"; GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0001702_GE - Strictly Confidential - Contains Business Secrets msg".

⁵⁴⁸ See replies to question 82 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁵⁴⁹ See replies to question 80 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

efficiency and turndown capability) MHPS' 701F4 is more distant to Alstom's GT26 than the GE's 9F.05 and Siemens' 4000F are.

- (633) In GE internal documents,⁵⁵⁰ MHPS' 701 F4 is considered less flexible [GE internal evaluation of MHPS].⁵⁵¹ GE's internal emails show bid evaluation matrices for tenders where [GE internal evaluation of MHPS GT].⁵⁵²

Figure 35: Competitive Positioning Large 50 Hz HDGTs according to GE

[extract from internal GE document. Table showing performance values for GE's and competing large 50HZ GTs]

Source: Annex 2501, slide 11.

- (634) Regarding Ansaldo's AE94.3A, several customers indicated that from a technological point of view they consider Ansaldo's Large HDGT not to be as competitive as Alstom's GT26 stating, for example, that "*Ansaldo has less R&D capabilities to keep up to speed with the technological developments*" and "*Although Ansaldo have taken the original Siemens concept and made some improvements of their own, the performance levels are not yet comparable with the Alstom GT26.*"⁵⁵³ In GE internal documents,⁵⁵⁴ Ansaldo's V94.3A has a significant gap in terms of efficiency.

(iii) Operational flexibility benchmarking

- (635) In GE's internal emails regarding bid evaluation matrices for tenders, GE considered that [GE internal evaluation of competitor GT].⁵⁵⁵
- (636) The Commission notes that the Notifying Party has measured flexibility by using the specifications of initial request for quotations ("RFQs"). However, as discussed in Section 8.6.1, customers try to invite initially as many OEMs as possible and therefore it is in their interest not to put strict flexibility requirements at the beginning of the tender process.⁵⁵⁶ Therefore, the observation of the Notifying Party that "*for each flexibility feature [...], more than half of the projects that MHI and Ansaldo did not bid for had no such requirements*" does not imply that those customers do not value flexibility requirements in later stages of the bidding process, in particular in their evaluation models.

⁵⁵⁰ See Annex 2501, slide 11 and GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0002343_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE e-mail]".

⁵⁵¹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0002343_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE e-mail]".

⁵⁵² See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0016632_GE - Strictly Confidential - Contains Business Secrets msg".

⁵⁵³ See replies to question 83 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁵⁵⁴ See Annex 2501, slide 11.

⁵⁵⁵ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0016632_GE - Strictly Confidential - Contains Business Secrets msg".

⁵⁵⁶ This is also recognized by the Notifying Party when it mentions that "*many tenders do not specify any flexibility requirements at all, and those that do set them at a level where all suppliers can compete*" see paper submitted by the Notifying Party on 30 April 2015, "GE/Alstom: An analysis of competition for high-flexibility gas turbine projects".

- (637) Therefore the Commission attaches more importance to (i) the objective benchmarking of the operational flexibility parameters, (ii) customers and competitors' views, and (iii) the Parties' internal documents, in particular those on bidding interactions.
- (638) In the Form CO, the Notifying Party submitted a table on the main technical characteristics of the HDGTs offered in the Large 50 Hz segment, including on operational flexibility. After notification, the Notifying Party provided updates of that table, with changes often favouring the Notifying Party's claims.
- (639) As the Commission had doubts about the accuracy of those estimates of the Notifying Party, it therefore directly requested competitors to provide it with real figures for their respective HDGTs.

Part-load efficiencies

- (640) Alstom presents itself as "*industry leader on part load efficiency*", having *inter alia* "*nearly constant efficiency down to 80% load*".⁵⁵⁷
- (641) In a situation where gas-fired power generation fluctuates to cover periods of sudden supply shortage or peak demands or of both, but also produces at lower utilisation rates, thermal efficiency under part-load operation (so-called part-load efficiencies) is a very important parameter of operational flexibility.⁵⁵⁸ The higher the efficiency at part-load, the more cost-effective the production will be for a flexible generation profile. For example a 1 percentage point delta between two HDGTs in efficiency at 60% load is very significant for customers in the industry, in particular in the EEA.
- (642) The Parties submitted the data in Figure 36 for estimates on part load efficiencies of HDGTs in the Large segment.

Figure 36: CCPP efficiency at full and part load

CC PP load	GT26 (2011)	9F.03	9F.05	SGT5-4000F	MHI 701F4	MHI 701F5
100%	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]
90%	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]
80%	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]

⁵⁵⁷

See Annex 4072, "The Next Generation GT26 from Alstom, the Pioneer in Operational Flexibility".

⁵⁵⁸

See also Annex 4288, page 2.

70%	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]
60%	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]
50%	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]	[ALSTOM calculations of CCPP efficiency]

Source: Alstom's reply to the Commission's Request for Information N° 27, 15.04.2015, question 15, based on Alstom's calculation (GT Pro 2013 and Alstom's market intelligence).

- (643) Even taking into account this part load efficiency scenario claimed by the Parties, the part load efficiencies of MHPS' 701F4 and 701F5 at for instance 80% load and 50% load would be still significantly behind Alstom's GT26.⁵⁵⁹
- (644) Figure 36 is however based on two doubtful assumptions. Firstly, the Parties are claiming that the net CC efficiency at 100% load of MHPS' 701F4 and 701F5 would amount respectively to 60.0% and 61.0% as indicated in GT World Performance Handbook ("GTWH"). [information on Alstom's assessment of competition].⁵⁶⁰ Secondly, the Parties computed the CC efficiency by using Alstom's STs and Alstom's HRSG performances; [information on Alstom's assessment of competition], MHPS and Siemens do not typically use Alstom's ST for CC and Alstom's HRSG.
- (645) Therefore, the Commission asked the Parties to re-compute the part load efficiencies [information on Alstom's assessment of competition]⁵⁶¹ but keeping Alstom's STs and Alstom's HRSG performances to calculate CC efficiency.
- (646) The results of the re-calculation are illustrated in Figure 37. In terms of part-load efficiency, MHPS' M701F4 and even M701F5 HDGTs, which is a Very Large HDGT, according to Alstom's re-calculation (GT Pro 2013 and Alstom's market intelligence⁵⁶²) are significantly behind Alstom's GT26. At 50% load the gap between Alstom's GT26 and MHPS's 701F4 is more than [0-5] percentage points.

⁵⁵⁹ See Annex 4874, "Note on OEMs' and in particular MHI's flexibility parameters", Table A.

⁵⁶⁰ See Annex 1079, page 95.

⁵⁶¹ See Annex 1079, page 95.

⁵⁶² See Alstom's reply to the Commission's Request for Information N°27, 15.04.2015, question 15.

Figure 37: CCPP efficiency at full and part load

[ALSTOM calculations of CCPP efficiency]

Source: Alstom's reply to the Commission's Request for Information N°27, 15.04.2015, question 15, based on Alstom's calculation (GT Pro 2013 and Alstom's market intelligence).

- (647) Several customers confirmed the best in class performances of the GT26 in terms of part-load efficiencies. A utility based in the EEA stated: *"One of the best suited HDGT machines for cycling mode is the GT26, which is the best in class in terms of flexibility. A very interesting GT26 feature is its high part-load efficiencies at various operating points. For example, at 90 percent load the GT26 does not seem to have any loss in efficiency while others do"*.⁵⁶³
- (648) Numerous GE emails indicate Alstom's advanced part-load efficiency: [quotes from internal GE documents evaluating ALSTOM's part-load efficiency], continuing in the same document that [quotes from internal GE documents evaluating ALSTOM's part-load efficiency].⁵⁶⁴ Moreover, [quotes from internal GE documents evaluating ALSTOM's part-load efficiency].⁵⁶⁵ A HDGT competitor confirmed that Alstom's GT26 *"is able to reach nearly base-load efficiency down to an 80% load. Alstom's GT26 has specific features to operate with high flexibility and with high-part load efficiencies which make it particular well suited for the typical needs of EEA power generation customers"*.⁵⁶⁶ GE, in its internal documents, also confirms that at 85% load Alstom's GT26 is the only HDGT not losing almost any efficiency compared to 100% load.⁵⁶⁷
- (649) GE, in its internal emails, confirmed that MHPS was significantly behind Alstom's GT26 and GE's 9F.05 in terms of part load efficiency. [internal GE evaluation of MHPS].⁵⁶⁸ [internal GE evaluation of ALSTOM].⁵⁶⁹ In the [name of GT project] tender, GE indicates that [GE internal assessment of GE GT] as GE is *"advertising OpFlex" and "flexibility is our most significant differentiator and we must ensure that we are truly differentiated, and not leaving any part load performance on the table"*.⁵⁷⁰

Turndown capabilities

- (650) Turndown capability is another important parameter of operational flexibility. Turndown indicates the minimum load capability of the machine whilst being

⁵⁶³ See Minutes of a conference call with a customer on 24 March 2015.

⁵⁶⁴ See GE's reply to the Commission's Request for Information N°20, doc "GE_0001237_GE - Strictly Confidential - Contains Business Secrets.msg".

⁵⁶⁵ See GE's reply to the Commission's Request for Information N°20, doc "GE-US-0000275_GE - Strictly Confidential - Contains Business Secrets.msg)".

⁵⁶⁶ See a competitor's reply to the Commission's Request for Information, 22 May 2015, question 4.

⁵⁶⁷ See Annex 3657, slide 22.

⁵⁶⁸ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE - Strictly Confidential - Contains Business Secrets.msg [subject of internal GE e-mail]", slide 5.

⁵⁶⁹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0001702_GE – Strictly Confidential – Contains Business Secrets msg" and doc "GE_0011515_GE - Strictly Confidential - Contains Business Secrets.msg".

⁵⁷⁰ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0001375_GE – Strictly Confidential – Contains Business Secrets.msg".

compliant with emissions of pollutants.⁵⁷¹ Keeping the HDGT at its minimum stable generation level also lowers the risks and costs associated with shutting the plant down and restarting it when required, and it minimises the costs of keeping the HDGT on when electricity prices are low.⁵⁷² Air emissions, such as CO₂ and NO_x, constrain the turndown levels that can be realized.⁵⁷³

- (651) In terms of turndown capabilities, Alstom's GT26 is best in class and currently has a 20% turndown capability, followed by GE's Large HDGTs (9F.03 and 9F.05 with 36% and 38% turndown capability respectively), by Siemens' 4000F with 40% and then by MHPS's 701F4 with 50%.⁵⁷⁴ As regards Ansaldo's AE94.3A, according to Ansaldo itself, the turndown capability of that HDGT is worse than claimed by the Notifying Party.⁵⁷⁵
- (652) Customers indicated that Alstom's GT26 has an advantage compared to HDGTs of the other OEMs in terms of turndown capability, that GE and Siemens are relatively close while *"The 50 percent turn-down capabilities of the M701F4 in full load is a huge disadvantage"*.⁵⁷⁶ Another EEA-based utility stated that *"The most flexible machine in the F class is made by Alstom, followed by GE and Siemens which are relatively close competitors, whereas MHPS machines are significantly behind in terms of flexibility. The differentiating attribute for Alstom is its Dual Combustion Chamber (DCC) technology, which drives the turndown"*.⁵⁷⁷
- (653) Moreover, a post-mortem feedback on a tender, in GE internal emails, indicates that [internal GE evaluation of ALSTOM].⁵⁷⁸ [internal GE evaluation of ALSTOM]. In GE internal documents, [quote from GE internal e-mail]⁵⁷⁹ and that [quote from GE internal e-mail].⁵⁸⁰
- (654) Customers also stated that they give value to the lowest possible turndown capability. Inter alia, an EEA-based utility indicated that *"One of the most important criteria when running a machine in cycling mode is the turndown capability. A customer typically sees significant value in an as low as possible turndown [...]. So the low turndown capacity allows operating the machines longer and not shutting the plants overnight, resulting in minimised overnight losses and/or start-up costs. On top of that, it allows to offer a wider secondary*

⁵⁷¹ These constraints are often measured by CO₂ and NO_x emissions. See Annex 4874, "Note on OEMs' and in particular MHI's flexibility parameters".

⁵⁷² See minutes of the conference calls with customers of 18 March 2015, and of 19 March 2015 and minutes of the conference call with a competitor of 11 March 2015.

⁵⁷³ See Annex 5151, RBB Paper.

⁵⁷⁴ See MHPS' reply to the Commission's Request for Information, 26.03.2015, question 40.

⁵⁷⁵ See competitor's reply to the Commission's Request for Information, 26.03.2015, question 35.

⁵⁷⁶ See Minutes of a conference call with a customer on 18 March 2015.

⁵⁷⁷ See minutes of a conference call with a customer on 24 March 2015.

⁵⁷⁸ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0007406_GE - Strictly Confidential - Contains Business Secrets msg".

⁵⁷⁹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0002343_GE - Strictly Confidential - Contains Business Secrets msg/[subject of GE internal e-mail]".

⁵⁸⁰ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0010830_GE - Strictly Confidential - Contains Business Secrets msg/[subject of GE internal e-mail]", slide 13.

frequency control range to the grid operator and to capture additional ancillary services' revenue".⁵⁸¹

- (655) Another EEA-based utility stated that it "would like to have a turndown as a low as physically possible, while complying with environmental regulation [...] Anything below the minimum criteria gives an advantage in flexibility and is part of the bid evaluation. When the value generated at night could be very low, a low turndown capability is valuable since it would allow running the machine overnight, whilst minimising the financial losses from operation. Running the machine overnight rather than turning it off is very important because a warm machine can be ramped up a lot faster in the morning. This is also valuable as it reduces service requirements. In fact, turning on and off the machine on a daily basis has an impact on maintenance costs. In fact, the thermal shock exerted on the machine when starting implies high wear of the parts and, thus, results in shorter maintenance intervals. Keeping turbines on overnight also avoid the risks of the machines not turning on when needed during the morning peak".⁵⁸² A further EEA-based utility stated "the lower the load the better".⁵⁸³

Ramp-up rate

- (656) The ramp-rate of a HDGT indicates its ability to increase electrical output quickly and to respond to demand changes swiftly. That can be an important source of commercial opportunities, given that when spot prices are high, utilities make more profit if their machines ramp up faster.
- (657) According to MHPS' submission, ramp-up rates for its M701F4 and M701F5 HDGTs are significantly different compared to the values claimed by the Parties. According to MHPS, the ramp-up rate of the M701F4 corresponds to 21 MW/min and the one of the M701F5 to 23 MW/min,⁵⁸⁴ therefore placing them behind the levels of Alstom's GT26 at 30 MW/min, Siemens' 4000F at 30 MW/min and GE's 9F.05 at 25.13 MW/min.

Start-up speed (hot)

- (658) Start-up time and cost are relevant and important when HDGTs are turned on and off frequently. In recent years, more emphasis has been placed on the development of power plants that can start in a short time in order to be active on the grid as quickly as possible.
- (659) In terms of start-up speed, both in SC and CC, Alstom, GE and Siemens HDGTs have particularly similar performances. Alstom's GT26 scores 14 min in SC and 30 min in CC, GE's 9F.03 and 9F.05 both score 15 min in SC and 20 min in CC, Siemens' 4000F 10 min in SC and 32 min in CC.
- (660) MHPS' 701F4 and 701F5 lag behind Alstom, GE and Siemens, with a start-up speed which is roughly double the time: 30 min in SC and 60 min in CC.⁵⁸⁵

⁵⁸¹ See minutes of a conference call with a customer on 24 March 2015.

⁵⁸² See minutes of a conference call with a customer on 19 March 2015.

⁵⁸³ See minutes of a conference call with a customer on 18 March 2015.

⁵⁸⁴ See competitor's reply to the Commission's Request for Information, 26 March 2015, question 40.

⁵⁸⁵ See competitor's reply to the Commission's Request for Information, 26 March 2015, question 40.

- (661) EEA customers confirmed that MHPS' 701F4 and 701F5 have a disadvantage in terms of start-up speed: *"the M701F4/M701F5 would not be suitable for both cycling and peaker operations given that it requires almost 60 minutes to start up and offers only 60 percent part load. As such, it would be difficult for MHPS' machines to compete in Europe in the coming years"*.⁵⁸⁶
- (662) As regards Ansaldo's AE94.3A, Ansaldo itself confirms that the start-up speed of that HDGT is worse than what the Notifying Party claims.⁵⁸⁷
- (663) GE, in its internal emails, confirmed that in terms of start-up time and cost, [quote from internal GE e-mail concerning evaluation of competitors].⁵⁸⁸ Moreover, GE considers itself in terms of start-up time to be "[quote from internal GE e-mail concerning evaluation of competitors]".⁵⁸⁹

(iv) Conclusion on technological closeness in the Large segment

- (664) The Commission considers that, from a technological point of view, Alstom's GT26 is best in class in operational flexibility, ahead even of GE and Siemens, in particular due to its superior part load efficiencies and turndown capabilities.
- (665) The Commission also considers that Alstom, GE and Siemens are close competitors in operational flexibility while MHPS and Ansaldo are more distant competitors.

8.5.2.3. The Transaction eliminates a significant and close competitor of GE in the Large 50Hz HDGT segment from a commercial point of view

- (666) The majority of customers confirmed that Alstom's participation in tenders for Large HDGTs helped them to negotiate agreements with better commercial conditions with either GE or Siemens, but less so with MHPS, and only marginally so with Ansaldo.⁵⁹⁰

(i) The bidding analysis shows Alstom, GE and Siemens closely competing in the Large 50Hz HDGT segment

- (667) The bidding analysis presented in Annex I of the Decision indicates that the Parties are close competitors, and that more generally Alstom is an important competitive constraint on both GE and Siemens. It also shows that MHPS is a distant competitor and Ansaldo an even more distant competitor of Alstom.
- (668) The bidding data includes all tenders awarded during the period 2009-2014, in countries with a 50Hz frequency. The Commission has analysed this data both for tenders in the worldwide 50Hz area excluding China and Iran, and for the EEA.⁵⁹¹

⁵⁸⁶ See Minutes of a conference call with a customer on 18 March 2015.

⁵⁸⁷ See competitor's reply to the Commission's Request for Information, 27 March 2015, question 35.

⁵⁸⁸ See Ge's reply to Commission Request for Information N° 20, 12.03.2015, doc "GE_0012096_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE e-mail]" page 4.

⁵⁸⁹ *ibid*, page 5.

⁵⁹⁰ Replies to question 50 of Phase I Questionnaire Q1 to customers Gas fired power plant and replies to question 78 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁵⁹¹ A detailed description of the data and of the assumptions used is provided in Annex I. There are no Large projects for combined cycle applications in Iran in the bidding data provided by the Notifying Party. As such, the bidding analysis reported below automatically excludes Iran.

- (669) As regards the geographical presence of OEMs, Table 24 demonstrates that GE and Siemens participate in almost all tenders in the EEA and China, and at a worldwide level of 50Hz excluding China and Iran. However, the situation is different for smaller OEMs like Alstom, MHPS, and Ansaldo. First, at a worldwide level of 50 Hz excluding China and Iran, Alstom ranks third in terms of participations, with a participation rate of [60-70]%, well above MHPS and Ansaldo. Second, that is also the case in the EEA, with even a greater difference between Alstom and MHPS/Ansaldo. Third, MHPS seems to focus mainly on China with a [90-100]% participation rate, while being much less active in tender procedures in the EEA with a [20-30]% participation rate.

Table 24: Participation rates for competitive tenders in the Large segment (CC)

2009-2014	Worldwide 50Hz without China and Iran	EEA level	China
GE	[90-100]%	[90-100]%	[90-100]%
Siemens	[90-100]%	[90-100]%	[90-100]%
Alstom	[60-70]%	[60-70]%	[0-5]%
MHPS	[30-40]%	[20-30]%	[90-100]%
Ansaldo	[30-40]%	[30-40]%	[0-5]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (670) Based on bidding data provided by the Notifying Party, Alstom won [10-20]% of the tenders in the Large segment, at the same level as MHPS. However, while Alstom's share of successful bids increases to [10-20]% in competitive tenders, MHPS' share of successful bids decreases to [5-10]%. This increase shows Alstom's importance as a competitive player.

Table 25: Share of wins of Alstom, MHPS, and Ansaldo in the Large segment (CC)

Worldwide 50Hz (without China and Iran): 2009- 2014	All tenders	Competitive tenders
Alstom	[10-20]%	[10-20]%
MHPS	[10-20]%	[5-10]%
Ansaldo	[0-5]%	[0-5]%
Observations	[number of tenders]	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (671) The analysis of bidding data shows that the merged entity accounts for a high combined share of successful bids in competitive tenders (that is to say tenders

with two or more firm participants) for worldwide 50Hz excluding China and Iran. The combined share of the merged entity is in the range of [40-50]%-[50-60]% depending on the time period considered (with an increasing share over time). Alstom's share of successful bids was [10-20]%-[10-20]% during the 2009-2014 period, again depending on the time window that is considered. Moreover, Alstom's share of successful bids in competitive tenders has been increasing over time, and reaches [10-20]% for the shorter 2012-2014 period.

- (672) At the EEA level, the Parties account for [40-50]% of the competitive tenders included in the bidding data, on par with Siemens, and with MHPS and Ansaldo significantly lagging behind (with a combined share in successful bids in competitive tenders of only [5-10]%, that is to say one tender ([name of project])).
- (673) The Commission also relied on the bidding data to analyse the pattern of firm participations by OEMs. An analysis of participation rates can determine whether the high market shares of the merged entity is the result of GE and Alstom competing against each other in tenders. The analysis of participation rate has also been complemented by an analysis of shortlist information provided by the Notifying Party.
- (674) The Commission concludes that the analysis of firm participation and shortlist information contained in the bidding data shows the following:
 - (a) after Siemens, Alstom is the OEM that competes the most often against GE, both in terms of firm participations and shortlists;
 - (b) Alstom meets and competes against GE in [50-60]% of tenders where GE made a firm bid in worldwide 50Hz excluding China and Iran during 2009-2014. That percentage has increased above [60-70]% since 2011. The equivalent figure for the EEA is [60-70]% for the period 2009-2014;
 - (c) Alstom is shortlisted against GE in [40-50]% of worldwide 50Hz excluding China tenders with shortlist information. That figure is below that for Siemens which is shortlisted [60-70]% of the time, but well above MHPS and Ansaldo which are shortlisted respectively in [10-20]% and [5-10]% of bids). At the EEA level, the situation is similar;
 - (d) MHPS' and Ansaldo's competitive interactions with GE are more limited than Alstom's (both in terms of firm participation and shortlists), and do not interact significantly with Alstom (suggesting that they are not close competitors to Alstom);
 - (e) Alstom and GE compete against each other in a significant share of competitive tenders (roughly [50-60]%; and
 - (f) tenders where GE and Alstom compete against each other have a concentrated market structure, with a significant proportion of tenders (at least [40-50]%) which attract three participants or fewer.

- (675) The analysis of firm participations and of shortlist also indicates a significant competitive interaction between Alstom and Siemens (based on considerations similar to those that suggest that GE and Alstom are close competitors).⁵⁹²
- (676) The Commission has also carried out an analysis of the impact of competing bidders on the successful bids of GE (including its winning probability) and on its margins. That analysis is particularly relevant in the context of a first price auction environment, where each firm faces a trade-off between the probability of winning the tender and the margin earned in case of winning the tender. A higher price will reduce the probability of winning the tender but will increase the margin in case of winning. Each bidder therefore chooses its price in order to optimise the trade-off between the probability of winning and the margin earned in case of winning, and thereby maximises its expected profits. The probability of winning a tender for a given bidder depends also on the offers made by competing bidders to the customers. Therefore, in a first price auction framework, the probability of winning a tender (conditional on the participation of rival bidders) is a key determinant of the optimal bid to be submitted in a tender (see also Section 2.2 of Annex 1 for a detailed discussion).⁵⁹³ The competitive constraint on GE from rival bidders can therefore be captured by their impact on GE's probability of being successful.
- (677) As discussed in Annex I, the Commission considers that a first price auction design (whereby bidders submit sealed bids with imperfect information on rivals' offer or customers' valuations or both) is a more appropriate framework to capture competitive interactions between rival OEMs than the alternative second-price auction framework.
- (678) The Commission concludes that the analyses of bidding data reveals the following points:
- (a) after Siemens, Alstom is the main OEM to which GE loses to in competitive tenders. For worldwide 50Hz excluding China, Alstom accounted for [20-30]% of GE's losses during the 2009-2014 period (rising to [30-40]% for the period from 2011). That finding is reinforced when only those tenders where GE was shortlisted or runner-up are considered (with Alstom accounting for [20-30]% of GE's losses during the 2009-2014 period for worldwide 50Hz excluding China). At the EEA level, Alstom has accounted for [20-30]% of GE's losses in competitive tenders;
 - (b) after Siemens, Alstom appears to be the main competitive constraint on GE's probability of winning a tender; that is less the case for MHPS, and even less so for Ansaldo. That effect is also confirmed by an econometric analysis, which takes into account other possible determinants of GE's probability of succeeding (including the participation of all OEMs, and other tender characteristics), confirming the importance of Alstom as a close and significant competitive constraint to GE;

⁵⁹² This is relevant to assess later on the potential loss of competition on Siemens due to the likely discontinuation of Alstom's GT26 after the Transaction.

⁵⁹³ See P. Klemperer (2005), "Bidding Markets", Competition Commission discussion paper, and S. Moresi (2010), "The use of upwards price pressure indices in Merger Analysis", The Antitrust Source, February.

- (c) in addition to Siemens, GE participates in many tenders against Alstom, and GE accounts for a significant share of Alstom's losses, suggesting that GE is also a competitive constraint to Alstom;
 - (d) there is therefore a two-way competitive interaction between the Parties.
- (679) The Commission has also carried out a margin analysis to test whether Alstom's participation is correlated with the contribution margins projected by GE when bidding in tenders (checking for the presence of other factors, such as the participation of other OEMs and tender characteristics).
- (680) The Commission's econometric analysis indicates that GE's contribution margins are negatively correlated with Alstom's participation, confirming the importance of Alstom as a close and significant competitive constraint to GE. That suggests that GE's margins are lower for tenders where Alstom is present, by around [information on margins] percentage points on average for HDGTs and by around [information on margins] percentage points lower on average for the overall equipment offered by GE.
- (681) On the basis of the evidence of the bidding data, the Commission concludes that: (i) Alstom is a close and significant competitive constraint to GE, whilst this is less the case for MHPS and even less for Ansaldo, (ii) GE is a close and significant competitive constraint to Alstom, (iii) the Parties exert a significant two-way competitive constraint on each other. Moreover, the bidding analysis also shows that MHPS/Ansaldo are not close competitors to Alstom due to limited interactions both in terms of participation and successful bids against Alstom.
- (682) The Commission concludes that the evidence suggests that the Parties are close and significant competitors. In the light of this finding and the high combined market share of the merged entity (above [50-60]%), this evidence indicates that the Parties will acquire after the Transaction market power and the ability and incentives to significantly impede competition in this market. Moreover, the market is highly concentrated as suggested by the high proportion of "3-to-2 bids" when the Parties compete against one another, with the third competitor being typically Siemens. That evidence also suggests that after the Transaction it is likely that the Parties will have the incentives to significantly impede competition.
- (683) On the basis of the evidence of the bidding data, the Commission also concludes that Alstom is also a close and significant competitive constraint to Siemens for the following reasons: (i) after GE, Alstom is the firm that competes and wins the most against Siemens, (ii) Alstom accounts for a significant proportion of Siemens' losses, suggesting that Alstom is likely to negatively affect Siemens' probability of winning tenders. Moreover, MHPS and Ansaldo appear to exert a limited competitive constraint on Siemens, which is significantly less than that exerted by Alstom. Therefore, the Commission concludes that the evidence suggests that the discontinuation of Alstom's GT26 after the Transaction is therefore also likely to result in a significant loss of competition vis-à-vis Siemens.
- (684) The Notifying Party has argued that the Parties are not close competitors since they are the runner-up bidders or successful bidders when bidding against each other in only [number of tenders] tenders, which includes only [number of

tenders] in the EEA in 2010 ([name and location of project]). The Notifying Party also argues that in those [number of tenders] tenders, Siemens is a close competitive constraint to GE and Alstom, and therefore significant anti-competitive effects are likely to be limited.⁵⁹⁴

- (685) The Commission notes that the argument of the Notifying Party relies on the assumption that tenders for HDGTs can be best analysed as second-price (or descending) auctions. That assumption is valid only under the relatively strict condition that OEMs have accurate information on the offers of competing OEMs and customers' valuation, as explained in Annex I. In that framework, only the winner and runner-up bidders are relevant to determine the outcome of competition in tenders. However, the assumptions underlying a second price auction framework are contradicted by the Commission's market investigation, including the fact that OEMs face significant uncertainty on key competitive variables (participating bidders, shortlisted bidders, runner-up bidder), and that customers do not convey detailed information to bidders during the tender process. Therefore, the Commission considers that a first-price auction assumption is more appropriate than a second-price auction framework to measure closeness between the merging parties, and potential anti-competitive effects.
- (686) Without prejudice to the fact that tenders for HDGTs are best assessed under the framework of a first price auction, the Commission also considers that there is evidence that Alstom poses a close and significant competition constraint on GE also under the alternative assumption of a second price auction.
- (687) In particular, the Commission notes that runner-up information is often missing in the data provided by the Notifying Party. The Commission has complemented the missing data on runner-up bidders by using a variety of sources which include GE's data on shortlisted bidders and on firm participants, GE internal documents on bidding events, runner-up data provided by Alstom, and runner-up data provided by third parties. The details of that analysis are set out in Annex I. On the basis of that information, the Commission finds that the Parties are the winner and runner-up to each other in [number of tenders]. These tenders represent a significant proportion (up to [20-30]%) of competitive tenders in the Large segment. Moreover, [number of tenders] of those tenders are awarded in the EEA: [number of tenders] tenders won by GE ([name, location and year of project]) and [number of tenders] won by Alstom ([name, location and year of project]).
- (688) Moreover, the Commission also assessed the argument of the Notifying Party that any constraint imposed by Alstom on GE, and vice versa, is unlikely to be significant in light of Siemens ranking third among the bidders for tenders where the Parties are the successful bidder and the runner-up.
- (689) In a second price auction design, the competitive constraint lost due to a merger depends on the distance between of the bidder ranking second and the bidder ranking third (see Annex I for further details). As mentioned by the Notifying Party, when the Parties are the successful OEM and the runner-up,

⁵⁹⁴ See Annex 4713, "Net Benefits to Heavy-Duty Gas Turbine Customers", CRA, [professors], "On the relevance of runner-up data", [Professor A], dated 7 May 2015.

Siemens is typically the next best alternative. As discussed in Annex I, the margin data of each of GE and Alstom can be used to assess the distance between competitors in a differentiated market.⁵⁹⁵ The Commission's analysis, as set out in Annex I, indicates that the presence of Siemens as the third placed bidder would not necessarily limit the competitive constraint lost due to the disappearance of Alstom as an independent competitor. That follows from the level of margins earned by both GE and Alstom when competing with Siemens, and is more generally linked to the highly differentiated nature of the market.

- (690) Therefore, even within the auction framework proposed by the Notifying Party, the Parties are close competitors in the sense that they are the successful bidder or the runner-up in a significant proportion of tenders. An analysis of margins data suggests that a significant competitive constraint would be lost due to the disappearance of Alstom as an independent competitor.
- (691) To conclude, the analysis of bidding data shows that (i) Alstom and GE are close and significant competitors to each other and there is a two-way competitive interaction between the Parties, (ii) Alstom is also a close and significant competitive constraint to Siemens, (iii) Ansaldo and MHPS are not close competitors of GE and Alstom. Moreover, when Alstom competes with GE or Siemens, there is a significant proportion of tenders which attracts three participants or fewer.

Assessment of the Notifying Party's arguments in the Reply to the Statement of Objections

- (692) In the Reply to the Statement of Objections, the Notifying Party has mainly criticised the Commission's econometric analysis on GE's probability to be successful in tenders and on GE's margins. The main issues raised by the Notifying Party in the Reply to the Statement of Objections are summarized as follows (see Section 4.4.11 of Annex I for further details):⁵⁹⁶
 - (a) the Notifying Party mentions that prices and margins change throughout a tender, and those changes are likely to reflect updated information on the source of competitive constraints faced by GE as tenders evolve. Therefore, the Commission's econometric analysis should take into account that GE adapts its bids during the tender process.
 - (b) the Notifying Party also suggests that the Commission's econometric analysis includes only the identity of the participants during the initial stage of the tender.
 - (c) The Notifying Party argues that the Commission's econometric analysis is incorrect since it does not consider the identity of the shortlisted OEMs.

⁵⁹⁵ See "The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years", C. Shapiro, 2010, *Antitrust Law Journal*, Vol. 77): "Merging firms often claim that certain non-merging firms can and will offer an equally good alternative to customers. Customer evidence can be especially valuable in assessing this claim. There can be some tension between this claim and the presence of significant supplier differentiation. We may test this claim with evidence from procurement events in which the merging firms competed as finalists against these non-merging firms. If they really do offer very close substitutes, one would expect to see relatively low margins in those bidding situations" (page 735).

⁵⁹⁶ See Annex 4 of the Reply to the Statement of Objections.

- (d) The Notifying Party also argues that the econometric analyses on GE's probability to successfully bid in tenders and on GE's margins are not robust to changes in the specification of the model.
- (693) A detailed assessment of the points raised by the Notifying Party is included in Annex I (Section 4.4.11). The Commission disagrees with the comments made by the Notifying Party for the following reasons.
- (694) As regards the comment that the Commission's regression analysis does not take into account that GE adapts its bids during the tender procedure, the Commission disagrees with the Notifying Party since the Commission has used margins that correspond to the last offer made by GE. Therefore, the margins used in the Commission's analysis already reflect all the information that was available to GE during the evolution of the tender and the corresponding changes in GE's bid behaviour.
- (695) Moreover, in Section 4.4.5 of Annex I, the Commission has also analysed the evolution of GE's margins during the tender process. In particular, the Commission's analysis shows that GE's margins are decreasing from the initial stage to the final stage for tenders where Alstom participates (with a reduction of [information on margins] percentage points on HDGTs and on overall equipment). By contrast, GE's percentage margins are constant between the initial and final stages of the bidding process for tenders where Alstom does not participate. That analysis therefore confirms previous findings that Alstom poses a close and significant competitive constraint to GE.
- (696) As regards the comment that the Commission's regression analysis includes only the identity of the participants corresponding to the initial stage of the tender, the Commission disagrees with the Notifying Party since the Commission uses the identity of the OEMs that participate at the firm stage as the variable of interest, not the identity of the participants corresponding to the initial stage (also called the budgetary stage). The Commission considers that to be justified since the firm stage corresponds to a significant commitment of OEMs, with discussions with customers lasting typically between 12 and 18 months and significant cost of participation. Therefore, the Commission considers that the claim of the Notifying Party that the Commission considers the identity of participants at the start of the bidding process is not correct.
- (697) As regards the comment of the Notifying Party that the Commission's regression analysis is incorrect since it does not consider the identity of the shortlisted OEMs, the Commission disagrees for the reasons set out in recitals (695) and (696).
- (698) A shortlist stage has been used only in 40% of the competitive tenders. Therefore, the Commission considers that it is more appropriate to consider participations at the firm stage for its econometric analysis, which is common for all tenders and corresponds to a significant commitment of OEMs.
- (699) The fact that GE's margins and probability of winning are significantly lower when either of Siemens, Alstom, MHPS, or any two of them or all of them participate at the firm stage demonstrates that the Notifying Party's suggestion that only the runner-up bidder in the final stage matters for the competitive assessment is not correct. That is also in line with the qualitative evidence

discussed in Section 3.1 of Annex I, showing that OEMs exert competitive pressure on each other at the firm stage.

- (700) As regards the comment of the Notifying Party that the Commission's econometric analyses on GE's probability to bid successfully in tenders and GE's margins are not robust to changes in the specification of the model, the Commission disagrees with the Notifying Party for the reasons set out in recitals (698) and (699).
- (701) First, the econometric analysis proposed by the Notifying Party contains significant technical deficiencies. In particular, the Notifying Party has included in its regression analysis several variables which are collinear. In other words, those variables move (almost) perfectly together. A well-known concern in econometrics is that multi-collinearity can lead to few statistically significant results. That technical issue undermines the validity of the econometric analysis conducted by the Notifying Party. In particular, based on the econometric analysis provided by the Notifying Party, Siemens would not be considered as a close competitor to GE, which is counter-intuitive. In contrast, the Commission's analysis avoids this technical issue.
- (702) Second, the Commission has also assessed the argument of the Notifying Party that the shortlist stage should be included in the regression analysis. As set out in Section 4.11 of Annex I, including the existence of a shortlist in the regression analysis is difficult for technical reasons, in particular due to the issue of multi-collinearity. Nevertheless, the Commission has analysed the identity of the shortlisted bidders and the level of GE's margins for tenders where GE is shortlisted. As set out in Section 4.11 of Annex I, among the [number of tenders] where GE is shortlisted, Siemens and Alstom are the OEMs who are shortlisted the most often, well above MHPS and Ansaldo. In addition, GE's margins at the shortlist stage are significantly lower in tenders when Alstom is shortlisted, by around [GE margins]% for HDGTs and [GE margins]% for the overall offerings, when compared to tenders where other OEMs are shortlisted. When Siemens, MHPS, or Ansaldo are shortlisted, GE's average margins are in the range of [GE margins]% for HDGTs and [GE margins]% for the overall offering. That analysis therefore confirms previous findings that Alstom is a close and significant competitive constraint to GE.
- (703) To conclude, the Commission considers that the econometric analysis of GE's probability to successfully bid in tenders and of GE's margins suggests that Alstom poses a close and significant competitive constraint to GE.
- (704) In the Reply to the Statement of Objections, the Notifying Party further argues in particular that: (i) data on shortlisted bidders and runner-up bidders are reliable for EEA tenders, and (ii) [60-70]% of worldwide tenders 50 Hz excluding China have information either on shortlisted bidders or on runner-up bidders, and that that figure grows to [80-90]% for EEA tenders. On that basis,

the Notifying Party suggests that the competitive assessment should focus on runner-up data.⁵⁹⁷

- (705) The Commission disagrees with the Notifying Party for the reasons set out in recitals (703) to (706).
- (706) First, as discussed in Section 3.4 of Annex I, the Commission considers that the claim of the Notifying Party on the reliability of data for shortlisted bidders for EEA tenders is not well substantiated, since it was not possible for the Commission to replicate the underlying analysis. Moreover, the evidence submitted by customers and competing OEMs reveals significant uncertainty on the identity of the runner-up bidders for tenders both at worldwide level and EEA level.⁵⁹⁸
- (707) Second, the arguments of the Notifying Party are not sufficient to contradict most of the evidence which shows (see Section 3 of Annex I) that OEMs face significant uncertainty in the course of the tenders, and therefore that a second-price auction is not appropriate to analyse HDGTs tenders.
- (708) Third, an exclusive focus on runner-up data for the competitive assessment would be justified if information on runner-up bidders was known accurately *ex-ante* before the firms submit their final bids. The fact that a runner-up was identified *ex-post* does not mean that that information was available *ex ante* at the time of bidding. As discussed in Section 3 of Annex I, the uncertainty characterising *ex-post* data on runner-up bidders suggests that OEMs do not always have accurate information *ex ante* when submitting their bids.
- (709) Fourth, in order to justify the exclusive focus on the successful bidder and the runner-up for measuring the merger effect, the Notifying Party has submitted a formal economic model. This model sustains that focusing on runner-up bidders is justified only if there is also a shortlist stage, during which it is assumed that information is revealed on competing bidders and on the customers' valuations (similar to a second price auction framework). Even if one were to accept the validity of that model's assumptions (contradicted by the evidence in Sections 3 of Annex I), the model suggests that focusing on runner-up information would only be relevant for those tenders where there is also a shortlist stage. However, information on runner-up tenders with a shortlist stage concerns only a minority of tenders (less than 40% of the competitive tenders at worldwide level 50Hz excluding China, and around 40% of EEA tenders). Therefore, even if one accepted the assumptions made in the economic model submitted by the Notifying Party (as contradicted by the evidence on HDGT tenders), the model would only apply to a minority of the relevant tenders. The approach of the Notifying Party to combine both the data on runner-up and shortlisted bidders (see paragraph (139)) is therefore not consistent with its own economic submission (even assuming that the assumptions of the model submitted by the Notifying Party were valid).

⁵⁹⁷ Annex I provides a detailed assessment of other comments made by the Notifying Party on the relevance of runner-up data and on the level of competitive harm in a second-price auction framework (see Annex I, Section 3.4 and Section 4.5.3).

⁵⁹⁸ See Section 3.4 of Annex I for a detailed assessment.

- (710) To conclude, the Commission maintains its conclusion that considering only runner-up data for the competitive assessment, namely a second-price auction framework, is not appropriate given the significant uncertainty that OEMs face in tenders. In addition, evidence provided by customers and competing OEMs demonstrates the lack of reliability of runner-up data provided by the merging parties.

(ii) Commercial closeness in the Large segment – evidence from bids

- (711) Supporting evidence about intense competitive interaction between GE and Alstom was found in GE internal documents.
- (712) According to paragraph 28 of the Horizontal Merger Guidelines, *"the fact that rivalry between the parties has been an important source of competition on the market may be a central factor in the analysis"*. By looking at bids in which GE was successful in the last 5 years, it often emerges that Alstom exerted strong competitive pressure on GE both in the Large and Medium segments. GE is often forced to revise and improve its commercial terms vis-à-vis customers in order to overcome technical shortcomings as well as aggressive pricing offered by Alstom. That interaction is observed both in tenders won by GE and in those eventually won by Alstom.
- (713) As regards the [name of project], where GE was successful in [location (EEA-country), type of GT frame and year of project], GE remarks that [internal GE documents concerning GE pricing strategy];⁵⁹⁹ GE also indicates that *"Regarding Alstom, the only feedback that I could get through the various discussions over the 3 days are that Alstom's block is also very flexible & that overall we are very close, may be as close that they would need to have an additional discussion with both of us after August 10, to make their mind"*.⁶⁰⁰
- (714) On the [name of project], internal information for a briefing to GE's CEO explains that GE competed with *"Siemens, Alstom, Ansaldo. Customer had several rounds of negotiation. After each round he asked for a bid update and eliminated [1] first Siemens (not flexible on terms, very expensive on price, not good part load capabilities and arrogant in front of customer) [2] Second Ansaldo (Ansaldo had best price, was very flexible in T&C's, but customer did not trust them and the soft evaluation factors made them get out)"*. [name of GE sales manager] further explains that *"For GE and Alstom, there were 2 rounds of rebid as we were evaluated equally after the 1st round. To Win against Alstom it took us to reduce further our price, improve our part load operation (was one of the most important factor)"*.⁶⁰¹
- (715) In relation to the [name of project] project, a bid won by GE in [location and year of project], GE internally discusses: *"[quotes from internal GE documents referring to internal GE evaluation of project and pricing strategy]"*. *[quotes from internal GE documents referring to internal GE evaluation of project and*

⁵⁹⁹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0001376_GE - Strictly Confidential - Contains Business Secrets msg".

⁶⁰⁰ See GE's reply to the Commission's Request for Information N° 41, 05.06.2015, doc "GE_0020238_GE - Strictly Confidential - Contains Business Secrets msg".

⁶⁰¹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0004849_GE - Strictly Confidential - Contains Business Secrets msg".

pricing strategy].⁶⁰² This internal GE's document also shows that GE competed against Alstom's GT26 using its two HDGTs: the 9F.05 HDGT and its 9F.03 HDGT. While GE initially participated with its 9F.05 HDGT, GE proposes in a second step to participate instead with GE's 9F.03 HDGT ("*quotes from internal GE documents referring to internal GE evaluation of project and pricing strategy*").

- (716) About the [name of project] project, a bid won by GE in [location of project (EEA-country), type of GT frame and year of project], while discussing the pricing strategy for the bid, GE internally observes that "*quotes from internal GE documents referring to internal GE evaluation of project and pricing strategy*".⁶⁰³
- (717) In relation to the [name of project] project, a bid won by GE [type of GT frame and year of project], while taking stock of the progress made in the tender for which GE and its EPC partner [name of EPC partner] have been invited for final bilateral price negotiations, GE stresses that "*We need to continue the negotiations in the same good spirit to avoid any of the back up candidates to step in (especially Alstom is working heavily in the background)*".⁶⁰⁴
- (718) As regards the [name of project] project, a bid won by GE [location of project and type of GT frame], [title of GE internal document] discussing the pricing strategy for the bid, GE identified that in that bid competition was coming from both Siemens and Alstom. In its target price analysis, GE identified Alstom as the one posing the main threat on the basis that according to GE's estimates, Alstom's offer would be the closest in terms of NPV.⁶⁰⁵ Consequently, decisions on price are made on assumptions only based on Alstom's pricing behaviour. In fact, GE analyses three possible scenarios:[GE pricing strategy].⁶⁰⁶
- (719) In addition, Alstom seems to be perceived as an aggressive competitor by GE in a number of instances.
- (720) About the [name of project] project, a bid in [location of project] that started in [year of project],⁶⁰⁷ GE points to the fact that: "*quote from internal GE document concerning GE's pricing strategy*".⁶⁰⁸
- (721) In discussing the results of the bid opening for the [name of project] project in [location of project], which was won by Siemens in [year of project] with its

⁶⁰² See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE-US-0000311_GE - Strictly Confidential - Contains Business Secrets.msg".

⁶⁰³ See GE's reply to the Commission's Request for Information N°20, doc "GE_0001514_GE - Strictly Confidential - Contains Business Secrets.msg".

⁶⁰⁴ See GE's reply to the Commission's Request for Information N°20, doc "GE_0001592_GE - Strictly Confidential - Contains Business Secrets.msg".

⁶⁰⁵ Annex 1339, page 5.

⁶⁰⁶ Annex 1339, page 12.

⁶⁰⁷ See GE's reply to the Commission's Request for Information N°38, 30.05.2014, question 1.

⁶⁰⁸ See GE's reply to the Commission's Request for Information N°20, doc "GE_0004378 - Strictly Confidential - Contains Business Secrets.msg".

4000F, GE observes that *[quotes from internal GE documents concerning evaluation of competition]*".⁶⁰⁹

- (722) In relation to the [name of project] project, in the [title of GE internal document] prepared for having the authorisation on the final price, GE points to Alstom as its *"main competitor"*⁶¹⁰ and considers that *"GE is strong candidate for second ranking just behind Alstom"*⁶¹¹. Although in the end the project was put on hold by the client, GE observes that *"Alstom and us were in the final race, and our team was fighting really hard to be preferred"*.⁶¹²
- (723) As regards the [name of project] project (including [name of power plant]) in [location of project], won by Siemens with its 4000F in [year of project], while finalizing the pricing strategy for this bid, GE remarks that *"We know at least 3 parties still in the race, Siemens, Alstom and us. MHI with SNC seem to have been excluded - Alstom most feared competition as they will be aggressive, not to lose this deal as they are the existing OEM on both sites and are keen to stay market leader in [location of project]"*.⁶¹³
- (724) Another internal document shows that GE monitored Alstom's pricing behaviour in common bids in order to decide its pricing strategy for new bids, in which also Alstom was expected to compete.⁶¹⁴ For instance, as regards the [name of project] project, GE's decision on the price adjustment to the initial offer was based on Alstom's pricing behaviour, also in relation to price reductions observed in previous projects, like [name of project] and [name of project], where GE and Alstom competed. In the case of [name of project], it is mentioned that *"[GE pricing strategy]"*.

Figure 38: Impact on price of the competitive pressure between Alstom and GE in two tenders

[extract from internal GE document showing price reduction of total turnkey price from initial bid to order in two projects]

Source: reply to Commission's Request for Information N° 41, 05.06.2015, doc "GE_0017654_GE - Strictly Confidential - Contains Business Secrets.msg".

- (725) In fact, GE follows closely Alstom's evolution and bidding in several regions. According to a GE internal email,⁶¹⁵ there is a request *"to track across the Regions for more feedback. Please gather inputs from either trade show or bid*

⁶⁰⁹ See GE's reply to the Commission's Request for Information N°20, doc "GE_0011545_GE - Strictly Confidential - Contains Business Secrets.msg)".

⁶¹⁰ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, "Doc "GE_0014114_GE - Strictly Confidential - Contains Business Secrets msg/[subject of GE internal document]".

⁶¹¹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0014112_GE - Strictly Confidential - Contains Business Secrets msg".

⁶¹² See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE-US-0000099_GE - Strictly Confidential - Contains Business Secrets msg".

⁶¹³ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0016556_GE - Strictly Confidential - Contains Business Secrets msg".

⁶¹⁴ See GE's reply to the Commission's Request for Information N° 41, 05.06.2015, doc "GE_0017654_GE - Strictly Confidential - Contains Business Secrets msg".

⁶¹⁵ See GE's reply to the Commission's Request for Information N° 41, 05.06.2015, doc "GE_0019149_GE - Strictly Confidential - Contains Business Secrets msg".

activities and circle back". Given that there was "pretty big move for Alstom and a disruptive info as they claim full flexibility".

- (726) This evidence suggests that Alstom and GE closely interact and compete in the Large HDGT segment. They appear to have a differentiated but equally strong offering. In fact, GE faces the competitive pressure from Alstom and has to compensate by leveraging its commercial offers in order to win.

8.5.2.4. All Alstom's GT26 ratings belong to one HDGT platform

- (727) Regarding the Notifying Party's claim that Alstom would have discontinued the GT26 2006 rating, the Commission considers that the Notifying Party mentions in the Form CO that Alstom is currently offering the GT26 2006 and the GT26 2011,⁶¹⁶ and that the Notifying Party has not provided any evidence that Alstom would have discontinued the GT26 2006 rating if the merger did not take place.
- (728) In addition, the Commission considers that the different ratings of the GT26 are based on the same underlying technology platform and the same engine concept, and are the product of an ongoing evolutionary development of the GT26 HDGT's technology.
- (729) The Commission considers that the GT26 2011 shares significant technology elements with earlier GT26 ratings. When announcing the GT26 2011 to the market, Alstom explained that *"the latest GT26 upgrade [the GT26 (2011)] contains evolutionary modifications on [certain] core GT components"*.⁶¹⁷ Alstom notes in particular that *"the compressor architecture is based on the 22-stage well-proven design of the current GT26 engine"*, *"the SEV Combustion System architecture and structural parts remains unchanged to the current GT26"*, and *"the High Pressure (HP) turbine remains unchanged"*.
- (730) These elements are further confirmed in the Allianz report on the insurability of the GT26 2011 rating.⁶¹⁸ In that report, for instance, it is mentioned that *"the original GT26 engine concept (sequential combustion process, design principles, materials, basic dimensions and operation concept) has been maintained and conserved"* and that *"the GT26 (2011) has been judged to be an evolutionary technology upgrade of the current GT26 gas turbine"*.
- (731) Alstom also stresses the fact that the GT26 2011 is an "evolutionary" improvement and that all GT26s versions belong to a common technology platform.⁶¹⁹ The GT26 2011 is simply *"an evolution of the proven GT24/26 platform with a total of 135 units in operation, >5.9mOH and >98k starts"*,⁶²⁰ the latest stage of the *"continuous evolutionary upgrade of a proven*

⁶¹⁶ See paragraph 195 of the Form CO which describes Alstom's GT portfolio, which includes the GT26 (296MW), namely the GT26 2006 rating, and the GT26+ (326MW), namely the GT26 2011 rating, and "Today, ALSTOM offers the 2006 and 2011 models".

⁶¹⁷ See Annex 4322, page 6.

⁶¹⁸ See Annex 1433 of the Form CO: AZT Investigation report, "Technical Review Report on the Alstom GT26⁽²⁰¹¹⁾ Gas Turbine", dated 04/10/2011.

⁶¹⁹ See Annex 4322, pages 22-23; see Annex 4358; see Annex 4359, page 23; Annex 4352, pages 24-28.

⁶²⁰ See Annex 4332, page 30.

platform",⁶²¹ or the "natural evolution of a sound proven GT technology with a track-record of more than 15 years".⁶²²

- (732) In one of its internal documents analysing the GT26, Alstom summarizes the upgrade path of the GT26 which is illustrated in Figure 39.

Figure 39: GT26 performance and flexibility evolution

[extract from internal ALSTOM document that shows the evolution of the GT26 frame]

Source: Annex 4351

- (733) As illustrated in Figure 39, there is a technological continuum across the various GT26 versions in the sense that each version is based on the same original engine concept and incorporates elements from the previous platforms and further builds on them by introducing new improved features/elements. Moreover, Alstom also reported the sale of retrofits of the MXL2 as part of the commercial validation process for t[he new 2011 ratings
- (734) The "platform management approach" is also mentioned in Alstom internal documents. Alstom regularly organises management meetings discussing the "Large Gas Platform 50Hz (GT26/KA26)", where all activities affecting the GT26 platform are discussed.⁶²³

8.5.2.5. Conclusion on closeness in Large segment

- (735) The Commission concludes that both from a technological and a commercial point of view Alstom is an important player and a close competitor of GE and Siemens.
- (736) Alstom has best in class operational flexibility, ahead of GE and Siemens. GE and Siemens both globally offer Large HDGTs with strong technical performance, including in the area of operational flexibility (for example the FlexEfficiency50 package of GE), and therefore they typically target the same customers targeted by Alstom.
- (737) The Commission concludes that MHPS, in particular in bids where operational flexibility matters, is a less significant and more distant competitor. MHPS's Large HDGT is typically best suited for base load operations. Due to both MHPS' strategic focus on Asian markets and the lower performance in operational flexibility of its Large HDGT, MHPS is currently not a significant player in the EEA markets.
- (738) The Commission concludes that Ansaldo is perceived as technologically weaker due to lower performances in operational flexibility and efficiency and from a commercial point of view is even less important because it focuses only on specific geographic regions.

⁶²¹ See Annex 4352, page 23; see Annex 4351, page 13.

⁶²² See Annex 4348, page 10.

⁶²³ See for instance Annex 4893.

8.5.3. *The Transaction eliminates a significant and close competitor of GE in the Very Large 50Hz HDGT segment*

- (739) In the Very Large segment of the market for 50 Hz HDGTs, Alstom is present with the GT36; GE offers the 9HA.01 and 9HA.02, MHPS offers the M701J, M701G2, M701F5 and potentially the M701JAC, while Siemens offers the 8000H.

8.5.3.1. The Notifying Party's views

- (740) The Parties claim that the GT36 is the first new machine developed by Alstom since the mid-1990s. According to the Parties, given ongoing innovation and leapfrogging by its competitors, by the time it can be introduced, the GT36 is likely not to be sufficiently differentiated from its rivals in terms of output and performance.
- (741) According to the Notifying Party, Siemens and MHPS continue to compete fiercely on innovation in the Very Large segment. The Notifying Party claims that Siemens plans to test a new HDGT frame in 2015 and that it will increase by 11% R&D in 2015 and that MHPS is developing a new HDGT frame 1700 C to achieve 62 to 65% CC efficiency.
- (742) In addition, the Notifying Party claims that: (i) there are delays with the launch of the GT36; (ii) Alstom's [reference to Alstom financial constraints] reduce its ability to compete especially in the Very Large segment; and (iii) Alstom will have difficulties in competing in the Very Large segment since it is a latecomer. Moreover, the Notifying Party considers that Alstom is facing severe difficulties in finding a fleet leader because [information on ALSTOM].

8.5.3.2. The Transaction eliminates a significant and close competitor of GE and Siemens in the Very Large 50Hz HDGT segment from a technological point of view

(i) Alstom's Very Large HDGT's main features

- (743) Absent the merger, Alstom was about to officially launch an HDGT competing in the Very Large segment, the GT36. Before the announcement of the Transaction, Alstom expected to have the first fire⁶²⁴ of the GT36 in 60 Hz version in [date of first fire] and in 50 Hz version in [date of first fire].⁶²⁵
- (744) The 50 Hz unit is intended to have SC output of [power output] and gross SC efficiency of [efficiency]%; and output of [power output] and net CC efficiency of [efficiency]% in a 1x1 configuration.
- (745) In terms of R&D headcount the GT36 has, as of March 2014, [number of FTE engineers] full time equivalent engineers dedicated to it, [breakdown of FTE by location].⁶²⁶
- (746) In terms of investment for testing facilities for the GT36, Alstom spent EUR [R&D spend] for its share of the combustor testing facility in Cologne,

⁶²⁴ Start of full technical operation of the plant.

⁶²⁵ See Annex 1586.

⁶²⁶ See Alstom's reply to the Commission's Request for Information N°13, 23.01.2015, question 32.

Germany and was planning to spend EUR [R&D spend] for the GT36 test power plant in Birr, Switzerland.⁶²⁷

- (747) According to a report prepared by [name of third party report], dated June 2014,⁶²⁸ "in developing the GT36, Alstom built off the successful design features of the GT24/26 platform to create an evolutionary gas turbine with increased capacity, reliability, and maintainability, while reducing the overall lifecycle cost of the gas turbine".⁶²⁹ Compared to the GT26, the improvements consist mainly in (i) a reduction from 22 compressor stages in the GT26 to 15 stages in the GT36, (ii) a reduction in discharge pressure of 36 bar to 23 bar, (iii) the development of the Constant Pressure Sequential Combustion ("CPSC") system for the combustor, which is a can combustion system that combines the can systems typically used in other OEMs GTs (experience gained through PSM) with the low emissions of the sequential combustion system used in the GT26.[information on GT36 program].

- (748) According to Alstom internal documents,⁶³⁰ the GT36 is targeting "*lowest cost of electricity*", high flexibility and best-in-class availability. Alstom, in its presentation of the GT36 to customers, states that the GT36 has "*Availability +1% compared to Best in Class*"⁶³¹ which corresponds to a customer value of more than 20 million USD in terms of net present value ("NPV")⁶³². In addition, Alstom, in the same document, points out the "*lowest cost of electricity*" and "*best in class operational flexibility*" of the GT36.⁶³³

Figure 40: GT36 platform

[extract from internal ALSTOM document]

Source: Annex 1362, slide 48.

- (749) Alstom internal documents also mention that the potential development of a ⁶³⁴ [potential ALSTOM GT frame] requires only an additional [cost of GT frame development].⁶³⁵ [information on potential ALSTOM GT frame].⁶³⁶ The development of the [potential ALSTOM GT frame] has now been stopped. The Parties, despite the Commission's Requests for Information, have not provided proof that the decision of stopping the development of the [potential ALSTOM GT frame] was taken before the announcement of the Transaction and that that decision was unrelated to the merger.

⁶²⁷ See Alstom's reply to the Commission's Request for Information N°5, 29.10.2014, question 24.

⁶²⁸ See Annex 1026.

⁶²⁹ See Annex 1026.

⁶³⁰ See Annexes 1028 and 1586.

⁶³¹ See Annex 1362, slide 25.

⁶³² See Annex 1362, slide 32.

⁶³³ See Annex 1362, slide 48.

⁶³⁴ A de-rated engine is a gas turbine that is technologically modified in order to achieve a lower output (and possibly efficiency) on the basis of a given technology.

⁶³⁵ See Annex 267, page 16.

⁶³⁶ See Annex 1584, page 4.

(ii) Power output and CC efficiency benchmark

- (750) In terms of power output and base-load efficiency positioning of 50 Hz HDGTs in the Very Large segment (see Figure 34 above), the GT36 competes directly against the HA.02 HDGT technology of GE and the M701J HDGT of MHPS. That is confirmed in Alstom internal documents, where the GT36 is positioned to compete against the HA.02 HDGT technology of GE and the M701J HDGT of MHPS in the upper-end of the Very Large segment.⁶³⁷ According to GE internal documents, Alstom's GT36 is considered to have [internal GE assessment of GT36].⁶³⁸
- (751) Customer indicated that "*once the GT36 comes into the market, this provides us with another choice for Very Large HDGTs in addition to GE 9HA.02 and MHPS 701J*",⁶³⁹ and that "*In the range of 470 MW size GT, only GE and MHI are present, and MHI, in Europe, is a minor player. Alstom may offer an alternative*",⁶⁴⁰ and "*Otherwise only 3 relevant parties are left of which one party (MHPS) has not a very sound basis in EEA. Competition will enforce further improvements*".⁶⁴¹
- (752) Siemens' 8000H lags behind in term of output and efficiency and instead appears to compete more against the HA.01 HDGT technology of GE in the lower-end of the Very Large segment.
- (753) MHPS in the upper-end of the Very Large segment has offered to date only the M701J, which is steam-cooled. According to the Notifying Party, steam-cooled HDGTs are more difficult to operate, less flexible as regards load variation when compared to air-cooled machines, and take longer to start up. Due to the increasing penetration of renewables, operating conditions increasingly suppose flexible generation to accommodate power generation from renewable energy sources or other intermittent sources, which casts doubt on whether a steam-cooled HDGT is the optimum solution for cyclic power generation. Some customers also indicated that MHPS machines offer lower flexibility than those of its rivals⁶⁴² and are therefore less suited for European demand characteristics.
- (754) MHPS has, to date, not offered any air-cooled J HDGT in 50 Hz,⁶⁴³ therefore, in 50 Hz in the upper-end of the Very Large segment the only alternatives for air-cooled HDGTs currently offered are Alstom's GT36 and GE's 9HA.02.⁶⁴⁴ [internal GE and ALSTOM documents].⁶⁴⁵ An HDGT competitor stated that the "*air-cooled H-class machine offered MHPS (the JAC) currently exists (to [...] knowledge) only on paper. It has not been offered in any tenders in which [...] has participated*".⁶⁴⁶ MHPS stated that the testing of the

⁶³⁷ See Annex 1028, slide 7.

⁶³⁸ See Annex 3702, slide 5.

⁶³⁹ See reply to question 69.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁴⁰ See replies to question 96 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁶⁴¹ See replies to question 97 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁶⁴² See minutes of a conference call held with a customer on 10.12.2014.

⁶⁴³ See MHPS' reply to the Commission's Request for Information, 23.04.2015, question 2

⁶⁴⁴ According to McCoy, to date, MHPS sold air-cooled J HDGTs (501JAC) only in 60 Hz.

⁶⁴⁵ See Annex 3702, slide 5.

⁶⁴⁶ See minutes of a conference call held with a competitor on 20 March 2015.

M701JAC has been recently completed⁶⁴⁷ but, at the same time, MHPS has not been able to submit any relevant documents substantiating its claim, even when requested to do so by the Commission.

(755) [potential ALSTOM GT frame].⁶⁴⁸ [potential ALSTOM GT frame].⁶⁴⁹

Figure 41: Alstom's [potential ALSTOM GT frame]: cost of electricity benchmarking

[extract from internal ALSTOM document benchmarking the COE of potential ALSTOM GT frames against competitors]

Source: Annex 1435.

(iii) Operational flexibility benchmarking

(756) In terms of operational flexibility, Alstom's GT36 appears to be best in class like the GT26 in the Large segment. GE's 9HA seems the closest competitor, while Siemens' 8000H is slightly behind and MHPS' M701J and M701JAC lag further back.

(757) Regarding turndown capability, Alstom's GT36 is best in class and has a [GT36 turndown capability]% turndown capability,⁶⁵⁰ followed by GE's Very Large HDGTs (9HA.01 and 9HA.02) with 40% turndown capability, Siemens' 8000H with 42% turndown capability and then by MHPS's 701J and 701JAC with 50% turndown capability.⁶⁵¹

(758) More specifically, regarding ramp-up rate, Alstom's GT36 scores [ramp-up rate] MW / min, second only to GE's 9HA with 60 MW / min. Alstom's GT36 is ahead of Siemens' 8000H (38 MW / min) and MHPS is more distant with 31 MW / min for the M701J and 29 MW / min for the M701JAC.⁶⁵²

(759) Considering start-up speed (hot) in CC, Alstom, GE and Siemens HDGTs perform in a comparable manner. Alstom's GT36 and GE's 9H.01 and 9H.02 all score less than [duration of start-up] minutes in CC, and Siemens' 8000H [duration of start-up] minutes in CC. MHPS' 701J and 701JAC lag behind compared to Alstom, GE and Siemens, with a start-up speed which is roughly the double the time; that is [duration of start-up] minutes in CC.⁶⁵³

(iv) Further innovation in the Very Large segment

(760) In terms of further innovation in the Very Large segment, GE, [quote from internal GE document concerning competitive intelligence]⁶⁵⁴[quote from internal GE document concerning competitive intelligence].⁶⁵⁵ Therefore, according to GE, Siemens would need a new frame to catch up with GE, MHPS and Alstom in terms of CC power output. The development of a new frame typically entails several years of development and massive R&D costs.

⁶⁴⁷ See competitor' reply to the Commission's Request for Information, 23 April 2015, question 1.

⁶⁴⁸ See Annex 259, figure 19.

⁶⁴⁹ See Annex 1584, page 4.

⁶⁵⁰ See Annex 1362, slide 25.

⁶⁵¹ See competitor' reply to the Commission's Request for Information, 26 March 2015, question 40.

⁶⁵² See competitor' reply to the Commission's Request for Information, 26 March 2015, question 40.

⁶⁵³ See competitor' reply to the Commission's Request for Information, 26 March 2015, question 40.

⁶⁵⁴ See Annex 3713, slide 10.

⁶⁵⁵ See Annex 3713, slide 10.

- (761) Regarding the 50 Hz HDGTs, the Commission investigated the upgrades and the introduction of new Very Large HDGTs frames within the next three years.
- (762) The Commission investigated in particular whether any competitor active in 50 Hz HDGTs plans to introduce a new Very Large HDGT frame within the next three years. The Commission concludes on the basis of the documents in its file that in 50 Hz regions no new entry is expected [timeframe of entry] years.⁶⁵⁶
- (763) As regards upgrades, the Commission acknowledges that, on the basis of publicly available information and on the information on its file, competitors active in 50 Hz HDGTs remain committed to adapt and improve existing HDGT frames. The Commission considers, however, that upgrades can only incrementally improve Very Large HDGT characteristics, they cannot leap-frog by upgrading the performance directly into ranges that a newly developed HDGT frame can reach based on latest technological advances combined with optimized new design of the entire HDGT.

(v) Conclusion on technological closeness of competition in the Very Large segment

- (764) The Commission considers that, from a technological point of view, GE's 9HA.02 closest competitor, in the Very Large segment for 50 Hz HDGTs, is Alstom's GT36.
- (765) MHPS's M701J is a distant competitor, in particular for customer needs in the EEA, to date the M701JAC was never offered and has lower operational flexibility performance compared to Alstom and GE.
- (766) GE's 9HA.01, Siemens' 8000H, MHPS's M701F5 and Alstom's [name of potential ALSTOM GT frame] are more distant from a technological point of view as they have lower power output and lower CC efficiency compared to GE's 9HA.02, MHPS' M701J and Alstom's GT36.
- (767) Therefore, the Commission considers that the only currently offered HDGT competing with Alstom's GT36 would be GE's 9HA.02 in the Very Large segment for the highest power output and the highest CC efficiency, and in particular in terms of operational flexibility. In addition, on the basis of its file, the Commission concludes that there will not be any new other HDGT frame ready for delivery [timeframe of entry] years.

8.5.3.3. The Transaction eliminates a significant and close competitor of GE in the Very Large 50 Hz HDGT segment from a commercial point of view

(i) Commercial importance of Alstom in the Very Large segment

- (768) Although until recently Alstom did not have any offering in the Very Large segment, at the time of the Transaction announcement everything was on track for Alstom to complete the development of a new machine, the GT36, and enter that market segment.

⁶⁵⁶ See competitor's reply to the Commission's Request for Information, 26 March 2015, question 23; see competitor's reply to the Commission's Request for Information, 20 March 2015, question 21; see competitor's reply to the Commission's Request for Information, 27 March 2015, question 21, Attachment 2, slide 8.

- (769) The GT36 programme is a [value of investment] investment which started in [date of program launch] and which involved [number of FTE] at the time the Transaction was announced in March 2014.⁶⁵⁷
- (770) In its latest business plan for the GT36 before the announcement of the Transaction,[business plan for GT36: targeted share].⁶⁵⁸ [business plan for GT36: year of entry in 50Hz regions].⁶⁵⁹ In the light of that, Alstom had scheduled the official launch of the product at the beginning of July 2014. However, during the period after the announcement of the Transaction, Alstom's senior management decided at the last minute to cancel the official public launch of the GT36. Alstom's management decided, at that time, to proceed only with organising meetings or presentations to targeted customers.
- (771) Alstom, however, launched internally the GT36 on [date of internal launch]. According to its post-event analysis⁶⁶⁰, Alstom's employees were "*exited to hear the competitive strength of the GT36*" and despite that, there were "*a lot of concerns about what the impact of the merger with GE will be*".
- (772) When the Transaction was announced, Alstom was in negotiations with [name of customer] for the possible installation of a 60 Hz fleet leader (the [name of project])⁶⁶¹ and was also pursuing other opportunities, including in 50 Hz regions. Therefore, the launch of the machine was on track. Alstom's President of the Thermal Business acknowledged, during a meeting with the Commission's case team, that the announcement of the Transaction had a negative impact on Alstom's chances of finding a fleet leader. Alstom declared that [name of customer] had decided not to pursue its project in [name of project location] and therefore Alstom had no concrete opportunity for a fleet leader at the moment. Therefore, it is difficult to separate the impact of the announcement of the Transaction from Alstom's inability to find a fleet leader⁶⁶² to date.
- (773) At the time of the announcement of the merger, Alstom was taking the necessary steps to ensure the successful launch of the GT36 according to the GT36 business plan. Alstom has submitted already several firm bids, some of which are still under evaluation by customers.
- (774) The Notifying Party argues that there are delays with the launch of the GT36 and that Alstom's GT36 programme faces considerable risk and uncertainty in terms of timing.
- (775) However, according to Alstom's most recent internal documents⁶⁶³ dated 3 December 2014, the development, validation and production timing for the GT36 continue to be on track with a first fire for the 60 Hz engine scheduled in [date of first fire]. Whilst due to the uncertainty created by the Transaction

⁶⁵⁷ See GE's reply to Commission's Request for Information N°1 of 4 August 2014, question 20.

⁶⁵⁸ See Annex 1313, page 14.

⁶⁵⁹ Alstom, before the announcement of the merger, expected to assemble the first GT36 by September 2015.

⁶⁶⁰ See Annex 1482, slide 3.

⁶⁶¹ Form CO, paragraph 921. Annex 1034.

⁶⁶² The first unit in operation of a given new HDGT technology.

⁶⁶³ See Annex 1560.

some customers might have refrained from choosing the GT36 in recent months, Alstom has been proposing the new machine to some customers. In any case, the fact that so far Alstom has not managed to secure any contract does not imply that Alstom won't manage to sell its GT36 in the future. Alstom's "TYP 2015-17 Gas"⁶⁶⁴[sales forecast].

- (776) The Notifying Party also argues that Alstom's financial conditions reduce its ability to compete especially for the Very Large segment, where customers request more and more financial risks from OEMs, in particular to compensate for the risks associated to a new and untested product. According to GE, customers are willing to accept a new technology if it has been proven or if the OEM assumes the risks associated with the new technology,[GE internal view of customers].⁶⁶⁵
- (777) In its internal documents, Alstom remarks that GE has entered the Very Large "market very aggressively with unprecedented liabilities" in relation to the HA.02.⁶⁶⁶
- (778) However, none of the competitors which replied to the Commission's Requests for Information confirmed the offering of unlimited liability as a common practice in the industry for Very Large HDGTs.⁶⁶⁷ Customers did not confirm that with regard to the offers they received so far for Very Large HDGTs, all OEMs were offering unlimited liquidated damages liability.⁶⁶⁸ Moreover, a clear majority of customers considered Alstom's financial capabilities to be on-par with the other OEMs.⁶⁶⁹
- (779) The Notifying Party also argues that, in the fierce and continuous HDGT innovation race, Alstom has traditionally lagged well behind its competitors in terms of technology, also in the Very Large segment.
- (780) However, the overwhelming majority of customers regard Alstom as a credible innovator for Very Large HDGTs.⁶⁷⁰ A customer considers that "*Alstom has been a credible innovator for medium and large HDGTs in the 50 Hz market. It is expected that Alstom would be a credible innovator for Very Large HDGTs in the 50 Hz market*".⁶⁷¹ Another customer believes that Alstom "*successfully developed the GT26 for the 50 Hz market and there is no reason why this could not be repeated*".⁶⁷² In addition, customers declared that the participation of Alstom's GT36 in certain of their tenders would have an impact on their ability to obtain better conditions from other OEMs in relation to the supply of Very Large HDGTs, replied positively.⁶⁷³

⁶⁶⁴ Annex 225, page 20.

⁶⁶⁵ See reply to the Article 6(1)(c) decision, paragraph 105-106.

⁶⁶⁶ See Annex 1586, page 20.

⁶⁶⁷ See replies to question 66 of Phase I Questionnaire Q2 to competitors on the gas business.

⁶⁶⁸ See replies to question 12 of Phase I Questionnaire Q4 to customers of Alstom's GT36.

⁶⁶⁹ See replies to question 110 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁷⁰ See replies to question 68 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁷¹ See reply to question 68 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁷² See reply to question 68 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁷³ See replies to question 11 of Phase I Questionnaire Q4 to customers of Alstom's GT36.

- (781) The Notifying Party also argues that Alstom will have difficulties in competing since it is a latecomer.
- (782) MHPS and Siemens were the first movers in the Very Large segment, with HDGTs already in operation. Siemens' HDGT is active at the lower-end of the Very Large segment, with its 8000H HDGT launched in 2008. GE is a follower, after Siemens and MHPS, with the HA.01 technology which targets the lower-end of the Very Large segment; GE's latest technology, the HA.02, targets the upper-end of the Very Large segment. Ansaldo does not offer a machine in the Very Large segment.
- (783) The majority of customers indicated that they do not regard Alstom's entry into the Very Large segment after Siemens, MHPS and GE as an element that could interfere with Alstom's capability of being a significant player in the supply of Very Large HDGTs.⁶⁷⁴ A customer states that *"although Alstom will be slightly later than Siemens and GE in bringing a very large HDGT to the market, it has the experience and the resources to achieve this. Alstom successfully developed the GT26 for the 50Hz market and there is no reason why this could not be repeated. In addition the GT36 is only in competition with the GE 9HA.02 and the MHPS M701J. This version of the GE machine has not yet been developed and very few MHPS machines have been built and commissioned to date"*.⁶⁷⁵
- (784) [information from internal GE and ALSTOM documents on timeline of validation of GT36 and 9HA.02].⁶⁷⁶ The GT36 thus seems to be at par with GE's 9HA.02 in the 50 Hz segment in terms of timing ([timeline of introduction of GE's 9HA.02 and ALSTOM's GT36]). During a meeting with the Commission's case team on 3 November 2014, GE's Product Marketing General Manager indicated that [timeline of validation of GE's 9HA.02 and ALSTOM's GT36].
- (ii) The bidding analysis shows that Alstom (with its GT26 HDGT) and MHPS exerts a similar competitive constraint on GE's (and Siemens') Very Large HDGTs, and Alstom's competitive constraint is likely to increase more with its GT36 HDGT**
- (785) Based on bidding data provided by the Notifying Party, Table 26 and Table 27 illustrate that GE and Siemens are the two market leaders in the Very Large segment.
- (786) Table 26 sets out the shares of successful bids for tenders in the Very Large segment (for all tenders and for competitive tenders only), defined there as tenders where the winning HDGT has an output higher than 330MW. Table 26 shows that three OEMs have a HDGT in the Very Large segment: GE (with its 9HA.01), Siemens (with its 8000H), and MHPS (with its M701F5 and M701J). In 2014, Alstom and Ansaldo did not have HDGTs in the Very Large segment. This Table also shows that GE was able to achieve a high market share, despite entering later than Siemens and MHPS. Table 26 also shows the smaller

⁶⁷⁴ See replies to question 71 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁷⁵ See reply to question 71 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁷⁶ See Annex 1498.

importance of MHPS which was successful only in two tenders, which include one non-competitive tender in Japan with its M701J HDGT.⁶⁷⁷

Table 26: Shares of wins for all tenders (Worldwide 50Hz without China)

	2009-2014
GE	[40-50]%
Alstom	[0-5]%
Combined	[40-50]%
Siemens	[50-60]%
MHPS	[10-20]%
Ansaldo	[0-5]%
Observations	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (787) The Commission has also considered the shares of wins for tenders where at least one firm participated with a Very Large HDGT, independently of the output of winning HDGT. Table 27 shows that: (i) Ansaldo's bid was never successful against a Very Large HDGT, and (ii) Alstom and MHPS were successful in [number of tenders] each when they were competing against Very Large HDGTs (that is to say they have achieved the same success rate of [5-10]% in competitive tenders). The importance of Alstom and MHPS as competitive forces in the Very Large segment is analysed in the following Recitals. In the following analysis, the Commission focuses on a sample of [number of tenders] competitive tenders reported in Table 27, in particular on the competitive constraints that GE or Siemens (the two market leaders in this segment) face when they participate with their Very Large HDGTs.

Table 27: Shares of wins for all tenders (tenders where a Very Large HDGT has participated) (Worldwide 50Hz without China)

	2009-2014
GE	[30-40]%
Alstom	[5-10]%
Combined	[40-50]%
Siemens	[40-50]%
MHPS	[10-20]%
Ansaldo	[0-5]%
Observations	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (788) Table 28 and Table 29 show that Alstom and MHPS have similar participation rates against GE and Siemens.
- (789) Table 28 reports the participation of OEMs for tenders where GE or Siemens participate with a Very Large HDGT. From that table it emerges that: (i) GE

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In terms of capacity (MW), for the period 2009-2014, GE has a market share of [30-40]%, Siemens of [40-50]%, and MHPS of [10-20]%.

and Siemens participate often against each other, (ii) Ansaldo is the OEM with the lowest number of participations against GE and Siemens, suggesting that Ansaldo is a limited competitive constraint on the two market leaders and, (iii) Alstom and MHPS have similar participation rates (in the range of [70-80]%) in tenders against GE and Siemens, suggesting that those two OEMs could exert a similar competitive constraint on GE and Siemens.

Table 28: Participations against GE or Siemens (Worldwide (without China) – 2009-2014)

	Tender where GE participates	Tender where Siemens participates
GE	[0-5]%	[90-100]%
Siemens	[90-100]%	[0-5]%
Alstom	[60-70]%	[70-80]%
MHPS	[70-80]%	[60-70]%
Ansaldo	[10-20]%	[10-20]%
GE's participations	[number of tenders]	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (790) The Commission has also considered the participating OEMs for tenders won by GE or Siemens. Table 29 shows that for the tenders won by GE, Alstom and MHPS participate in the same number of tenders (in [number of tenders] tenders), while Ansaldo participates only in one tender. Similar considerations apply to tenders won by Siemens. This confirms the finding that Alstom and MHPS could exert a similar competitive constraint to GE and Siemens.

Table 29: Tenders won by GE or Siemens (Worldwide (without China) – 2009-2014)

	Tender won by GE	Tender won by Siemens
GE	[number of tenders]	[number of tenders]
Siemens	[number of tenders]	[number of tenders]
Alstom	[number of tenders]	[number of tenders]
MHPS	[number of tenders]	[number of tenders]
Ansaldo	[number of tenders]	[number of tenders]
NB. of wins	[number of tenders]	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (791) Table 30 shows that Alstom (with its GT26 HDGT) and MHPS win the same number of tenders against GE and Siemens.⁶⁷⁸
- (792) Table 30 reports the winning OEM for tenders where GE or Siemens participate. When GE participates, it loses mainly to Siemens which accounts for [70-80]% of GE's losses, while Alstom and MHPS account for a similar share of GE's losses ([number of tenders] wins or [10-20]% each). Therefore, Siemens seems to exert the main competitive constraint on GE in the Very Large segment, and MHPS and Alstom exert a similar competitive constraint on GE. It is notable however that Alstom, despite not having an offering in the

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As discussed in Annex I (Section 4), in order to assess the competitive force of each OEM, it is important to also interpret participations in light of wins.

Very Large segment (unlike MHPS), has succeeded in winning the same amount of tenders as MHPS for tenders where GE and Siemens have participated with a Very Large HDGT. Similar considerations apply to Siemens, where MHPS and Alstom account for a limited amount of Siemens's losses, while GE accounts for [70-80]% of Siemens's losses.

- (793) Therefore, in addition to MHPS and Alstom having similar participations rates against GE and Siemens, their success rates are also similar. The Commission notes however that, while Alstom was able to compete only with its Large GT26 HDGT, MHPS was already able to compete with its two Very Large HDGTs (M701F5, M701J). Therefore, despite not having a Very Large offering, Alstom exerts a competitive constraint on GE and Siemens to a similar extent that MHPS does.

Table 30: Number of wins by OEM in tenders in which GE or Siemens participates (Worldwide (without China) – 2009-2014)

	Tender where GE participates	Tender where Siemens participates
GE	[number of tenders]	[number of tenders]
Siemens	[number of tenders]	[number of tenders]
Alstom	[number of tenders]	[number of tenders]
MHPS	[number of tenders]	[number of tenders]
Ansaldo	[number of tenders]	[number of tenders]
Observations	[number of tenders]	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (794) To conclude, from the bidding data for tenders for Very Large HDGTs it is evident that: (i) Siemens and GE are the two market leaders in the Very Large segment, (ii) Ansaldo does not exert competitive pressure on GE and Siemens (it has the lowest number of participation and is never successful), and (iii) MHPS and Alstom exert a similar competitive pressure on GE and Siemens who have similar participation rates against GE or Siemens, and account for similar shares of GE' or Siemens' losses.
- (795) It should also be noted that, contrary to Alstom, MHPS has already two HDGTs available to compete against GE's 9HA.01 HDGT and Siemens 8000H HDGT, namely the M701F5 and the M701J HDGTs.
- (796) While Alstom's competitive constraint on GE and Siemens is similar to MHPS', it is notable that Alstom was able to participate only with its GT26 HDGT since its Very Large HDGT, the GT36, was under development. In the future in the Very Large segment Alstom is likely to participate instead with its GT36 HDGT and therefore is likely to exert more competitive pressure on GE and Siemens than what is observed in the data (and in particular a more important competitive constraint compared to MHPS).

8.5.3.4. Conclusion on closeness of competition in Very Large segment

- (797) The Commission concludes that the Transaction would eliminate a significant and close competitor of GE in the Very Large 50Hz HDGT segment.
- (798) The Commission considers that GE's 9HA.02 closest competitor, in the Very Large segment for 50 Hz, is Alstom's GT36. Siemens' 8000H is not as close, from a technological point of view.

- (799) The Commission also concludes that MHPS is not a close competitor of Alstom and GE in the Very Large 50 Hz segment. MHPS's Very Large HDGTs are typically best suited for base load operations, and have a lower performance in operational flexibility.

8.5.4. *Alstom is not a significant and close competitor of GE in the Medium 50Hz HDGT segment*

- (800) Concerning the Medium segment of the market for 50 Hz HDGTs, the Notifying Party consistently stated in the Form CO that GE's offering only included the 9E.03. "GE has two-E class GTs, one 50 Hz (GT-9E.03) and one 60 Hz (GT-7E.03)."⁶⁷⁹ GE indicates that it "introduced its E-class technology in the late 1970s (the 9E model (50 Hz) was introduced in 1978)." Moreover, GE confirmed that the Form CO provided "a complete competitive analysis for E-class GTs".⁶⁸⁰
- (801) However, during the Phase II investigation, the Commission discovered that GE also offers another Medium HDGT, namely the 9E.04. Publicly available documents of GE (see for instance "Power-gen Asia, 9E Gas Turbine, Kuala Lumpur, 9-12 September 2014")⁶⁸¹ state that the 9E.04 would be offered for shipment as of 2016. It also appears from GE's submissions that that machine was already being offered in bids on [dates of tenders] (respectively [names of projects] projects in [location of projects (non-EEA country)]).⁶⁸²
- (802) While GE was already publicly offering the 9E.04 as available for shipment in 2016, the Form CO mentions that product only under pipeline projects in Section 8.7. In that section, GE submitted that it "is developing a new versions of the 9E" that "is intended to incorporate incremental component improvements"; but that "GE has not formally decided whether the component technologies will be introduced into the GT products as there is a development and product cost impact." GE indicates that "When this decision is made, GE will start commercializing the new performance ratings."⁶⁸³ In contrast to its own 9E.04 product, GE did, for example, discuss the "AE94.2 Evo2", which is a turbine upgrade for Ansaldo's Medium HDGT that was launched in June 2014.⁶⁸⁴
- (803) The Commission notes, first, that the information provided by GE in the Form CO on 19 January 2015 according to which GE has not yet decided whether or not to commercialise the product is in apparent contradiction with the fact that, in reality, GE publicly launched the 9E.04 and had been already bidding with the product. Second, the information on the launch and actual bidding of the 9E.04 predates the notification and, in the Commission's view, should have been duly reflected in the Form CO. Third, the Commission also observes that the information on a new HDGT product by GE is significant in nature, as it directly concerns the Commission's assessment of the competitive landscape in

⁶⁷⁹ See Form CO, paragraph 590 and paragraph 608 and following.

⁶⁸⁰ See Form CO, footnote 287.

⁶⁸¹ See http://st-events.gepower.com/_downloads/presentations/PGAsia_9E_NewcombBarton_FINAL.pdf

⁶⁸² See GE's reply to the Commission's Request for Information N°31, 30.04.2015, question 13.

⁶⁸³ See Form CO, paragraph 1262.

⁶⁸⁴ See Form CO, paragraph 620.

the Medium segment, and has affected the way the Commission conducted its investigation during Phase I and at the beginning of Phase II.

- (804) The Commission reserves its position as to whether the information provided by GE in the Form CO as described in Recitals (797) and (799) constitutes incorrect or misleading information or both within the meaning of Article 14(1)(a) of the Merger Regulation.
- (805) In addition to 9E.04,[GE offering in medium GT].

Figure 42: GE offering in Medium

[extract from internal GE document concerning positioning of GE's and competitors' Medium GTs in terms of output and efficiency]

Source: Annex 3860, slide 7.

- (806) In the Medium segment of the market for 50 Hz HDGTs, Alstom competes with the GT13E2. As illustrated by Figure 43, there are three versions of the GT13, which are positioned in different points of the Medium segment.

Figure 43: GT13 evolution

[extract from internal ALSTOM document concerning positioning of ALSTOM's Medium GT offering in terms of power and efficiency]

Source: Annex 3876, slide 62.

- (807) In fact, in 2012, Alstom released two upgrades of the 2005 GT13E2: (i) GT13E2 – MXL2 (188 MW, 38.6% efficiency) – best in class for efficiency and (ii) GT13E2-U1 (202 MW, 38%) – best in class for output. Therefore, the three machines offer different combinations of output and efficiency.
- (808) Ansaldo's Medium machine is the AE94.2. The performance of the latest version in SC is 185 MW output and 36.2% efficiency. As regards the CC (1-on-1) configuration, the performance is 277 MW and 54.6% efficiency.⁶⁸⁵
- (809) MHPS offers both the H100 and the M701DA in the 50Hz Medium segment of HDGTs. Those two machines are geared for CC operations and have very different output and efficiency features. The former is a high efficiency – low output machine (157 MW, 54.4%), while the latter is a high output-low efficiency machine (212 MW, 51.4%).⁶⁸⁶
- (810) Siemens offers the 2000E in the Medium segment. In addition, Siemens offers the SGT5-3000E, which is a down-rated SGT5-4000F gas turbine, thus is based on an entirely different design than that of the SGT5-2000E gas turbine. From a power output perspective, it appears at the far upper end of the Medium segment (191 MW SC, 290 MW CC). In terms of efficiency, the SGT5-3000E offers a 56.5% CC efficiency and 36.8% SC efficiency.⁶⁸⁷

⁶⁸⁵ Ansaldo' reply to the Commission's Request for Information dated 10 July, question 1.
⁶⁸⁶ MHPS' reply to the Commission's Request for Information dated 10 July, question 1.
⁶⁸⁷ Siemens' reply to the Commission's Request for Information dated 10 July, question 1.

8.5.4.1. The Notifying Party's views

- (811) The Notifying Party submits that Siemens, MHPS and Ansaldo's products are perfectly capable of competing in the Medium 50 Hz HDGT segment. The Notifying Party submitted a paper on "*Medium Gas Turbine*" on 29 May 2015. The Notifying Party also claims that in the Medium segment GE's and Alstom's products are not in close competition from a technological point of view because there is a wide output gap and efficiency gap between GE's 9E.03 and Alstom's GT13E2; which is not closed by GE's 9E.04.

8.5.4.2. Alstom is not a significant and close competitor of GE in the Medium 50Hz HDGT segment from a technological point of view

- (812) According to the majority of customers, Alstom is a credible innovator⁶⁸⁸ in the Medium segment. A customer states that "*while the GT13 is a mature product it has continued to be developed by Alstom and the latest machine with MXL2 technology is a class leader in the category of Medium HDGTs*".⁶⁸⁹ Alstom's offer in the Medium segment, the GT13E2, is considered one of the best products available in the Medium segment by a majority of customers.⁶⁹⁰
- (813) The majority of customers considered that the closest HDGT to Alstom's GT13E2, in terms of technical performance parameters for SC and CC, is Siemens' 2000E. Only a few customers suggested that Alstom's GT13E2 is close to GE's 9E.03.⁶⁹¹ Therefore, feedback from customers suggests that Alstom is a technological significant player in the Medium segment, however it is not perceived to be in particularly close competition with GE.

(i) Alstom's Medium HDGTs main features

- (814) In the Medium segment of the market for 50 Hz HDGTs, Alstom competes with three versions of the GT13E2, illustrated by Figure 44, which are positioned in different points of the Medium segment.

Figure 44: GT13 product positioning

[extract from internal ALSTOM document concerning position of ALSTOM's Medium GT products in terms of output and efficiency]

Source: Annex 3876, slide 69.

- (815) Based on Alstom internal documents, the three machines are expected to meet different customers' needs. In particular, whereas the MXL2 version is targeting combined cycle operations, the U1 version is mainly intended for SC operations.

⁶⁸⁸ See replies to question 80 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁸⁹ See reply to question 81 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁹⁰ See replies to question 81 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁶⁹¹ See replies to questions 56 and 56 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

Figure 45: GT13 product comparison

[extract from internal ALSTOM document concerning performance characteristics of three GT13E2 versions]

Source: Annex 3851, slide 38.

- (816) In the 2013 GTW Handbook, Alstom gives the following description of the evolution of the GT13E2: in "2012, the popular GT13E2 model (more than 160 units [...]) went through another evolutionary upgrading. First introduced into operation in 1993, the GT13E2 was initially rated at 165MW at 35.7% simple cycle efficiency. Major scope of its first upgrade (in 2002) pushed performance to 172 MW and 36.4% efficiency. [...] It also introduced an option to run the engine at two different modes: a lower firing temperature level (for extended inspection intervals) or standard higher firing temperature mode with slightly better performance. Continuous upgrades during the 2000s saw power rise into 180 MW range at close to 37% efficiency. This latest major uprate puts the GT13E2 at 202 MW output and 38% efficiency".⁶⁹²
- (817) In terms of operational flexibility, for the GT13E2 2012 version, Alstom claimed "improved start-up times and turndown capabilities".⁶⁹³ "In combined cycle, with help of the additional variable guide vanes, the 2-on-1 standardized GT13E2 plant shows a 4% to 5% fuel savings when operated down at 50% of load, compared to earlier version".⁶⁹⁴ "The engine's efficiency at low ambient conditions is said to be significantly better than competitors' machines".⁶⁹⁵
- (818) In terms of lower emissions, "running on natural gas, full load, NOx emissions are lowered from 25 ppm down to 15 ppm".⁶⁹⁶
- (819) In its internal documents, Alstom sees its GT13 models to have a competitive advantage with regard to the offering of other OEMs, in terms of several parameters, which are indicated in green in Figure 46, such as power output, efficiency, both at SC and CC, as well as emissions and inspection intervals.

Figure 46: Alstom's GT13 competitive positioning

[extract from internal ALSTOM document – comparison of performance of three GT13E2 versions]

Source: Annex 3876, slide 68.

- (820) [internal GE assessment of GT13E2].⁶⁹⁷

(ii) Technological benchmarking

- (821) GE's offering for the Medium segment includes the 9E.03 and, since October 2014, also the 9E.04. The 9E.04 is a performance upgrade developed by GE's thermal services arm, Power Generation Systems ('PGS') and incorporated in

⁶⁹² See Annex 3635.

⁶⁹³ See Annex 3635.

⁶⁹⁴ See Annex 3635.

⁶⁹⁵ See Annex 3635.

⁶⁹⁶ See Annex 3635.

⁶⁹⁷ See Annex 3648, slide 2.

the Power Generation Product's ('PGP') new unit catalogue.⁶⁹⁸ The 9E.04 includes a new turbine and a new hot gas path rotor design allowing it to reach almost 37% efficiency in SC.⁶⁹⁹ That represented an important improvement of the old GE's 9E.03 which held a position at the bottom of the Medium segment with its 34.5% SC efficiency.

- (822) Figure 47 illustrates the main differences between the two machines in terms of technical performance.⁷⁰⁰

Figure 47: GE's 9E.03 and 9E.04 comparison

[extract from internal GE document. Table comparing performance of 9E.03 and 9E.04]

Source: see footnote 700.

- (823) [GE Medium GT product].

Figure 48: Medium product options by GE

CTQ	9E.03	9E.04	9F.03	GE product	13E2	2000E
\$/Kw SC Plant	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]
\$/kw GTG	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]
SC output	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]
CC Output	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]
SC Efficiency	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]
CC Efficiency	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]
<i>Fuel Flex</i>	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]	[performance of GE Medium GT offering]

Source: Annex 3860, slide 6.

⁶⁹⁸

See GE's reply to the Commission's Request for Information N°31, 30.04.2015, question 7.

⁶⁹⁹

See GE's reply to the Commission's Request for Information N°31, 30.04.2015, question 7.

⁷⁰⁰

See GE's reply to the Commission's Request for Information N°20, doc "GE_0014971_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE document]".

- (824) According to Figure 48, where GE compares its offering against that of Siemens and Alstom, Alstom's GT13 and GE's 9E.03 appear to be the most distant competing machines both in terms of efficiency (SC and CC) and output (SC and CC).
- (825) However, as shown also by Figure 49, GE's 9E.04 made an important step to reduce the technological gap with the GT13E2, although the machines [GE internal assessment of competitiveness].

Figure 49: GE's 9E competitive positioning

[extract from internal GE document concerning positioning of GE's and competitors' medium GTs in terms of output and efficiency]

Source: Annex 3860, slide 19.

- (826) The 9E.04 partially reduces the technological gap with the GT13E2 in terms of SC efficiency. In fact, although Alstom remains best in class, GE becomes the closest to Alstom in terms of SC efficiency, followed by Ansaldo, Siemens and MHPS. However, in SC configuration, the gap between the two machines remains considerable in terms of output performance. Alstom's GT13E2 is positioned at the upper-end of the Medium segment, slightly ahead of Ansaldo's AE94.2, and in any case ahead of Siemens' 2000E.
- (827) As regards performance in CC configuration, the Parties' offer is distant both in terms of efficiency and output, whereas Siemens and Ansaldo are much closer to the GT13E2 than GE's 9E.03 and 9E.04.
- (828) Figure 50 provides a detailed comparison of the technical parameters of Medium machines based on GE's intelligence, which again illustrates that the 9E.03 (in the table appearing as the 9E AGP) and Alstom's GT13E2 are positioned at the extremes of the Medium segment and that the 9E.04 approaches Alstom's offer only partially.

Figure 50: 9E competitiveness by GE

[technical characteristics of GE and competitors' Medium GT]

OEM	MODEL	GT Output, MW	MS 1x1 CC, MW	GT Efficiency (%)	MS 1x1 CC, Efficiency (%)	GT + Gen+ MSD \$/KW Costs
GE	9E AGP	[...]	[...]	[...]	[...]	[...]
GE	9E.04	[...]	[...]	[...]	[...]	[...]
MHI	M701DA	[...]	[...]	[...]	[...]	[...]
SIEMENS	SGT5-2000E	[...]	[...]	[...]	[...]	[...]
ANSALDO	AE94.2	[...]	[...]	[...]	[...]	[...]
ALSTOM	GT13E2M	[...]	[...]	[...]	[...]	[...]
ALSTOM	GT13E2MXL	[...]	[...]	[...]	[...]	[...]

Source: Annex 3860, slide 15.

- (829) The technological gap between the Parties' offer in the Medium segment is further evidenced by GE's intention to retain Alstom's GT13E2 in its

portfolio.⁷⁰¹ That suggests that GE perceives Alstom's offering in the Medium segment as complementary to its current offer, contrary to Alstom's Large and Very Large offering.

- (830) In conclusion, until the recent launch of the 9E.04, Ansaldo and Siemens' machines were closer to Alstom's both in CC and SC configurations. In terms of SC efficiency, GE is closer with the 9E.04, although it remains quite distant from Alstom in the SC output and CC output and efficiency. On the basis of the analysis of the technical parameters, Ansaldo and Siemens appear to be closer competitors of Alstom than GE.

(iii) Conclusion on technological closeness of competition in the Medium 50 Hz segment

- (831) From a technological point of view, the Commission considers that Alstom's GT13E2 closest competitors in the Medium 50 Hz HDGT segment are Siemens' 2000E and Ansaldo's AE94.2. The GE's 9E.03 and MHPS' M701DA appear to be more distant from a technological point of view. With the launch of the new 9E.04, GE has become the closest competitor, in terms of SC efficiency, to the GT13. However, in terms of the other parameters, GE's offering remains more distant. GE and Alstom are thus not close competitors in the Medium 50 Hz segment from a technological point of view.

8.5.4.3. Alstom is not a significant and close competitor of GE in the Medium 50Hz HDGT segment from a commercial point of view

- (832) Customers broadly considered Alstom as an important player in the Medium segment.⁷⁰²
- (833) A vast majority of customers acknowledged that Alstom's participation in tenders for Medium HDGTs affected their ability to obtain better conditions from other suppliers. In particular, Alstom's participation with GT13E2 helped customers to negotiate better conditions mainly from Siemens, but also from GE and MHPS, and to a very limited extent from Ansaldo.⁷⁰³
- (834) Those feedbacks from customers suggest that Alstom is a commercially significant player in the Medium segment and exerts significant competitive pressure on the other OEMs, including GE.
- (835) However, the bidding analysis and qualitative evidence collected in the market investigation indicate that although the Parties compete and interact, they do not exert close competitive pressure on each other.

⁷⁰¹ See for instance Annex 4708.

⁷⁰² See replies to question 79 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁰³ See replies to question 59 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

(i) The bidding analysis shows that there are four global competitors in the Medium 50Hz HDGT segment

- (836) As regards the Medium segment, the bidding analysis reveals that contrary to the other OEMs, MHPS has a very limited geographic focus. Over the last five years, MHPS did not participate in any tenders outside China and Japan. MHPS participated in 23 tenders (all in combined cycle applications), of which 21 in China and two in Japan. Moreover, the Commission also notes that MHPS does not participate in any tender for simple cycle applications.
- (837) Therefore, past bidding data for the period 2009-2014 shows that GE, Siemens, Alstom and Ansaldo participate actively in tenders at worldwide level, 50Hz excluding China and Iran.

(ii) Although the analysis of EEA Medium HDGT tenders has limited relevance due to the small sample, it suggests Ansaldo has been successful in the EEA

- (838) Based on Annex 207 of the Form CO, only two tenders in the Medium segment were awarded in the last five years in the EEA. One project was awarded to Ansaldo for a combined cycle Medium HDGT in Italy in 2009.⁷⁰⁴ That was a non-competitive tender for the replacement of a previous Ansaldo's HDGT.⁷⁰⁵ The second project (which was a competitive tender) in the EEA was a simple cycle project in Finland in 2010, awarded to Ansaldo.
- (839) Past bidding data shows that (i) demand for Medium HDGTs has been limited in the EEA for the period 2009-2014 and that (ii) Ansaldo was awarded the only two tenders in the EEA for Medium HDGTs.

(iii) Medium tenders for CC applications: the analysis of past bidding data suggests a lack of closeness between the parties and a limited competitive harm⁷⁰⁶

⁷⁰⁴ See Annex 207.

⁷⁰⁵ See Annex 207.

⁷⁰⁶ In the body of the Reply to the Statement of Objections, the Notifying Party presents a bidding analysis of the Medium segment. This was further complemented by another subsequent economic submission made by the Notifying Party on 13 July 2015, by [Professors], "*GE/Alstom: E-Class Bidding Analysis*". These two Submissions focus on runner-up data to argue that competitive harm is likely to be limited since the merging parties are the winner and runner-up in a limited number of tenders (in the range of 3-4 bids for the period 2009-2014) (see also Reply to the Statement of Objections, page 193). The Commission disagrees with the assessment done by the Notifying Party. First, as discussed in Annex I (Section 3), focusing on runner-up data for the competitive assessment is not appropriate given the nature of HDGTs tenders. Second, the Commission is concerned about the (lack of) accuracy of the runner-up information: the Notifying Party mentions that there was a formal shortlist stage in only [number of tenders] that it considers (see page 1 of "*GE/Alstom: E-Class Bidding Analysis*", dated 13 July 2015), and among the competitive tenders considered in the Commission's analysis runner-up data is missing for almost 60% of those tenders.

- (840) Table 31 shows that the merged entity has a high market share above [60-70]% for the period 2009-2014.⁷⁰⁷ MHPS and Ansaldo have a more limited market share: each with a market share around [5-10]% for the period 2009-2014.

⁷⁰⁷ This is based on bidding data provided by the Notifying Party, which exclude Iran.

Table 31: Shares of wins for all tenders (Medium CC)

	Worldwide 50Hz (without China and Iran) 2009-2014
GE	[40-50]%
Alstom	[20-30]%
Combined	[60-70]%
Siemens	[30-40]%
MHPS	[0-5]%
Ansaldo	[5-10]%
Observations	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (841) In terms of capacity (MW), for the period 2009-2014, the merged entity has a combined market share of [60-70]% (GE: [40-50]%, Alstom: [20-30]%), Siemens has a market share of [20-30]%, MHPS [0-5]%, and Ansaldo [0-5]%. Those market shares are in line with market shares presented in Section 8.4.2.4. The bidding data therefore confirms the high combined market share of the merged entity.
- (842) As regards competitive tenders (see Table 32), the merged entity represents also a high combined market share, around [60-70]%. Second, this table also shows that Ansaldo and MHPS have never won a competitive tender for combined cycle applications in the medium segment during the period 2009-2014.

Table 32: Shares of wins for competitive tenders (Medium CC)

	Worldwide 50Hz (without China and Iran) 2009-2014
GE	[20-30]%
Alstom	[20-30]%
Combined	[50-60]%
Siemens	[40-50]%
MHPS	[0-5]%
Ansaldo	[0-5]%
Observations	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (843) As regards Ansaldo, while it has participated in a significant number of competitive tenders for combined cycle applications ([number of tenders] out of [number of tenders] competitive tenders), it was not successful in the period from 2009 to 2014. However, the Commission also notes that Ansaldo, in its Reply to the Request for Information dated 10 July 2015, mentions that *"Regarding E-class, in recent years, Ansaldo has been mainly focused on markets where open cycles had been requested to quickly answer at the continuous growing demand. [...] Now Ansaldo is approaching new markets where E-class machines are requested both in open and in combined cycle. In fact, recently Ansaldo has been competing with success with its E-class machine in combined cycle in South East Asia"*. Therefore, while Ansaldo has not won any competitive tenders in the past for combined cycle applications, the Commission considers that that could change in the future based on the recent strategic focus of Ansaldo.

- (844) As regards the analysis of participation in tenders, for the period from 2009 to 2014, the merging parties participate against one another in a limited number of tenders (in [number of tenders] tenders), which represents [10-20]% of all Medium tenders for combined cycle applications.⁷⁰⁸ Moreover, among the [number of tenders] tenders where the Parties compete against one another, [number of tenders] tenders have two other participants.⁷⁰⁹
- (845) The Commission also notes that the relatively limited proportion of tenders where the Parties meet and compete against each other can also be explained by the high proportion of non-competitive tenders characterizing the Medium segment. In fact, over the last five years, more than half of the overall number of tenders ([50-60]%) was awarded on a non-competitive basis ([number of tenders] out of [number of tenders] tenders). In the Large HDGT segment, only [20-30]% of the overall number of tenders was non-competitive ([number of tenders] out of 100 tenders).
- (846) Moreover, an analysis of successful bids in the tenders where the Parties competed against each other also shows that [GE success rate]. More generally, for all tenders where Alstom participates, [name of competitors] win. Therefore, while GE participates relatively often against Alstom (in [number of tenders] out of [number of tenders] tenders), the fact that it has never been successful suggests that GE exerts a limited competitive constraint on Alstom.⁷¹⁰ The Commission nevertheless considers that results should be interpreted with caution due to the small sample size.
- (847) As regards the competitive constraint that Alstom exerts on GE, among the [number of tenders] tenders in which GE participates, GE loses to Siemens and Alstom. That suggests that Alstom is likely to constrain GE's probability of winning tenders. However, among the [number of tenders] tenders won by GE, Alstom has never participated. That suggests that the competitive harm is likely to be limited.⁷¹¹
- (848) To conclude, the analysis of bidding data suggests that: (i) there is a one-way competitive constraint (whilst Alstom is a competitive constraint to GE, GE is not currently a significant competitive constraint to Alstom), and (ii) the merging parties have competed in a limited number of tenders (only [number of tenders] tenders), with often two other participants. Therefore, competitive harm is likely to be limited since the one-way competitive constraint would

⁷⁰⁸ In comparison, the merging parties compete against one another in 40 tenders in the Large segment, which represent around [40-50]% of the tenders for Large HDGTs.

⁷⁰⁹ See also Reply to the Statement of Objections, page 182. Therefore, there is only [number of tenders] (out of [number of tenders]) with three participants or less. This is more limited than in the Large segment, where there is at least [40-50]% of tenders with three participants or less among the tenders where the Parties meet.

⁷¹⁰ In comparison, for tenders in the Large segment, GE exerts a significant competitive constraint on Alstom, and Alstom exerts as well a significant competitive constraint on GE.

⁷¹¹ See also Reply to the Statement of Objections, page 192. In comparison, for tenders in the Large segment, Alstom participates in a significant number of tenders won by GE.

concern a limited number of tenders.⁷¹² In addition, while Alstom is a competitive constraint to GE, the fact that it never participates in tenders in which GE is successful is another element suggesting a limited competitive harm. Lastly, while Ansaldo has not been successful in any competitive Medium tenders for combined cycle applications in the past, Ansaldo is likely to become a greater competitive force due to its new strategy to compete more aggressively for combined cycle applications. In other words, past bidding data is likely to underestimate the role of Ansaldo as a competitive force for the coming years. Therefore, the analysis of past bidding data (where GE was present with its 9E.03 HDGT) suggests the merging parties are not close competitors and that competitive harm is limited.

(iv) Medium tenders for SC applications: the analysis of past bidding data suggests that the Parties are not close competitors and that competitive harm is limited

- (849) Table 33 outlines the market shares for tenders at a worldwide level excluding China. Bidding data shows that the merged entity has a high market share of around [70-80]%. Ansaldo appears as the second player with a [20-30]% market share, followed by Siemens. Alstom appears as the fourth player for tenders in SC applications.
- (850) In term of capacity (MW), for the period from 2009 to 2014, the Parties have a combined market share of [50-60]% (GE: [40-50]%, Alstom: [10-20]%), Siemens has a market share of [20-30]%, MHPS [0-5]%, and Ansaldo [10-20]%. Those market shares are in line with market shares presented in Section 8.4.2.4.

Table 33: Shares of wins for all tenders (Medium SC) (Worldwide 50 Hz excluding China and Iran)

	2009-2014
GE	[50-60]%
Alstom	[10-20]%
Combined	[60-70]%
Siemens	[10-20]%
MHPS	[0-5]%
Ansaldo	[10-20]%
Observations	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

⁷¹² In comparison, in the Large segment, there is a two-way competitive interaction between the merging parties which could concern a significant number of tenders.

Table 34 reports the share of successful bids in competitive tenders. This confirms the high market share of the Parties, which is around [70-80]%, and that GE is the market leader also for competitive tenders in Medium SC applications. Second,

- (851) Table 34 also confirms the importance of Ansaldo as a player for tenders in SC applications. Third, Siemens appears to be third, and Alstom is the fourth player in terms of market share.

Table 34: Shares of wins for competitive tenders (Medium SC) (Worldwide 50 Hz excluding China and Iran)

	2009-2014
GE	[50-60]%
Alstom	[10-20]%
Combined	[60-70]%
Siemens	[10-20]%
MHPS	[0-5]%
Ansaldo	[20-30]%
Observations	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (852) As regards the analysis of participations in tenders, for the period from 2009 to 2014, the merging parties compete against each other in [number of tenders] tenders, which represent [10-20]% of all Medium tenders for simple cycle applications. Among the [number of tenders] tenders where the Parties compete against each other, [number of tenders] tenders have no other participants. However, the Commission considers that those figures should be interpreted carefully for the following reasons. First, among those [number of tenders] tenders where GE and Alstom are the only two participants, [number of tenders] tenders are in Iraq and [number of tenders] tender is in Jordan, therefore they are likely to correspond to customers with a significantly different demand profile than customers in the EEA. That is particularly relevant given the strong regional differentiation of preferences and requirements from a demand perspective. Second, in the letter sent to the Commission on 23 June 2015,⁷¹³ Alstom mentions three changes in its participation in tenders in the Medium segment, which concern tenders in Iraq: for the [number of tenders] projects⁷¹⁴, Alstom mentioned that the HDGT was assigned to GE very early in the process and that Alstom did not offer an HDGT while, for another project Alstom mentions that it was not aware of the project and it has no entry in its sales dataset.⁷¹⁵ GE participated successfully in those [number of tenders] projects in Iraq. Considering those changes, instead of meeting and competing in [number of tenders] tenders, Alstom and GE have as a matter of fact competed effectively only in [number of tenders] tenders ([number of tenders] tenders with two participants, [number of tenders] tenders with three participants), which would represent only [10-20]% of Medium tenders for simple cycle applications.
- (853) The Commission also note that the relatively limited proportion of tenders where the Parties have met and competed can also be explained by the high proportion of non-competitive tenders, around [40-50]%.
- (854) In order to assess the importance of Alstom as a competitive constraint to GE, the Commission has analysed the success rates of GE's competitors when they

⁷¹³ See letter sent by Alstom on the 23 June 2015.

⁷¹⁴ In the bidding data provided by the Notifying Party, these [number of tenders] projects are: [projects names and ID].

⁷¹⁵ In the bidding data provided by the Notifying Party, this project is [name of project and ID].

compete against GE. Comparing Alstom's share of wins with the corresponding share of wins of competitors allows to benchmark the competitive constraint of Alstom on GE with the competitive constraints of other competitors on GE. Table 35 reports the results of that analysis. Alstom competes with GE in [number of tenders] tenders, with a success rate of [10-20]% ([number of tenders] win out of [number of tenders] tenders). In comparison, Ansaldo competes against GE also in [number of tenders] tenders, however its success rate is significantly higher at [50-60]%. This suggests that Ansaldo is a closer and stronger competitive constraint on GE than Alstom. As regards Siemens, it participates against GE in [number of tenders] tenders, with a win rate of [10-20]% ([number of tenders] wins out of [number of tenders] tenders). The fact that Siemens competes against GE in more tenders than Alstom suggests that Siemens exerts a closer competitive constraint on GE than Alstom. It should also be noted that the while Alstom participated [number of tenders], the changes in Alstom's participation mentioned in the letter sent to the Commission on 23 June 2015 (see also Recital (850)) are not taken into account.⁷¹⁶ If those changes were to be considered, Alstom would participate only in [number of tenders] tenders against GE, which would be below Siemens' and Ansaldo's participation rates. Therefore, the analysis of bidding data suggests that Alstom is the third competitive constraint on GE.

- (855) As discussed above in recitals (847) to (849), GE is the clear market leader in tenders for Medium HDGTs in simple cycle applications, with market shares significantly above all other OEMs when considering all tenders and competitive tenders only. Therefore, to determine significant unilateral effect it is important whether the Transaction eliminates a significant and close competitor of GE, which cannot be established based on past bidding data. The Commission nevertheless considers that results should be interpreted carefully due to the small sample size.

Table 35: OEMs' share of wins for tenders with competition against GE

2009-2014	Number of tenders with GE as a competitor	%wins for tenders with GE as a competitor
Siemens	[...]	[10-20]%
Alstom	[...]	[10-20]%
MHPS	[...]	[0-5]%
Ansaldo	[...]	[50-60]%

Source: Commission's calculations based on GE's bidding data.

- (856) To conclude, the analysis of bidding data shows that the Parties have competed against one another in a limited number of tenders ([number of tenders] tenders) and suggests that Alstom is the third competitive constraint on GE, behind Ansaldo and Siemens. Therefore, the analysis of past bidding data (where GE was present with its 9E.03 HDGT) suggests that the merging parties are not close competitors and that competitive harm would be limited in the Medium segment should the Transaction take place.

⁷¹⁶

See letter sent by Alstom on the 23 June 2015.

(v) Qualitative evidence supports lack of closeness between GT13E2 and 9E.03

- (857) The nature and degree of the interaction between the Parties in the Medium segment appear to be different from the interaction observed in the Large HDGT segment. [internal GE assessment of Alstom's position]⁷¹⁷ [internal GE assessment of Alstom's position] GE considers that its offering in the Medium segment is technologically distant from Alstom's one.
- (858) GE considers that [quote from internal GE document concerningt GE's position]⁷¹⁸ [quote from internal GE document concerningt GE's position]⁷¹⁹. That conveys the idea that the technological gap between GE's 9E.03 and Alstom's GT13E2 has become so large that it cannot be compensated commercially.
- (859) In fact, GE cannot be competitive when customers require the characteristics and performance offered by Alstom's GT13E2, and vice-versa. Since also in the Medium segment the starting requirement for tenders is target output, according to GE, the fact that the 9E.03 and GT13E2 are very distant in terms of output (130 MW vs 185-188 MW respectively) implies that they cannot always compete against each other. GE also submits that even if the output specification were to be set at a range that allows both GTs to bid, all else being equal, the unit with larger output would be successful, as the price/kW is lower and the efficiency is usually higher than a smaller unit within the same technology (that is to say a Medium HDGT).⁷²⁰
- (860) Alstom analyses its competitive positioning vis-à-vis the 9E.03 and observes that [70-80]% of the head-to-head competitions with the 9E.03 favoured the GT13E2.⁷²¹ That shows that when Alstom has the right output to participate in tenders, its technological superiority cannot be challenged commercially by GE's 9E.03, due to the significant technological gap.
- (861) In view of the technological gap between them, the 9E.03 and the GT13E2 do not appear to compete for the same customers. In particular, the 9E.03 appears to be very successful in tenders where customers require fuel flexibility, fast delivery and low first costs (Capex). On average, 9E.03 targets peaking power plants ('peaker') applications,⁷²² mainly in SC with few expected operating hours, and mechanical drive applications. Conversely, Alstom's GT13E2 is a big machine, with high Capex, significantly high maintenance costs and, thus, higher operational costs, which appears to be more competitive in CC applications.
- (862) Moreover, and according to market participants as well as the Notifying Party,⁷²³ Medium HDGTs provide solutions not only for power generation

⁷¹⁷ See Annex 3648, slide 6.

⁷¹⁸ See Annex 3664, slide 7.

⁷¹⁹ See Annex 3652, slide 5.

⁷²⁰ See Reply to the Statement of Objection, paragraph 640.

⁷²¹ See Annex 3876, slide 98.

⁷²² Peaking power plants, also known as peaker, are power plants that generally run only when there is a high demand, known as peak demand, for electricity. Because they supply power only occasionally, the power supplied commands a much higher price per kilowatt hour than base load power.

⁷²³ See Reply to the Statement of Objections, paragraphs 639.

dispatched to the grid, but also for a number of industrial applications, ranging from compressor drive for oil & gas projects to industrial co-generation and distributed power generation. That implies that the Medium segment has highly differentiated project requirements in terms of physical size, output, efficiency, fuel flexibility, and other technical parameters. Thus, the capability to meet specific requirements (“fit-for-purpose”), and not generally a given efficiency or output level or both, is a key consideration in each Medium project.

- (863) In conclusion, the qualitative evidence gathered in the course of the market investigation confirms that the 9E.03 and the GT13E2 do not closely interact and compete with each other and that the requirements of each project in the Medium segment are more differentiated than in other segments.

(vi) The 9E.04 does not bring GE significantly closer to Alstom

- (864) In view of the backward looking nature, the bidding analysis fails to take into account the competitive interaction between the recent 9E.04 and GT13E2. In fact, the bidding dataset only includes tenders occurred until the announcement of the deal (Q1 2014). As indicated by GE, the 9E.04 has been offered in tenders as of May 2014. By April 2015, GE had [GE order].⁷²⁴ Therefore, the bidding data do not offer information about the potential closeness of the 9E.04 and GT13E2.
- (865) As explained in Recitals (823) to (828), the 9E.04 gets closer to the GT13E2 in terms of SC efficiency. In fact, whereas the 9E.03 has a SC efficiency equal to 34.5%, the 9E.4 offers about 37% efficiency, which is the closest to Alstom's GT13E2 SC efficiency performance at 38%. However, the gap between the machines remains considerable in terms of CC efficiency, where other OEM's offer better performances than GE and closer to Alstom (see Table 36). For all others parameters, including CC efficiency and output, the 9E.04 does not bridge the gap with the GT13E2 and Siemens and Ansaldo offer machines which are closer to the GT13E2.

Table 36: CS efficiency of the Medium HDGTs

	Siemens	Ansaldo	Alstom	MHPS	GE	Siemens	GE	MHPS
	SGT 3000E	AE94.2	GT13.E2 MXL2	H-100	9E.04	SGT-5 2000E	9E.03	701DA
CC efficiency	[CC efficiency]	[CC efficiency]	[CC efficiency]	[CC efficiency]	[CC efficiency]	[CC efficiency]	[CC efficiency]	[CC efficiency]

Source: GE's reply to Commission's Request for Information N° 51, 15.07.2015

- (866) GE submits however that SC efficiency is not a relevant criterion for the selection of Medium HDGTs. On the one hand, if customers value efficiency over output, they would usually opt for Large or Very Large HDGTs, as they are by definition much more efficient than Medium HDGTs. On the other hand, if a given project has output limitations precluding the use of Large or

⁷²⁴

See GE's reply to the Commission's Request for Information N° 31, 30.04.2015, question 13.

Very Large HDGTs, customers can turn to aero derivative solutions, which offer higher efficiency than Medium HDGTs.⁷²⁵

- (867) The findings of the market investigation show that future demand for Medium 50 Hz HDGTs in Europe will be mainly driven by peaker and cogeneration applications.⁷²⁶ Whereas the preferred configuration for peakers is SC, cogeneration plants mainly use CC operations. As explained by MHPS, and confirmed by other OEMs, "*Customers of peakers put emphasis on output, operational flexibility, fuel flexibility, emission levels, and reliability*". On the contrary, "*Customers of co-generation HDGTs have the same preferences as customers for peakers except that they also place value on efficiency (heat efficiency and power efficiency)*."⁷²⁷
- (868) The analysis of the [number of tenders] ongoing EEA tenders for Medium 50 Hz HDGTs where the parties are participating shows that SC efficiency is not a key selection criterion for either cogeneration or peaker applications. In particular, [name of customer and type of project], indicated that SC efficiency is not one of the main criteria taken into account in the tender evaluation process.⁷²⁸ That was confirmed also by all the OEMs⁷²⁹ and EEA customers currently carrying out tender procedures for Medium HDGTs.⁷³⁰
- (869) Consequently, the closeness between 9E.04 and GT13E2 in terms of SC efficiency does not imply a significant commercial closeness between the two machines.

8.5.4.4. Conclusion on closeness of competition in the Medium segment

- (870) From a technological point of view, the Commission considers that Alstom's GT13E2 closest competitors in the Medium 50 Hz HDGT segment are Siemens' 2000E and Ansaldo's AE94.2. GE's 9E.03 and MHPS' M701DA appear to be more distant from a technological point of view. With the launch of the new 9E.04, GE has become the closest in terms of SC efficiency to the GT13. However, GE's offering remains more distant in terms of the other parameters, including CC efficiency.
- (871) The bidding analysis and qualitative evidence collected in the market investigation suggest that although the Parties compete and interact, they are not exerting close competitive constraint on each other.
- (872) In particular, the bidding analysis shows that there are four global competitors in the Medium HDGT segment. The analysis of past bidding data suggests the Parties are not close competitors and competitive harm is limited in the CC and SC Medium HDGT. Although the analysis of EEA Medium HDGT tenders has limited relevance due to the small sample, it suggests that Ansaldo is a credible player in the EEA. In general, Siemens and Ansaldo appear to be significant

⁷²⁵ See Reply to the Statement of Objections, paragraphs 629-638.

⁷²⁶ See replies to question 51 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷²⁷ See MHPS' reply to the Commission's Request for Information, 10.07.2015, question 3.

⁷²⁸ See minutes of the conference call held with [name of customer] of 10 July 2015.

⁷²⁹ Ansaldo and Siemens' reply to the Commission's Request for Information, 10.07.2015, question 3.

⁷³⁰ See minutes of the conference call held with [name of customer] of 23 July 2015 and minutes of the conference call held with [name of customer] of 10 July 2015.

competitors in the Medium segment, competing more closely with Alstom than GE does.

- (873) Qualitative evidence collected during the market investigation supports that GT13E2 and 9E.03 are not in close competition. As regards the forward looking potential competition between the recently launched GE's 9E.04 and the GT13E2, the Commission has not found evidence that the two machines will closely compete against each other given that SC efficiency is a less relevant factor for Medium SC projects and the two machines will still be significantly distant in term of CC efficiency. Moreover, the requirements of each project in the Medium segment are more differentiated than in other segments.
- (874) The Commission concludes that the Transaction does not eliminate a significant and close competitor to GE in the Medium CC 50Hz HDGT segment.

8.5.5. *Significant repositioning of competitors after the Transaction defeating the expected price rise is unlikely*

- (875) When analysing closeness of competition, as explained in paragraph 30 of the Horizontal Merger Guidelines, *"the Commission examines whether the possibility of repositioning or product line extension by competitors or the merging parties may influence the incentive of the merged entity to raise prices"*.
- (876) Repositioning in the markets for HDGTs is difficult, lengthy and costly. Upgrades of existing frames require significant time and R&D resources. Such upgrades can increase output or efficiency (or both) or improve to a certain extent other technological features such as flexibility, but they cannot in themselves lead to significant material advancement (leapfrogging) or repositioning. Larger technology leaps can usually be achieved through the development of new frames, for which the lead time from the start of a given R&D programme to the start of commercial operations can be in the range of five to 12 years and for which total R&D and development costs amount to several hundreds of million Euro. Considering the case of Alstom's GT36, total R&D and development costs amount to [R&D cost].
- (877) As explained in Section 8.3.2, the successful launch of a new frame or of a material upgrade on an existing machine requires proven track record, which takes a long time to accumulate. According to information provided by the Notifying Party, the validation of HDGTs is difficult and costly, especially for the HDGTs at the higher end of the output range. In fact, *"before deploying a new HDGT to the field, customers typically requires a validation test on a "Test Stand" assessment at the factory (i.e., manufacturer). To build such a test stand requires an investment of about USD [value of investment required to build a test stand]. It will also take at least two years to build such a facility"*.⁷³¹ In addition, the Notifying Party also explained that *"many customers today require at least 8,000 hours (i.e., nearly one year) of successful GT unit operation. Therefore, a new supplier of any HDGT*

⁷³¹

See GE's reply to the Commission's Request for Information N° 18, 06.03.2015, question 14.

*technology will have to qualify their units at the field before the new HDGT would become commercially viable. This adds at least one more year to the overall time frame. Finding a customer to do this field validation test, also typically requires concessions with the customer because of the risks associated with failure. This is why the "Test Stand" validation at the factory is a really important part of the whole HDGT development process".*⁷³²

- (878) Given the high level of sunk costs and of uncertainty with regard to customer acceptance, the development of a new machine is a risky project. Evidence of the high risks associated with the launch of new products is the unsuccessful start of Alstom's GT24 in the 1990s, which forced the company into a major strategic and financial restructuring. As such, repositioning through the development of large upgrades or new frames or both entails risks and large sunk costs and for competitors it could be less profitable than their current, proven product line.
- (879) The market investigation also showed that each OEM is engaged on a distinct technological path, which allows it to achieve certain unique features. For instance, Alstom's unique reheat technology, through its double-combustion chamber, allows to reach turndown capability that cannot be matched by HDGTs which are not based on a double-combustion technology.⁷³³ OEMs are typically engaged on specific technology paths for decades. Alstom for instance started developing the double-combustion technology in the early 1990s. As such, it is not clear whether OEMs could have the ability or the incentive to change the technology path in order to achieve certain specific performance targets, nor whether all technology paths in which OEMs are currently engaged can eventually lead to similar technological attributes as regards all aspects of performance (that is to say output, efficiency, but also emissions and flexibility requirements).
- (880) Looking at competitors in more details, the Commission considers, as explained in Section 8.5.1, that Siemens is today already a close competitor to Alstom. Both GE and Siemens have now developed machines which are close to Alstom's in terms of flexibility, part-load efficiency and emissions. As such, Alstom, GE and Siemens are largely targeting the same profile of customers.
- (881) The Commission also considers, as explained in Section 8.5.1, that Ansaldo currently has a relatively limited ability and resources to develop new frames and significant upgrades. Ansaldo is considered a less credible innovator by most competitors and customers, and the Parties themselves. As explained by Alstom, Ansaldo *"does not have own GT technology. Technology is limited to upgrade of "old" Siemens engines"*.⁷³⁴ As such, it is unlikely that Ansaldo will be able to reposition its machines in the coming years in the segments of the market for 50 Hz HDGTs where the GT26 was competing pre-merger.
- (882) As regards MHPS, the company underlines that its *"R&D resources and activities are driven by the rapidly changing and specific requirements of customers. As such, MHPS dedicates its resources and activities to multiple*

⁷³² See GE's reply to the Commission's Request for Information N° 18, 06.03.2015, question 14.

⁷³³ See competitor's reply to Commission's Request for Information of 26.03.2015,

⁷³⁴ See Annex 223, page 292.

parameters such as flexibility."⁷³⁵ Although "it is difficult for MHPS to pinpoint exactly a specific targeted improvement that MHPS intends to achieve in terms of flexibility", MHPS considers that it "has the capability to offer improvements in accordance with the requirements of the customer"⁷³⁶ and "the potential to reposition its HDGTs on a technological path more oriented towards operational flexibility."⁷³⁷

- (883) As regards the relevant time frame, "in terms of timing of relevant improvements, [...] MHPS estimates that it will take a certain amount of time and economic resources."^{738 739}
- (884) As explained in Section 8.5.1, MHPS' HDGTs typically have high output and efficiency, thanks to its success in developing high firing temperature HDGTs. Such turbines are typically used for base-load power generation, including in countries where gas prices are high. MHPS' HDGTs however are less flexible than other machines, which makes them less suitable for mid-merit or peaking operations.
- (885) These technical characteristics explain to a certain extent MHPS' limited focus on and low penetration in the EEA. A HDGT competitor confirmed that "MHPS presence in the European market is very limited, because its offering is not competitive in relation to flexibility parameters such as turndown, start-up speed (hot) and ramp-up rate. MHPS' offering is not competitive for cycling operating mode. MHPS' HDGT are primarily designed for base-load operations, which make it a good fit in Asian countries. The sales of MHPS are mainly driven by the high gas prices in Asia so Baseload efficiency is the main driver in the development of the machines. [...] In order to improve the operational flexibility of its machines, even its air-cooled machines, MHPS would have to redesign its machines very significantly. This is expected to take at least 5 years and significant costs".⁷⁴⁰ A large European customer also estimates that it would take MHPS "several years" to improve its start-up and ramp-up capabilities.⁷⁴¹
- (886) The Commission therefore considers that MHPS is unlikely to have the ability to reposition its machines in a relevant time frame of 2 to 3 years, including in the segments of the market for 50 Hz HDGTs where the GT26 was competing pre-merger.
- (887) As regards MHPS' incentives to reposition, in view of (i) MHPS's strategic focus on 60 Hz markets and 50 Hz markets in Asia; (ii) MHPS' strong position in the fast growing and profitable markets where base load is still seen as a key requirement, as well as (iii) the high sunk costs and risks associated with a repositioning to meet the specific requirements of flexibility-driven customers, it is also unlikely that MHPS would have the incentive in the coming years to

⁷³⁵ See competitor's reply to Commission's Request for Information of 26.03.2015, question 26/27.

⁷³⁶ See competitor's reply to Commission's Request for Information of 26.03.2015, question 26/27.

⁷³⁷ See competitor's reply to Commission's Request for Information of 06.05.2015, question 1.

⁷³⁸ See competitor's reply to Commission's Request for Information of 26.03.2015, question 26/27.

⁷³⁹ See competitor's reply to Commission's Request for Information of 06.05.2015, question 1.

⁷⁴⁰ See minutes of a conference call held with a competitor on 20.03.2015.

⁷⁴¹ See minutes of a conference call held with customer on 18.03.2015.

reposition its machines in the segments of the market for 50 Hz HDGTs where the GT26 was competing pre-merger.

- (888) The analysis of bidding data (see Section 4.3.4 of Annex I) also shows that any repositioning of MHPS or Ansaldo is unlikely to offset potential anti-competitive effects for the following reasons.
- (a) First, the high proportion of 3-to-2 tenders among those tenders where the Parties compete against each other implies that rivals would need to participate in more tenders than they currently do to replace Alstom's presence in current 3-to-2 tenders. That is particularly the case when data on participation provided by third party OEMs is considered.
 - (b) Second, MHPS or Ansaldo could have already participated in more tenders before the Transaction but they did not, even though this strategy would seem already profitable considering Alstom's greater success rate compared to MHPS or Ansaldo in the Large segment (for 50Hz excluding China and Iran in particular), and the high value of HDGT tenders. That suggests that MHPS and Ansaldo faced significant impediments to participate more actively in tenders in the Large segment, for example because they were not able to meet sufficiently the projects' requirements. That in turn implies that after the Transaction they would be a weaker competitive constraint to other OEMs than Alstom was pre-merger, even if they were to participate more frequently in tenders post-merger.
 - (c) Third, the evidence from the market investigation indicates that lack of participations in tenders is not due to MHPS or Ansaldo not being invited but rather to a perceived lack of product or commercial fit. That factor would still affect the rival OEMs' willingness to significantly increase their participation rate after the Transaction.
 - (d) Fourth, the qualitative evidence set out before in Sections 8.5.1.2, 8.5.1.3, 8.5.2.2, 8.5.3.2 and 8.5.4.2 shows that MHPS/Ansaldo and Alstom are not close in product space, in particular in relation to operational flexibility and other technological characteristics. In relation to MHPS in particular (which is the 4th OEM in terms of success rates in worldwide excluding China 50Hz Large segment), its successful bids in the past competitive tenders does not appear to be linked to product features related to operational flexibility, while that is a particular strength of Alstom (in particular for turn-down and part-load efficiency).
 - (e) Fifth, competitive conditions would need to worsen for MHPS and Ansaldo to become significantly more active in bids, thus resulting in consumer harm (logically, if competitive conditions remain the same as in the pre-merger situation, then MHPS' incentives to participate in tenders would not change). Greater participation by these OEMs after the Transaction is therefore still compatible with a finding of a significant loss of competition after the Transaction.
 - (f) Last, the analysis of margins in Annex I, Section 4.4.7, also indicates that there could be a significant price increase for 4-to-3 tenders, in particular for HDGTs, even if MHPS were to participate in more tenders where currently only the Parties and Siemens are present.

- (889) The Commission considers that significant repositioning in the meaning of the Horizontal Merger Guidelines defeating the expected price rises is unlikely in the market for 50Hz HDGTs.

8.5.6. Conclusion

- (890) The Commission concludes that, in the Large and Very Large segments of the market for 50 Hz HDGTs, (i) Alstom is a significant player and a close competitor of GE both from a technological and commercial point of view; (ii) MHPS is a more distant competitor; (iii) Ansaldo is an even more distant competitor; and (iv) significant repositioning in the market for 50 Hz HDGT which would defeat the negative effects of the Transaction, in particular for EEA customers, is unlikely.
- (891) In the Medium segment, the Commission concludes that GE and Alstom are not close competitors as Siemens and Ansaldo are the closest competitors to Alstom, whereas GE is a more distant competitor from a technological and commercial point of view.

8.6. The Transaction will further reduce the limited number of alternatives available to customers

- (892) According to paragraph 31 of the Horizontal Merger Guidelines “*Customers of the merging parties may have difficulties switching to other suppliers because there are few alternative suppliers [...]. Such customers are particularly vulnerable to price increases. The merger may affect these customers' ability to protect themselves against price increases*”.
- (893) The Commission recalls that the market for 50 Hz HDGTs is a highly differentiated market where HDGTs vary across a vast number of dimensions. As explained in Section 7.2.3, differentiation takes place on the basis of several technical parameters that qualify and identify each HDGT. The combination of those technical features determines the HDGT's performance and, thus, its suitability to different customers' needs.
- (894) To accommodate customers' heterogeneous needs, OEMs offer highly differentiated HDGTs. In fact, OEMs tend to have a portfolio of products that are spread across the multiple axes of differentiation in order to be able to capture as many customers as possible. However, in view of the high level of investments required to develop a new frame and maintain it, OEMs usually rely on a limited range of products in their portfolio, which on average correspond to 2-4 frames, to cover the entire space. Therefore, many customers' choice will be limited to two or three options at best.
- (895) In the Sections 8.6.1.1 to 8.6.1.4, the Commission will analyse the determinants of the number of OEMs participating in tenders and the effective number of alternatives available to customers in the space where GE and Alstom are both present, and which would constitute the alternatives to the merged entity post-Transaction.

8.6.1. Customers consider that it is always better to have the maximum number of bidders participating in tenders

- (896) As the Commission explained in Section 8.1, in the markets for HDGTs, with highly differentiated products, the number of alternative suppliers available to

customers in a tender is relevant. The Commission has assessed the factors determining the number of OEMs participating in tenders.

- (897) The Notifying Party claimed that it is the customers that constrain the number of bidders in tenders implying that the decision on whether or not to participate in a tender is thus endogenous to customers rather than exogenous to OEMs.⁷⁴² The Notifying Party claims that transaction costs on the side of customers could induce them not to invite all OEMs to submit a bid ("*given the complexity of gas turbines, it may be costly for customers to evaluate bids; this means that, even if all five suppliers could submit effective offers, a customer might choose to invite only three of them to bid*"). The Commission has therefore investigated the factors determining the number of bidders in tender events, by relying on information from customers, from the Notifying Parties and from competing OEMs.

8.6.1.1. Customers generally invite all five OEMs to participate in tenders

- (898) The majority of customers reported that they generally invite as many OEMs as possible to participate in their tenders.⁷⁴³ When asked about the reason for not inviting all five OEMs, only very few customers listed administrative costs of evaluating many alternatives.⁷⁴⁴ The remaining ones stated either that not all five OEMs are able to offer the required specifications, that they simply always invite all five OEMs or that there other reasons. Note that the latter covers, amongst others, instances where "*not all HDGT OEMs are showing a genuine interest in the project*".
- (899) In relation to the customers' costs of having multiple bidders participating at each stage of the tender process, the Commission observes that those costs do not appear to be a decisive factor according to the majority of customers.⁷⁴⁵ Instead, the majority of customers explained that those costs are "*in general low and outweighed by the advantages of competition*"⁷⁴⁶, "*would be minor in comparison with the potential benefit of improved competitive tension in the process that additional bidders bring*", "*minor*" or reported that there is "*no extra cost*".⁷⁴⁷ At the same time, the majority of customers identified benefits of having multiple bidders at each stage of the tender process. These are mainly considered to consist of intensified competition leading to better offers and having more alternatives among which an optimal solution can be found.⁷⁴⁸

8.6.1.2. Information from the Parties shows that product fit and commercial considerations are important determinants when an OEM decides to participate in tenders

- (900) The evidence on bidding events made available by the Parties (including internal documents) indicated that issues of product fit and commercial

⁷⁴² See RBB Annex to the Notifying Party's Response to the Article 6(1)(c) Decision, page 17.

⁷⁴³ See replies to question 43 of Phase II Questionnaire Q7 to customers of Gas fired power plant. See also minutes of the conference call held with customer of 19 March 2015 where this customer states that it is in its "*interest to invite as many bidders as possible*".

⁷⁴⁴ See replies to question 44 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁴⁵ See replies to question 47 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁴⁶ See reply to question 47 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁴⁷ See replies to question 47 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁴⁸ See replies to question 46 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

considerations are factors which determine more significantly the number of bidders in tenders than a desire by customers to limit the number of bidders in order to contain transaction costs.

- (901) In an internal document, the Notifying Party reported its participation in a number of bids during 2012 ([number of bids and corresponding output capacity]), and identifies [number of bids and corresponding output capacity] for which no bid was made.⁷⁴⁹ Out of the [output capacity] for which no bid was made, [output capacity] (roughly [70-80]%) relate to “*No Product Fit*”, while the remaining [output capacity] refer to other causes (for example “*Sole source ... not open to competition*” and “*Competitor product launch*”) explaining the lack of competition. None of the reasons given for the absence of a bid by the Notifying Party appear to relate to the fact that the customer restricted the number of bidders in order to reduce transaction costs.
- (902) As regards Alstom's justification for not participating at the firm bid stage in tenders covering the period from 2009 to 2014, Alstom reported product or other commercial considerations or both as the predominant reasons for abstaining from participation.⁷⁵⁰ More specifically, in [number of bids] cases out of the [number of bids] overall tenders in question Alstom's reasons for not participating at the firm bid stage that are related to product fit or commercial considerations or both. The reasons for not bidding indicated in these tenders include factors such as not meeting the respective customers' technological requirements, no EPC channel and the lack of commercial fit for Alstom. By contrast, Alstom reported that for only [number of bids] tenders it had not been invited by the respective customers.⁷⁵¹ The remaining [number of bids] tenders reported by Alstom include exclusive deals with other OEMs ([number of bids] tenders) and an instance where Alstom appeared to have a low appetite to participate and, at the same time, the respective customer did not ask Alstom to participate ([number of bids]).
- (903) The Notifying Party has also been asked to give its view on the reasons why Alstom did not participate at the firm bid stage of these tenders.⁷⁵² The Commission observes that to a large extent the Notifying Party's view is aligned with the reasons reported by Alstom. Whereas in three cases the Notifying Party indicated reasons which differ from those reported by Alstom and in another four cases it was not able to provide information (“*GE does not know why Alstom did not bid*”), for the majority of tenders ([number of bids]) it reported reasons which basically confirmed those quoted by Alstom.

8.6.1.3. Evidence from competing OEMs shows that product fit is an important determinant when an OEM decides to participate in tenders

- (904) Evidence from competing OEMs also indicates that customers do not have the incentives to limit the number of competing bidders, and that instead product

⁷⁴⁹ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, "GE_0006575_GE - Strictly Confidential - Contains Business Secrets.msg/[subject of internal GE e-mail]".

⁷⁵⁰ See Alstom's reply to the Commission's Request for Information N° 35, 22.05.2015, question 5.

⁷⁵¹ See Alstom's reply to the Commission's Request for Information N° 35, 22.05.2015, question 5.

⁷⁵² See GE's reply to the Commission's Request for Information N° 35, 22.05.2015, question 6.

fit is an important factor in determining the number of OEMs making firm bids in tender events.

- (905) One competitor OEM has indicated to the Commission that the reason for not making a firm bid in a specific project is typically not due to customers deciding to limit the number of bidders (due to costs of handling multiple bidders) but rather to the fit between the OEM's product and the requirements of customers.⁷⁵³ In line with the views expressed by customers, that OEM further stated that customers do not have an incentive to limit the number of bidders and alternatives, respectively, as that "*creates customer advantage from a negotiation point of view*". In other words, the more OEMs participate in a tender, the better it is for the customer so that they typically invite all OEMs likely to participate in a tender procedure.⁷⁵⁴
- (906) That OEM also explained that bids are assessed by customers on the basis of very detailed customer requirements, both of commercial and technical nature.⁷⁵⁵ Meeting these requirements is key to the success of a bid. Customer requirements often determine the selection of a given technology. However, it is also possible that a customer will seek to open the specifications of a bid in order to allow for more competition, in case only one OEM submitted a bid under the initial specifications.
- (907) That same OEM also stated that it carefully selects the opportunities it bids for, in light of the significant investment required to bid. Meeting the bid requirements determines whether a firm bid will be accepted and allowed to compete for the tender. According to that OEM, it determines whether it can comply with the customer requirements and therefore whether the project is a fit at the time of the "*Bid / No Bid*" decision.⁷⁵⁶
- (908) The Commission considers that the evidence indicates that the ability by OEMs to meet the requirements set out by customers is an important determinant of the number of OEMs that are willing to make a firm bid for any given tender. By contrast, the number of OEMs bidding for a particular tender is unlikely to be limited by the fact that customers do not invite all OEMs to participate.
- (909) Another OEM stated that the number of bidders at each stage of a bidding process was determined by customers as a function of their requirements.⁷⁵⁷ Nevertheless, that OEM also considers that buyers generally benefit from multiple bidders as that generates "*increased competition in the tender process which leads to an increase in the customer's bargaining power*". Thereby, this OEM stated that the "*more bidders there are the better the terms that a customer can extract*".⁷⁵⁸

⁷⁵³ See minutes of the conference call held with competitor of 3 March 2015.

⁷⁵⁴ See minutes of the conference call held with competitor of 3 March 2015.

⁷⁵⁵ See competitor's reply to the Commission's Request for Information, 20.03.2015, question 24.

⁷⁵⁶ See minutes of the conference call held with competitor of 3 March 2015,

⁷⁵⁷ See competitor's reply to the Commission's Request for Information, 26.03.2015, question 32.

⁷⁵⁸ See competitor's reply to the Commission's Request for Information, 26.03.2015, question 34.

8.6.1.4. Conclusion on factors determining the number of bidders in tender procedures

- (910) The Commission considers that customers benefit from having multiple bidders at each stage in the tender process through a larger choice of credible alternatives and more favourable offers induced by the competitive process among the participating OEMs. The evidence suggests that it is typically not the customers that limit the number of OEMs invited to participate in a tender. It appears rather to be the case that it is the OEMs who decide whether to participate in a tender or not. That decision appears to be largely linked to the technological and commercial fit between an OEM's offer and the specific customers' requirements.
- (911) Overall, the evidence reviewed by the Commission does not confirm the Notifying Party's claim that in order to reduce the costs of evaluating competing offers the number of bidders present at the firm bid stage is the result of the customers' discretion when deciding on how many bidders to invite to a tender.

8.6.2. *There are few commercial and technological alternatives that can satisfy the demand requirements in the segments where both Alstom and GE are present*

- (912) In many cases, in the market for 50 Hz HDGTs, post-Transaction, customers will have a choice among only two or three HDGT options at best.
- (913) In most of the cases, and particularly for the Large and Very Large segment, for the EEA customers, only Siemens could be considered as a strong commercial alternative to Alstom and GE.
- (914) Ansaldo is a niche player that seems to be subject to some restrictions resulting from its previous license agreement with Siemens. In fact, Ansaldo has a limited product portfolio, has currently limited R&D capabilities relative to its competitors and it typically targets clients looking for limited initial capital expenditure, even at the cost of somewhat lower efficiency, for instance in Middle East countries where gas is relatively cheap. Ansaldo explains that its priority target markets are currently in the Mediterranean region. Thus, with the exception of the Medium segment, where Ansaldo has a significant position, Ansaldo is not a real option for customers.
- (915) MHPS has a specific product and regional strategy with a focus in regions other than EEA. In fact, MHPS' gas turbines typically have high output and efficiency, and are thus typically used for base-load power generation. They appear however to have shorter maintenance intervals and to be less flexible than other machines, which makes them less suitable for mid-merit or peaking operations. These technical characteristics explain to a certain extent MHPS' limited focus on and low penetration in the EEA. Several EEA customers explained that MHPS is not very familiar with their needs and its servicing capabilities in the EEA are below average.
- (916) From a technological point of view, and looking in particular to the Large and Very Large segments, it emerges that customers, in particular the EEA ones, have one or no technological alternative to the Parties.
- (917) Customers confirm the existence of a reduced number of alternatives for their requirements: *"The number of potential suppliers is very low, and sometimes not all the potential suppliers can present an offer for a project, reducing even*

more the number of alternatives for the buyer”⁷⁵⁹ and “HDGT market is concentrated itself. On a given project, taking in account the specific project requirements, in general even less alternatives exist”⁷⁶⁰.

- (918) In the Large segment Alstom's GT26 is positioned to compete directly with GE's 9F.05 and with Siemens' 4000F. MHPS' M701F4 and Ansaldo's AE94.3A are lagging behind, in particular for the predominant demand requirements in the EEA.
- (919) MHPS' M701F4 is similar to Alstom's GT26 as regards power output and base-load efficiency. However, as regards operational flexibility elements (including technical minimum load, ramp-up rates and start-up time), MHPS' M701F4 is significantly weaker than Alstom's GT26. Therefore, this HDGT is not considered as a good alternative to Alstom's GT26 in regions of the world where operational flexibility is an important demand requirement, as is the case of the EEA.
- (920) Ansaldo's AE94.3A, apart from not being as flexible as Alstom's GT26, lags behind as regards efficiency levels.
- (921) In the Very Large segment, where Alstom offers the GT36, the only, currently offered, technological alternative that could satisfy that specific demand requirements of EEA customers would be GE's 9HA.02.
- (922) Siemens' 8000H is currently lagging behind in term of output and efficiency and instead appears to compete against the GE's HA.01 in the lower-end of the Very Large segment.
- (923) MHPS has two HDGTs available in the upper end of the Very Large segment, the M701J and the M701JAC. However, to date, it has only offered the M701J. This HDGT is steam-cooled and thus it is more difficult to operate, less flexible to load variation compared to air-cooled machines, and takes longer to start up. Moreover, in terms of operational flexibility, both the MHPS' M701J and the M701JAC are distant from Alstom's GT36.
- (924) On the contrary, in the Medium segment, Alstom's GT13E2 closest competitors are Siemens' 2000E and Ansaldo's AE94.2. GE's 9E.03 and MHPS' M701DA appear to be more distant from a technological point of view. With the launch of the new 9E.04, GE has become the closest in terms of SC efficiency to the GT13. However, GE's offering remains more distant in terms of the other parameters
- (925) The Commission considers that in the Large and Very Large segments, for the EEA customers, in many of the cases only Siemens could be considered as a strong technical and commercial alternative to Alstom and GE. In terms of technological positioning, customers would thus have one or no technological alternatives to the merged entity post-Transaction.

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See reply to question 23 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

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See reply to question 23 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

8.6.3. *In a significant proportion of the Large segment tenders where Alstom and GE/Siemens participate there were no more than three OEM s participating*

- (926) The Commission's analysis in this section considers tenders where Alstom and GE compete against each other since these tenders are the most likely to be affected by a potential loss of competition after the Transaction. In addition, due to the likely discontinuation of Alstom's GT26 HDGT after the Transaction (see Section 8.8.3), the analysis also considers tenders where Alstom competes against Siemens, since these tenders are also likely to be affected by a loss of competition due to the discontinuation of Alstom's GT26 HDGT.
- (927) The analysis of bidding data shows at a worldwide level 50Hz excluding China that there were three or fewer participants in roughly three quarters of tenders for Large HDGTs. A similar situation applies to the EEA, where [70-80]% of tenders in the Large segment had three or fewer participants. In addition, in only very few tenders the five OEM were present, namely [0-5]% at worldwide level and [5-10]% in the EEA

Table 37: Number of participants in tenders in the Large segment

2009-2014	Worldwide 50Hz (without China and Iran)	EEA level
1 participant	[20-30]%	[10-20]%
2 participants	[20-30]%	[10-20]%
3 participants	[20-30]%	[30-40]%
4 participants	[20-30]%	[20-30]%
5 participants	[0-5]%	[5-10]%
Observations	[number of tenders]	[number of tenders]

Source: Commission's calculations based on GE's bidding data.

- (928) The Commission has also considered participation by other OEMs for those tenders where GE and Alstom compete against one another on the basis of the bidding data provided by the Parties. The Commission identifies [number of tenders] such tenders for the period from 2009 to 2014. This represents [50-60]% of the competitive tenders. A significant proportion of these tenders have three participants or fewer, that is at most one other participant in addition to GE and Alstom. This is the case for [40-50]% of these tenders for the period 2009-2014, [40-50]% for the period 2011-2014, [50-60]% for the period 2012-2014, and [50-60]% in the EEA (for 2009-2014). On the contrary, only for [5-10]% of these tenders for the period 2009-2014, [10-20]% for the period 2011-2014, [5-10]% for the period 2012-2014, and [10-20]% in the EEA (for 2009-2014) were all five OEMs present. This evidence suggests a concentrated market structure for those tenders that are the most likely to suffer from a loss of competition between the Parties.
- (929) Data on participation obtained from competing OEMs shows that, for the tenders where GE and Alstom compete against one another, the market structure is even more concentrated than in the bidding data provided by the Notifying Party. In other words, GE's information overestimates participation by other bidders. The share of worldwide tenders where GE and Alstom face

only one other competitor rises to [50-60]% and [50-60]% respectively for the periods 2009-2014 and 2011-2014. On the contrary the share of worldwide tenders in which five OEMs participate decreases to [5-10]% and [5-10]%, respectively for the periods 2009-2014 and 2011-2014.

- (930) The concentrated market structure characterized as well all tenders where Alstom competes against Siemens. This concerns [number of tenders] tenders in the Large segment ([50-60]% of the competitive tenders). A significant proportion of these tenders have three participants or fewer, that is at most one other participant in addition to Siemens and Alstom: [40-50]% for the period 2009-2014, [40-50]% for the period 2011-2014, [50-60]% for the period 2012-2014, and [40-50]% in the EEA. On the contrary, only for [5-10]% of these tenders for the period 2009-2014, [10-20]% for the period 2011-2014, [5-10]% for the period 2012-2014, and [10-20]% in the EEA (for 2009-2014) there were the five OEMs present.
- (931) Market reconstruction data also show a more concentrated market structure for tenders where Alstom and Siemens compete against each other, compared to bidding data provided by the Notifying Party. The share of tenders where Siemens and Alstom face only another competitor rises to [50-60]% and [50-60]% respectively for the periods 2009-2014 and 2011-2014. On the contrary the share of worldwide tenders in which five OEMs participate decreases to [5-10]% and [5-10]%, respectively for the periods 2009-2014 and 2011-2014.
- (932) Therefore, in a significant number of tenders where Alstom competes against GE or Siemens (around [50-60]% in the data provided by the Notifying Party, slightly below [60-70]% using data from competing OEMs), there are no more than three OEMs participating. This confirms the analyses of the previous section about the reduced number of alternatives in the space where Alstom's GT26 is competing.

8.6.4. *The presence of the remaining OEMs is not likely to counteract the reduction of alternatives resulting from the disappearance of Alstom as an independent competitor*

- (933) The Commission recalls that the market for 50 Hz HDGTs is characterised by very high entry barriers (see Section 8.3.2). Therefore, there would not be any entry in the market in the next years that could compensate the elimination of Alstom as an independent competitor. Moreover, the Commission considers that significant repositioning by the remaining OEMs present in the market is unlikely (see Section 8.5.5). Hence, post-Transaction the alternatives to customers would be limited to other three OEMs that are active in the market, with two of them, Ansaldo and MHPS, presenting a commercial and technical offer significantly different from Alstom, in particular in the Large and Very Large segments.
- (934) During Phase I a majority of customers expressed concerns about the impact of the Transaction on competition in the market for 50 Hz HDGTs, although at

the same time a majority of customers considered that there are enough alternative suppliers of HDGTs pre-merger.⁷⁶¹

- (935) The question in Phase I was not precise because it did not clarify what the concept "enough" related to. Therefore, in Phase II, the Commission asked a more precise question which is more in line with the applicable test of the Horizontal Merger Guidelines. Customers were asked what they would expect if Alstom exited the market as an independent competitor and given the continued presence of the remaining OEMs, compared to the pre-merger situation, namely if they expect: (i) at least the same level of choice and quality, (ii) equivalent or better commercial terms and conditions, (iii) at least the same level of innovation.
- (936) A majority of customers considers that, despite the presence of the remaining OEMs, the Transaction would lead to worse commercial terms and conditions and prices in the overall market for 50 Hz HDGTs.⁷⁶² This effect is even worse if GE discontinues the development and marketing of some of Alstom's HDGTs.⁷⁶³ One customer explains that *"It is difficult to say with any certainty but the number of OEMs competing in the market place would reduce if Alstom GTs are discontinued. If there is less competition in the segment this could have an adverse impact upon the terms and conditions offered"*.⁷⁶⁴
- (937) A significant number of customers also consider that innovation would be lower, despite the presence of the remaining OEMs.⁷⁶⁵ If GE were to decide to discontinue the development and marketing of some of Alstom's HDGTs even more customers consider that innovation would be lower.⁷⁶⁶ A customer states that *"An OEM introduces innovations in order to produce equipment with better performance characteristics compared with these of similar equipment of other OEMs. In case of lack of competition it will be possible that there is not motivation for innovation"*.⁷⁶⁷ Furthermore, one customer explains that *"OEMs will continue to innovate to be competitive. Concentration of expertise into a few organizations could however lead to focus of innovative concepts into a few areas as opposed to broader innovation across several companies"*.⁷⁶⁸
- (938) As regards in particular the Large and Very Large segments, the majority of customers consider that, despite the remaining OEMs present in the market, the Transaction would worsen the commercial conditions and terms and prices⁷⁶⁹ and would lead to lower innovation⁷⁷⁰. Customers explain that that they expect *"Less competition at the expense of clients. We are not expecting GE*

⁷⁶¹ See replies to question 91 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁶² See replies to question 118.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁶³ See replies to question 118.2.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁶⁴ See replies to question 118.2.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁶⁵ See replies to question 118.3 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁶⁶ See replies to question 118.3.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁶⁷ See replies to question 118.3.1 of Phase II Questionnaire Q7 to customers Q7 to customers Gas fired power plant.

⁷⁶⁸ See replies to question 118.3.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁶⁹ See replies to questions 86.2 and 101.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁷⁰ See replies to question 86.3 and 101.3 of Phase II Questionnaire Q7 to customers Gas fired power plant.

cannibalizing its own offerings"⁷⁷¹ and that *"The competitive tension would help to drive better terms & conditions and prices. The same caveat applies in the event that Alstom were to cease trading"*⁷⁷². Other customers state that *"Both GE and Alstom have provided innovative solutions to their respective fleets. The need to innovate may reduce if there are fewer competitors"*⁷⁷³ and *"Innovation efforts would not go to GT26 upgrades. Innovation would focus on other products"*⁷⁷⁴.

8.6.5. Conclusion

- (939) The market for 50 Hz HDGTs highly differentiated. Therefore, the number of alternative suppliers available to customers in a tender is important. This is confirmed by customers that consider that it is always better to have the maximum number of bidders participating in tenders and thus generally try to invite all five OEMs to participate in tenders.
- (940) When looking to the Large and Very Large segments the Commission's investigation has shown that in most of the cases, for the EEA customers, only Siemens could be considered as a strong technical and commercial alternative to Alstom and GE. In terms of technological positioning, customers would thus have only one or no technological alternative to the merged entity post-Transaction. This is also the result of the very high entry barriers and repositioning costs that make it unlikely that other OEMs can substitute Alstom in their current competitive role in the market.
- (941) The bidding data analysis supports this evidence. In fact, in the Large segment in a significant number of tenders where Alstom competes against GE or Siemens (around [50-60]% in the data provided by the Notifying Party, slightly below [60-70]% using data from competing OEMs), there is only one other tender participant.
- (942) Market participants indicated that the presence of the remaining OEMs is not likely, post-Transaction, to counteract the reduction of alternatives resulting from the disappearance of Alstom as an independent competitor.
- (943) In conclusion the Commission considers that the presence of the remaining OEMs is not likely, post-Transaction, to counteract the reduction of alternatives resulting from the disappearance of Alstom as an independent competitor and as such, the Transaction would significantly reduce the choice available to customers in the market for 50 Hz HDGTs, and in particular in the Large and Very Large segments.

8.7. The Transaction eliminates an important competitive force from an innovation and technology point of view

- (944) As explained in paragraph 37 of the Horizontal Merger Guidelines, *"some firms have more of an influence on the competitive process than their market shares or similar measures would suggest. A merger involving such a firm may change the competitive dynamics in a significant, anti-competitive way, in*

⁷⁷¹ See replies to question 86.2.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁷² See replies to question 86.2.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁷³ See replies to question 86.3.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁷⁷⁴ See replies to question 86.3.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

particular when the market is already concentrated". As explained in Section 8.4, the overall market for 50 Hz HDGTs is already highly concentrated.

- (945) Paragraph 38 of the Horizontal Merger Guidelines states that "*in markets where innovation is an important competitive force, [...] effective competition may be significantly impeded by a merger between two important innovators, for instance between two companies with "pipeline" products related to a specific product market. Similarly, a firm with a relatively small market share may nevertheless be an important competitive force if it has promising pipeline products*".
- (946) This section aims at showing that Alstom, in the overall market for 50 Hz HDGTs, which is already highly concentrated, is stronger than its market shares would suggest from a technological point of view because it is an important innovator.
- (947) The Notifying Party claims that the removal of Alstom as an independent competitor does not eliminate strong or unique competitive pressure on the other competitors, which was necessary to maintain the competitive nature of the global market for 50 Hz HDGTs. The Notifying Party also claims that Alstom is currently not, and has never been, a leading innovator in HDGTs.

8.7.1. *Alstom's HDGTs technology is distinctive and in many respects best in class*

- (948) A large majority of customers and competitors indicated during the Commission's investigation that Alstom is an important player in the overall market for 50 Hz HDGTs given, among other reasons, its strong portfolio of proven design and experience, the fact that it delivers technical attributes (power, efficiency, reliability, availability, flexibility, emissions control) which are similar to, or better than, those of its competitors, as well as the quality of its offering of other components for CCPPs and its EPC and turnkey solution capabilities.⁷⁷⁵
- (949) Alstom's technology is distinctive, based on the unique sequential combustion. The GT24/GT26/GT36 sequential combustion gas turbine family allows the highest operational flexibility. Alstom's sequential combustion technology provides superior part-load efficiency and turndown capability.
- (950) [internal GE assessment of competing technologies] (see Figure 51 below).⁷⁷⁶

Figure 51: HDGTs' OEMs technological path

[extract from internal GE document illustrating evolution of firing temperature and output of GE and competing GT frames]

Source: Annex 3662, slide 18.

- (951) In the market for 50 Hz HDGTs, all HDGTs offered by Alstom are characterized by cutting edge technology that often demonstrated best in class performances.

⁷⁷⁵ See replies to question 83 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 72 of Phase I Questionnaire Q2 to competitors on the gas business.

⁷⁷⁶ See Annex 3662, slide 18.

- (952) In the Large segment, Alstom's GT26, as discussed in Section 8.5.2 on closeness, has very high CC efficiency, power output at the upper-end of the Large segment and best in class operational flexibility. Alstom, in an internal document, recognises that *"when looked at from the view-point of what today's dynamic power markets are looking for and require from these advanced-class CCPP technologies, the KA26 in many ways is not a 15+ year old CCPP technology but rather a CCPP technology that was 15+ years ahead of its time!"*.⁷⁷⁷
- (953) In the Very Large segment, Alstom's GT36, as discussed in Section 8.5.3 on closeness, has very high CC efficiency, power output at the upper-end of the Very Large segment, best in class operational flexibility and it targets the lowest cost of electricity.
- (954) In the Medium segment, Alstom's GT13E2, as discussed in Section 8.5.3 on closeness, has best in class CC efficiency and power output at the upper-end of the Medium segment.

8.7.2. Market participants' views on Alstom's importance as an innovator

- (955) A significant number of customers and competitors actually considered that Alstom is stronger than its competitors in certain areas of the market for 50 Hz HDGTs of particular relevance for EEA customers.⁷⁷⁸ Respondents in particular stressed Alstom's class-leading efficiency and flexibility, driven by its unique double combustion technology. A large EEA-based utility for instance states: *"The sequential combustor on the GT26 offers a competitive advantage for technical performance of the engine; this is mainly around flexibility to switch off part, or all, of the secondary combustor. Alstom's experience with sequential combustion on the GT26 is expected to be one of the main selling points for the staged combustion on the GT36. Currently none of the other OEMs have engines with operational sequential combustion, though a number of them are developing it"*.⁷⁷⁹ Another one explains that *"The GT26 / GT24 platform is class leading efficiency for F-class machines. The Alstom two stage combustion system offers class leading emissions control and the lowest minimum GT loads levels on the market"*.⁷⁸⁰ The two combustor chambers of the GT26 can be individually controlled, allowing the plant to be parked at 20% load and still meet emissions requirements, thus avoiding the need for costly overnight shutdowns.⁷⁸¹
- (956) [internal GE assessment of ALSTOM's technology].⁷⁸²
- (957) A significant number of customers, including some of the largest utilities in the EEA, expressed concerns that the Transaction would have a negative impact on

⁷⁷⁷ See GE's reply to the Commission's Request for Information N° 44, 22.06.2015, Annex 44.04.02.

⁷⁷⁸ See replies to question 85 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 74 of Phase I Questionnaire Q2 to competitors on the gas business.

⁷⁷⁹ See reply to question 85.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁸⁰ See reply to question 85.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁸¹ See GE's reply to the Commission's Request for Information N° 18, 06.03.2015, question 1c, Annex 3731, entitled "Gas Turbine World July - August 2011".

⁷⁸² See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0007406_GE - Strictly Confidential - Contains Business Secrets msg".

overall innovation for HDGTs.⁷⁸³ A non-European customer stated: *"Introduction of higher efficiency machines in the market will be affected. Monopoly in certain product range could prevail"*.⁷⁸⁴

- (958) A very large majority of customers and competitors indicated during the Commission's investigation that Alstom is a credible innovator in the market for 50 Hz HDGTs, which has been able to successfully introduce new frames and continuously upgrade them through continued innovation and R&D.⁷⁸⁵ A large EEA-based utility states for instance: *"Alstom have been at the forefront of some of the most innovative gas turbine developments in the last 15 years. The sequential combustor offers significant flexibility options not available from Alstom's competitors"*.⁷⁸⁶ Another explains: *"Alstom has competitive offerings in both the Medium and Large HDGT ranges and this has been made possible through continued innovation and R&D. Alstom successfully developed the GT26 for the 50Hz market and the GT24 for the 60Hz market, they have continued to evolve the GT13 product and clearly have plans to develop a very large HDGT platform"*.⁷⁸⁷ Another states that *"MXL2 upgrade package on GT26 is innovative in its flexibility by allowing to switch between M mode for max power and flexibility and XL mode to allow increase of inspection intervals"*.⁷⁸⁸ A competitor indicated that *"Alstom is also a leader in flexibility in power plants design. It is a strong competitive advantage in all markets requiring flexibility"*.⁷⁸⁹
- (959) All competitors and a very large majority of customers also stated that innovation introduced by Alstom in the past has pushed its competitors to innovate as well.⁷⁹⁰ In particular, market participants stressed the fact that Alstom's efforts to increase the flexibility and part-load efficiency of its HDGTs has forced competitors to also innovate and improve in these areas as well. An EEA-based utility for instance explains that *"the 2006 version of the GT26 resulted in Alstom winning almost every contract in the UK between 2006 and 2010 and has resulted in a renewed cycle of newer, more powerful variants being introduced by all manufacturers"*.⁷⁹¹ Another one states that *"the GT24/GT26 is an innovative design offering highest flexibility leading to competitive pressure on the HDGT OEMs"*.⁷⁹²
- (960) Customers indicated almost unanimously that the innovation introduced by Alstom with its GT26 and subsequent upgrades have been important in pushing

⁷⁸³ See replies to question 182 of Phase I Questionnaire Q1 to customers of Gas fired power plant and replies to question 152 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁸⁴ See reply to question 182 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁸⁵ See replies to question 84 of Phase I Questionnaire Q1 to customers of Gas fired power plant 73 of Phase I Questionnaire Q2 to competitors on the gas business.

⁷⁸⁶ See reply to question 84 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁸⁷ See reply to question 84 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁸⁸ See reply to question 49 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁷⁸⁹ See minutes of a conference call held with a competitor on 20 March 2015.

⁷⁹⁰ See replies to question 86 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 76 Phase I Questionnaire Q2 to competitors on the gas business.

⁷⁹¹ See reply to question 86 of Phase I Questionnaire Q1 to customers of Gas fired power plant

⁷⁹² See reply to question 86 of Phase I Questionnaire Q1 to customers of Gas fired power plant

certain of its competitors to also innovate in Large 50 Hz HDGTs.⁷⁹³ Customers indicated that *"At the moment GT26 was introduced it was revolutionary technology: very high compression ratio, intercooler and sequential combustion. Other OEMs have taken different approaches to a large extent but innovation by a competitor is certainly an incentive to develop own innovation"*, *"Alstom's sequential combustion technology provide more superior part-load efficiency and turndown capability"*, and that *"The MXL2 upgrade package and the Low Part Load solution have kept the GT26 as the class leader in this size of plant and this no doubt puts pressure on the competition that can be useful during off peak hours"*.⁷⁹⁴

- (961) Moreover, it is confirmed by an internal email of GE that technological advancements of the GT26 are regarded *"pretty big move for Alstom and disruptive info as they claim full flexibility [with their new GT26]"*.⁷⁹⁵
- (962) The overwhelming majority of customers considered, on the basis of the Alstom's GT36 presentation included in the Commission's Requests for Information to customers, Alstom as a credible innovator for Very Large HDGTs.⁷⁹⁶ A customer considers that *"Alstom has been a credible innovator for medium and large HDGTs in the 50 Hz market. It is expected that Alstom would be a credible innovator for Very Large HDGTs in the 50 Hz market"*.⁷⁹⁷ Another customer believes that Alstom *"successfully developed the GT26 for the 50 Hz market and there is no reason why this could not be repeated"*.⁷⁹⁸ In addition, almost all customers indicated that the GT36 is an attractive product in the Very Large segment.⁷⁹⁹ A European customer states that *"the proposed GT36 would be in direct competition with the GE HA.02 both in terms of power output and efficiency and this would be good for both pricing and innovation"*.⁸⁰⁰ Other customers consider that *"Alstom is a traditional GT supplier and the GT36 seems to be an interesting alternative in terms of size, efficiency and availability / maintainability"*⁸⁰¹ and *"would consider purchasing the GT36"*.⁸⁰²
- (963) The overwhelming majority of customers indicated that the innovation introduced by Alstom with its GT36 and subsequent upgrades have been important in pushing certain of its competitors to also innovate in Very Large 50 Hz HDGTs.⁸⁰³ Even if one customer indicated that *"As long as Siemens, GE or MHI are innovating, Alstom will not be required to push the competition"*, several others had the opposite view. Inter alia, customers stated that *"The*

⁷⁹³ See reply to question 77 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁹⁴ See reply to question 77 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁹⁵ See GE's reply to the Commission's Request for Information N° 20, 12.03.2015, doc "GE_0009135_GE - Strictly Confidential - Contains Business Secrets msg".

⁷⁹⁶ See replies to question 68 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁹⁷ See reply to question 68 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁹⁸ See reply to question 68 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁷⁹⁹ See replies to question 69 of Phase II Questionnaire Q7 to customers of Gas fired power plant and question 3 of Phase I Questionnaire Q4 to customers of Alstom's GT36.

⁸⁰⁰ See reply to question 69 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁰¹ See reply to question 3 of Phase I Questionnaire Q4 to customers of Alstom's GT36.

⁸⁰² See reply to question 3 of Phase I Questionnaire Q4 to customers of Alstom's GT36.

⁸⁰³ See reply to question 97 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

other OEM's will have to continue making their products as competitive as possible", "Alstom is a big player and force all competitors to pushing their GTs", "Otherwise only 3 relevant parties are left of which one party (MHPS) has not a very sound basis in EEA. Competition will enforce further improvements", "Any upgrade/improvement introduced by any OEM push the competitors to recover the gap. One interesting improvement introduced by Alstom is Sequential combustion design", "more competition will drive innovation" and that "Alstom have been a significant innovator in E-Class and F-Class product ranges and so their ability to provide competition should not be overlooked".⁸⁰⁴

- (964) The overwhelming majority of customers indicated that the innovation introduced by Alstom with its GT13E2 and subsequent upgrades have been important in pushing certain of its competitors to also innovate in Medium 50 Hz HDGTs.⁸⁰⁵ A customer states that *"Alstom has pushed by its MXL2 upgrade to the limits of what can be achieved by upgrading E class technology. Upgrades allow existing fleet to remain ahead in the merit order of power plants, which increases the running hours and contributes to selling more hot gas path parts. The switchable operational modes of the MXL2 upgrade for example have been likely an incentive for other OEMs in their upgrade developments".*⁸⁰⁶ Other customers indicated that *"Alstom have pushed the time between major outages from 24000EOH towards 42000EOH with successive upgrades" and that "The MXL2 package of upgrades has continued to raise the bar in the Medium HDGT range and the other vendors are having to innovate to keep pace".*⁸⁰⁷

8.7.3. *Alstom has higher R&D spend and higher capabilities than its market shares would suggest*

- (965) Alstom's important role in innovating in the market for 50 Hz HDGTs is also evidenced by the high level of its HDGT-related (i) R&D costs and investments ("spend") and (ii) R&D headcount.
- (966) As can be seen in Table 23, Alstom's HDGT-related R&D spend is, over the period 2013 to 2015, slightly above that of GE, being the OEM with the highest R&D spend in that period. A market reconstruction also showed that Alstom (excluding GE) is also significantly above of all its other competitors. The total R&D spend of the combined entity would represent [60-70]% of total HDGT-related spend by all OEMs over the period 2013 to 2015, and Alstom would represent [30-40]%.
- (967) According to Alstom internal documents (see figure below), Alstom's overall HDGT-related R&D headcount, as of December 2013, amounted at [ALSTOM's R&D headcount] and was forecasted [strategic plans concerning ALSTOM's R&D headcount] This figure also shows how, over the years, Alstom flexibly allocated R&D resources to different projects.⁸⁰⁸ The only

⁸⁰⁴ See reply to question 97 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁰⁵ See reply to question 58 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁰⁶ Reply to question 58 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁰⁷ Reply to question 58 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁰⁸ See Annex 3826, slide 5.

projects requiring more or less constant R&D resources over the years are [names of R&D projects].

Figure 52: Overall Alstom's GAS R&D manpower requirement

[extract from internal ALSTOM document showing allocation of R&D resources]

Source: Annex 3826, slide 5.

- (968) The Commission considers Alstom being part of the top three HDGT competitors in terms of R&D for 50 Hz HDGTs, with higher R&D spend than its market shares would suggest, significantly ahead in particular of MHPS and Ansaldo in this regard.

8.7.4. Alstom has better testing facilities than its market shares would suggest

- (969) Alstom's important role as a technologically significant player in the overall market for 50 Hz HDGTs appears to be clear also looking at its capabilities in terms of testing facilities for 50 Hz HDGTs. According to a very large majority of customers and all HDGT OEMs, having a state-of-the-art testing facility at full load represents a significant competitive advantage for an OEM when offering HDGTs.⁸⁰⁹ A large EEA-based utility stated that *"Without a full load test, we may not accept a new technology to be implemented on our engines"*.⁸¹⁰ Another large EEA utility indicated that *"A test bed where a gas turbine can operate is a particular advantage for new technology like very large HDGTs. This provides the purchaser with the opportunity to see how the machine operates, its performance and reliability. This reduces some of the technology risk associated with purchasing a new and unproven technology like the H class machines. The GE facility in the US isn't connected to the high voltage transmission system so they can operate their machine on the test bed as they choose without adversely impacting the performance of the transmission system. This provides them with the opportunity to really push the operating parameters of the machine in a safe environment. Siemens have a test bed at an operational power station but the performance of the machine is restricted by the requirement to comply with the grid code of the system owner where the plant is connected. Alstom we understand are currently constructing a test bed for their GT36 machine. This is less of an issue for the large and medium HDGT markets as this is proven technology and there are often tens if not hundreds of reference plants which demonstrate the performance of gas turbines"*.⁸¹¹
- (970) An HDGT competitor stated that *"There is a distinction between component testing facilities [...] and testing facilities for an entire turbine at a full load"*.⁸¹² Another HDGT competitor stated that *"If an OEM has a full-load testing facility, it can perform tests in conditions similar to the real conditions in a power plant. This capability has significant advantages for an OEM in*

⁸⁰⁹ See replies to question 106 of Phase II Questionnaire Q7 to customers of Gas fired power plant and replies to question 45 of Phase II Questionnaire Q10 to competitors on the gas business.

⁸¹⁰ Reply to question 106 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸¹¹ See reply to question 106 of Phase II Questionnaire Q7 to customers of Gas fired power plant

⁸¹² See minutes of a conference call held with a competitor on 20 March 2015.

*terms of developing more efficient GTs by eliminating operational drawbacks during testing".*⁸¹³

- (971) Ansaldo indicated that it *"does not have a testing facility for the full GT. It only has the possibility to test occasionally the improvements in existing power plant after having negotiated with customer. New GT model were never developed so far due to lack of such test facility"*.⁸¹⁴ Some customers confirmed that Ansaldo has a disadvantage vis-à-vis the other OEMs in terms of testing facilities in 50 Hz.⁸¹⁵
- (972) An HDGT competitor stated that *"MHPS has limited facilities for testing new machines. MHPS has an old generator which allows testing J class machines only at part-loads and not at full load, which is a big disadvantage in testing new products. From the knowledge of [...], the J-class machines of MHPS are not tested at full-load for the 60Hz frequency, and MHPS cannot test its J-class GT(s) on 50Hz frequency"*.⁸¹⁶ MHPS confirmed that it *"does not have a full-load testing facility for 50 Hz. As such, MHPS first tests the critical and high-risk technology underpinning newly-developed GTs through the testing of 60 Hz units"*.⁸¹⁷
- (973) A HDGT competitor stated that *"Alstom is the only OEM which has a 50 Hz full load testing facility. There are rumours in conferences that Alstom has extended and improved its testing facility in Birr to be able to test the GT36 as well"*.⁸¹⁸ Alstom itself, confirms that the *"GT26 gas turbine has completed part- and full- load performance validation at Alstom's grid-connected power plants test facility"* (Birr).⁸¹⁹ Alstom has its testing facilities in Birr (Switzerland). The testing facility built for the GT26 is a fully operating, grid-connected power plant owned by Alstom to perform full-scale testing under real load conditions. *"The test campaign for the upgraded GT26 gas turbine, which began in March 2011, required the installation of more than 4,000 pieces of test instrumentation (in addition to the standard instrumentation) to ensure maximum engine performance monitoring under all operating conditions"*.⁸²⁰ In Spring 2014, Alstom started building an additional testing facility in Birr for its Very Large HDGT, the GT36.
- (974) The Commission considers that Alstom has cutting edge testing facilities for 50 Hz HDGTs, better than its market shares would suggest, significantly ahead in particular of MHPS and Ansaldo in this regard.

8.7.5. Alstom has access to a large installed base supporting its ability to innovate

- (975) As described in Recital (390), experience from operating and servicing a large installed base provides a crucial input to the innovation process of OEMs. For instance, the GT36 has been developed by Alstom by building upon its

⁸¹³ See reply to question 45 Phase II Questionnaire Q10 to competitors on the gas business.

⁸¹⁴ See competitor's reply to the Commission's Request for Information of 27 March 2015, question 18.

⁸¹⁵ See replies to question 106.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸¹⁶ See minutes of a conference call held with a competitor on 20 March 2015.

⁸¹⁷ See competitor's reply to the Commission's Request for Information, dated 26 March 2015, question 22.

⁸¹⁸ See minutes of a conference call held with a competitor on 20 March 2015.

⁸¹⁹ See Annex 3731, "Gas Turbine World July - August 2011".

⁸²⁰ See Annex 3731, "Gas Turbine World July - August 2011".

experience with older machines. Alstom internal documents show that the GT36 is a product built on proven existing components and platforms⁸²¹, that the GT36's design is linked to the predecessors designs GT24/26⁸²² and in particular that GT36 leverages the technology advancements made in the GT24/26 platform.⁸²³

Figure 53: GT36: a technological continuum from Alstom's platforms

[extract from internal ALSTOM document showing evolution of ALSTOM's GT frames over time]

Source: Annex 1033.

Figure 54: GT36 is built upon Alstom's proven technology

[content of internal ALSTOM document containing information on GT36 technical characteristics]

Source: Annex 1033.

- (976) In addition, other internal documents provide evidence of the relevance of access to an installed base which allows Alstom to test innovation with existing plants (so-called “front-runner” units). Alstom mentions that “field monitoring” (front-runner instrumentation) is the last element of validation of new technology, before introduction to the fleet.⁸²⁴ This applies also to validation of new upgrades. For example, according to an internal document from Alstom, even before being offered to the market in 2011, the MXL2 upgrade was installed on an existing Alstom unit in 2009. This allowed Alstom to validate (and then further improve) the new product.⁸²⁵ After testing in the “front-runner” unit, the upgrade is generally then applied to several more units in the installed base,⁸²⁶ which guarantees additional sources of revenues. Alstom also monitors the performance of these units in detail to verify that the product improvement was successful, and to demonstrate commercial validation of new upgrades.⁸²⁷
- (977) Internal documents from Alstom also show the relevance of the installed base as a source of information. In fact, operational data from the field allows Alstom to monitor how the market is evolving and to identify new market requirements.
- (978) Field data can be used to identify the operational regime of power plants in each market or region (for example in terms of number of annual operating hours, number of starts, and hourly utilisation rate).⁸²⁸ Such information allows Alstom to identify market requirements. Alstom for instance indicates that “operational flexibility is a must in the current power generation market, it is

⁸²¹ See Annex 1033.

⁸²² See Annex 1117.

⁸²³ See Annex 1025.

⁸²⁴ See Annex 4319, page 26.

⁸²⁵ See Annex 1433, pages 6, 23 and 27; see Annex 4359, pages 5-6, where the MXL2 retrofits are considered as relevant field experience for the GT26 2011; see Annex 4351, page 15.

⁸²⁶ See Annex 4893, page 17.

⁸²⁷ See Annex 4893, pages 18 and 165; see Annex 5730; see Annex 6448.

⁸²⁸ See for instance Annex 4359, pages 12-17; see Annex 4361, page 13; see Annex 4360, pages 6 and 12.

*driven by many volatile parameters that have not been as significant a decade ago as they are today”, “Alstom systematically analyses market trends and assess the need and drivers for operational flexibility”, and that Operational Flexibility “features set strong requirements for product development” and “at heart of Alstom product testing and validation activities”.*⁸²⁹

- (979) *This information is particularly useful for instance to identify the value of technical features of HDGTs, such as flexibility, before actually making investments to improve those features. In presenting its GT26 (in particular the 2011 ratings),*⁸³⁰ *Alstom emphasises that its insights on the value of operational flexibility rely on its access to extensive field experience.*⁸³¹
- (980) *Moreover, information from the fleet helps steering the innovation efforts so as to better meet customers' expectations. As Alstom explains, "Operational experience of the GT26 fleet is permanently observed with respect to wear and tear on the components in order to adapt the design and the operation concept for a robust and reliable operation." In addition, "The change of the operation profile, particular in Europe, reveals new findings on the units. Typical new findings are: Accelerated wear of seals and stator parts in sliding contact Drift of operation points with impact to operational stability and emissions, sometimes requires re-adjustment of the unit More frequent loosening of bolting connections Increased failure rate of instrumentation" and Alstom notices that "adaptations of the design have been made to avoid such findings".*⁸³² *Therefore, there appear to be a direct link between the information Alstom accessed through its installed base and innovation.*
- (981) *For instance, in the [name of pipeline program] feasibility study, Alstom starts its analysis by gathering the main learnings from [information concerning feasibility study of pipeline program].*⁸³³ *This shows indeed that information stemming from the operation of units in the installed base represent a starting point for identifying areas of improvements and accordingly future projects. There are several additional examples of product improvements by Alstom that are tested and validated using field experience, as part of the overall development and validation process.*⁸³⁴
- (982) *[ALSTOM GT pipeline program and indication of relevance of installed base].*⁸³⁵ *Another Alstom document presents evidence of Alstom's use of experience from the units in operations to derive insights on current market conditions in each region, and improve their product.*⁸³⁶ *It is mentioned in this document that [contents of internal ALSTOM document concerning relevance of field data].*

⁸²⁹ See Annex 4319, page 38.

⁸³⁰ See for instance Annex 4352, pages 24-26; see Annex 4335, pages 44-49, 52-60.

⁸³¹ This is because the value of operational flexibility relies on the detailed operational profile of power plants, including the number of starts, the load utilization of plants when they are operating (part-load), the number of hours at Minimum Stable Load, etc.

⁸³² See Annex 4363.

⁸³³ See Annex 5730.

⁸³⁴ These example include:[examples of ALSTOM GT programs where field data were important].

⁸³⁵ See Annex 2497B.

⁸³⁶ See Annex 4363.

8.7.6. Alstom aims at covering all HDGT ranges in the overall 50 Hz market

- (983) Alstom is indeed a HDGT player aiming to have a full portfolio of HDGTs. Alstom, in its internal documents dated March 2014, indicates that "the product portfolio of the gas business targets the full power range in the medium, large and very large segments of 50 Hz and 60 Hz".⁸³⁷
- (984) In addition, Alstom implements a cross-platform innovation strategy, as can be seen by the following examples: (i) the 2012 upgraded version of the GT13E2 uses the first 16 stages out of 22 of the latest GT26 compressor,⁸³⁸ (ii) [information relating to GT36], (iii) [information relating to GT36].

8.7.7. Alstom has important pipeline HDGT products

- (985) Alstom launched in March 2013 an ambitious long-term program [information concerning an Alstom pipeline GT program].⁸³⁹[information concerning ALSTOM pipeline GT program].⁸⁴⁰
- (986) [information concerning ALSTOM pipeline GT program].⁸⁴¹[information concerning ALSTOM pipeline GT program].⁸⁴²[information concerning ALSTOM pipeline GT program].⁸⁴³

Figure 55: [name of ALSTOM pipeline GT program]

[extract from internal ALSTOM document containing information on ALSTOM pipeline GT program]

Source: Annex 1586, slide 37.

- (987) Alstom, in its internal documents from November and December 2013, indicated an R&D potential for the development of an additional platform [information concerning an Alstom pipeline GT program].
- (988) This new platform would potentially lead to new HDGTs,⁸⁴⁴ namely the: (i) "GT16": a new Large 50Hz HDGT better suited for simple cycle operations, which would be based on GE's 9FA combustor and 9FA turbine technologies (together with the GT26 compressor); (ii) "GT14": a new Large 60Hz HDGT better suited for simple cycle operations, based on GE's 7FA combustor and 7FA turbine technologies (together with the GT24 compressor); (iii) "GT12": a new Small/Medium 50/60Hz HDGT (described as "small" although it has an output above 90MW, which thus would fall in the "Medium" segment as per the HDGTs market definition), based on GE's 7FA combustor and 6FA turbine technologies (together with the GT24 compressor).⁸⁴⁵ Market introduction

⁸³⁷ See Annex 2497D, page 2.

⁸³⁸ See Annex 3635,

⁸³⁹ See Annex 2497B.

⁸⁴⁰ See Annex 2497D, page 2.

⁸⁴¹ See Annex 1586.

⁸⁴² See Annex 1586, slide 36.

⁸⁴³ See Annex 1586, slide 37.

⁸⁴⁴ See Annex 3826.

⁸⁴⁵ See Annex 1229, slides 15, 16, 17, 18.

(tender readiness) was foreseen at the beginning of 2015 for the GT14, end of 2015 for the GT12 and beginning of 2016 for the GT16.⁸⁴⁶

- (989) An Alstom internal document presents a cost comparison of the pipeline projects GT12, GT14 and GT16 that would serve as the base for the business case. This report shows the cost savings brought by Alstom capabilities to use PSM developments on GE's 7FA to achieve lower costs in these projects.⁸⁴⁷ Therefore, in view of the fact that PSM is an important independent service provider in the market, when it comes to innovation Alstom can rely also on the know-how and synergies stemming from PSM activities.

Figure 56: Possible platform: GT12, GT14 and GT16

[extract from internal ALSTOM document containing information on ALSTOM's pipeline GT programs]

Source: Annex 1229, slide 16.

- (990) [information concerning ALSTOM pipeline programs],⁸⁴⁸ [information concerning ALSTOM pipeline programs].
- (991) In any event, this possible new platform for the GT12, GT14 and GT16 further shows the innovation potential coming from Alstom and its subsidiary PSM.

8.7.8. The Transaction is likely to lead to significant and lasting harm to innovation

- (992) In order to be able to develop new frames and major upgrades, in the HDGT industry, access to data from an OEM's own HDGTs installed base is fundamental. The larger the size of the installed base the better it is in terms of information gathered to develop new frames and major upgrades.
- (993) The HDGT industry is R&D and capital intensive. It entails large sunk costs and, is characterized by a high degree of innovation.⁸⁴⁹ IP rights play an important role in protecting the incentives to innovate.⁸⁵⁰ As explained by a competitor: "*GT is a business of high degree of innovation. Since the main fuel of GT is natural gas which is very expensive, customer continuously demand for more efficient, flexible GT operations with short start-up ramping, high part load efficiency, lower heat rates and other specifications. To continue to remain competitive in the market, continuous R&D and innovation is necessary*".⁸⁵¹
- (994) The introduction of an entirely new product is a costly and lengthy procedure that requires significant R&D and capital expenditure investment and several years of development and validation. Therefore, OEMs engage in such long term R&D programs with the goal to conquer the market by pushing the innovation frontier, but innovation at the HDGT technology frontier is incremental and needs to build upon decades of experience. Reputation and

⁸⁴⁶ See Annex 3826, slide 3.

⁸⁴⁷ See Alstom's reply to the Commission's Request for Information N° 42, 09.06.2015, doc "documents of custodians Andreas Brautsch and Volker Eppler - list – 0007307593".

⁸⁴⁸ See Annex 1586, slide 5.

⁸⁴⁹ See replies to question 43 of Phase I Questionnaire Q2 to competitors on the gas business.

⁸⁵⁰ See replies to question 44 of Phase I Questionnaire Q2 to competitors on the gas business.

⁸⁵¹ See reply to question 43 of Phase I Questionnaire Q2 to competitors on the gas business.

track record are very important in this industry. It takes several decades to build up the technology, know-how and reputation to compete effectively in the market for 50 Hz HDGTs.

- (995) As described above, barriers to entry are very high in the HDGT industry. If Alstom disappears, unlike in some areas of the IT industry for example, disruptive innovation from new entrants or start-ups will likely not happen.
- (996) Therefore, the Commission considers that, by removing an important innovator in the market for 50 Hz HDGTs, the Transaction is likely to lead to significant and lasting harm on innovation.

8.7.9. Conclusion

- (997) The available evidence indicates that (i) Alstom's HDGT portfolio offering is distinctive and often best in class in terms of operational flexibility; (ii) Alstom's HDGT portfolio offering is highly regarded by customers looking for HDGTs characterized by high operational flexibility (Section 6.2 describes that EEA customers are the ones typically requiring high operational flexibility); (iii) Alstom is part of top three HDGT competitors in terms of R&D spend and capabilities; (iv) Alstom has cutting edge testing facilities; (v) Alstom has a significant installed base that supports its ability to innovate; (vi) Alstom targets all HDGT ranges in 50 Hz; and (vii) Alstom has important pipeline HDGT products.
- (998) The Commission concludes that Alstom, in the overall market for 50 Hz HDGTs, from a technological point of view, is stronger than its market shares would suggest.
- (999) As such, the Transaction would remove an important innovator in the market for 50 Hz HDGTs, therefore reducing the overall competitive pressure on the remaining players, with a reduction in the overall incentives to invest significantly in innovation.
- (1000) The Commission concludes that, due to the very high barriers to entry in the market for 50 Hz HDGTs, by removing an important innovator, the Transaction is likely to lead to significant and lasting harm on innovation.

8.8. The Transaction will likely lead to the discontinuation of Alstom's HDGTs and related R&D for the Large and Very Large segment

8.8.1. *Post-Transaction, GE will eliminate most of Alstom's R&D capabilities related to HDGTs*

- (1001) The termination of the Parties' overlapping product portfolio and associated R&D is one of the key reasons of the Transaction and one of the main sources of "synergies" expected by GE after the Transaction. In particular, post-Transaction, GE intends to eliminate most of Alstom's R&D capabilities related to HDGTs [GE post-closing integratin plans]⁸⁵²).
- (1002) In a document dated 27 November 2014, GE's target was,[GE post-closing integratin plans].

⁸⁵²

See Annex 12, slide 10, presentation to GE Board dated 7 March 2014.

- (1003) In a more recent document (23 March 2015), GE details the R&D-related synergies that it expects to create in relation to newly-built HDGTs:⁸⁵³
- (a) [GE post-closing integration plans],⁸⁵⁴ [GE post-closing integration plans];
 - (b) [GE post-closing integration plans],⁸⁵⁵ [GE post-closing integration plans]⁸⁵⁶;
 - (c) [GE post-closing integration plans]⁸⁵⁷;
 - (d) [GE post-closing integration plans];
 - (e) [GE post-closing integration plans];
 - (f) [GE post-closing integration plans];
 - (g) [GE post-closing integration plans].

Figure 57: Overview of R&D-related synergies expected in relation to HDGTs (newly-built), dated 23 March 2015

[GE synergy analysis]

Source: Annex 4707.

- (1004) Overall, GE will [GE post-closing integration plans].
- (1005) Overall, the Commission considers that the ability of the merged entity to pursue the development of Alstom's HDGT technology portfolio will disappear compared to Alstom's pre-merger ability to support the development of its product portfolio and of its specific technology path (see Section 8.7).

8.8.2. Post-Transaction GE will discontinue Alstom's GT36

- (1006) There is consistent evidence in the file that GE will after the Transaction discontinue the GT36.⁸⁵⁸ The main reason is that Alstom's GT36 [GE internal assessment of GT36].⁸⁵⁹
- (1007) The Notifying Party is not contesting the fact that post-merger GE will terminate the GT36 programme.
- (1008) In spite of a customer stating that it expected that the "*existing Alstom customer base will drive GE to continue the support and development of the product*",⁸⁶⁰ a significant part of customers, on balance, explained that "*it doesn't make commercial sense to develop two separate products which will serve the same purpose/markets, particularly with the very high costs associated with gas turbine development.*"⁸⁶¹ Customers also argued that "*as GE have two machines in H-class, some rationalisation of product lines and R&D spend*

⁸⁵³ See Annex 4707, slides 4 to 6.

⁸⁵⁴ See Annex 4669, page 6.

⁸⁵⁵ See Annex 4669, page 6.

⁸⁵⁶ See Annex 4707, slides 4 to 6.

⁸⁵⁷ See Annex 4707, slides 4 to 6.

⁸⁵⁸ See for instance Annexes 4686, 4687, 4689, 4693, 4694, 4695, 4695, 4704, 4707 and 4708.

⁸⁵⁹ See Annex 4699 and 4700.

⁸⁶⁰ See replies to question 73.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁶¹ See reply to question 73.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

may be expected." Therefore, *"the H.01 and H.02 will be preferred over the less developed GT36"*.⁸⁶²

- (1009) As regards competitors, only one respondent competitor actually expects a continuation of the GT36 after the Transaction.⁸⁶³ The remaining competitors explained that *"post-merger, GE and Alstom will focus their commercial and R&D activities on GTs and STs respectively"*.⁸⁶⁴

8.8.3. *Post-Transaction, GE will not have the incentives and ability to continue actively marketing and developing the GT26 in the way Alstom did before the Transaction*

8.8.3.1. Framework for analysing the Notifying Party's claim

- (1010) Merger control has the objective of ensuring that the structure of the market remains competitive. In order to verify the effects of a given merger on the structure of the market, the Commission should make a forward-looking assessment of the incentives and ability of the merging firms to increase prices or to restrict output.
- (1011) When making such a forward-looking assessment, the Commission takes into account various sources of evidence, including contemporaneous internal documents produced in the ordinary course of business, as well as interviews of market participants.
- (1012) Given the structural nature of merger control, and the need to establish the post-merger incentives of the merged entity, the Commission cannot rely on unilateral behavioural commitments, which can be easily reversed post-merger. The Commission is even sceptical vis-à-vis formal unilateral behavioural commitments and does not regard them as appropriate remedies.
- (1013) The Commission also attaches less evidentiary value to documents produced by the Parties after the Commission has raised serious doubts as to the compatibility of the planned transaction with the internal market, that significantly deviate from documents previously produced in the ordinary course of business, and that are not supported by credible data and evidence that such deviation is motivated by rational profit-maximising considerations.

8.8.3.2. The Notifying Party's view

- (1014) In all internal documents until the end of March 2014, the assumption made by the GE integration team is that the merged entity will discontinue the GT26.
- (1015) On the basis of a 5-page presentation allegedly produced by GE on 16 April 2015, the Notifying Party currently claims that GE intends to maintain the GT26 in their HDGT product offering after the Transaction, *"to offer to the few customers that may want it"*.⁸⁶⁵
- (1016) The Notifying Party argues that, since the merged entity *"already plan[s] to maintain people and facilities for installed base parts and upgrades"* of the

⁸⁶² See reply to question 73.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁶³ See replies to question 65 of Phase II Questionnaire Q2 to competitors on the gas business: "Yes" 1 out of 13 (8%), "No" 6 out of 13 (46%), "I do not know" 6 out of 13 (46%).

⁸⁶⁴ See reply to question 65.1 of Phase II Questionnaire Q2 to competitors on the gas business.

⁸⁶⁵ See annex 4894 and GE's reply to the Commission's Request for Information N° 31, 30.04.2015, questions 1-5.

GT26, selling the GT26 as a new product would have "*low incremental investment over cost to maintain people and facilities for the [installed base]*". Such costs are estimated at USD [cost of maintaining GT26] in net present value ("NPV") and include certain tooling required to assemble the GT26 in Belfort ([cost of tooling] NPV) and the cost of [number of engineers] additional project engineers required to support bids for the GT26 ([cost of engineers] NPV).

- (1017) The Notifying Party further argues that "*winning a single incremental unit that would otherwise go to Siemens/MHI/Ansaldo readily covers incremental costs*".
- (1018) GE's plan for after the Transaction would be to "*maintain GT26 offering for customers that want it*", but seemingly not to actively market this machine anymore.
- (1019) The Notifying Party additionally submits that it is now GE's intention to "*[GE integration plans]*", but that GE "*does not have any near term plans to conduct testing at this facility*".⁸⁶⁶

8.8.3.3. Commission's assessment

(i) On the basis of the GT26's close positioning against GE machines, GE internal documents until end of March 2015 consistently refer to the discontinuation of the GT26

- (1020) The Commission firstly notes that the discontinuation of the GT26 as a new product after the Transaction has consistently been the working hypothesis of the GE integration team, until at least the end of March 2015.⁸⁶⁷ A large number of internal documents dated from 13 November 2014 to 24 March 2015 explicitly refer to or justify the discontinuation of the GT26.⁸⁶⁸
- (1021) The Commission also notes that the discontinuation of the GT26 as a new product after the Transaction, as well as the [GE integration plan],⁸⁶⁹ has consistently been the working hypothesis of the Notifying Party for the calculation of the synergies brought about by the merger, including as late as in its submission on efficiencies dated 6 May 2015.⁸⁷⁰
- (1022) The Notifying Party argues that GE's view as to whether the GT26 should be discontinued as a new product has evolved over time, as the work of the integration team progressed and additional relevant data was gathered.⁸⁷¹
- (1023) The Commission notes that, as early as on 21 November 2014, the integration team already considered that "*validation [is] progressing as more data becomes available*" as regards "*product portfolio hypothesis*", which encompasses the decision to maintain or discontinue the GT26.⁸⁷² Additional relevant data was arguably gathered between 21 November 2014 and 24 March

⁸⁶⁶ See GE's reply to the Commission's Request for Information N° 31, 30.04.2015, question 4.

⁸⁶⁷ See Annex 4708, slide 11.

⁸⁶⁸ See for instance Annexes 4686, 4687, 4689, 4693, 4694, 4695, 4695, 4704, 4707 and 4708.

⁸⁶⁹ See Annex 4707 slide 5.

⁸⁷⁰ See Alstom's reply to the Commission's Request for Information N° 24, 25.03.2015, question 26.

⁸⁷¹ See GE's reply to the Commission's Request for Information N°31, 30.04.2015, question 2.

⁸⁷² See Annex 4693, slide 2.

2015, date when the integration team was still working on the assumption that the GT26 would be discontinued.⁸⁷³

- (1024) The Commission also notes that one the main rationale for the Transaction and expected sources of synergies is to "*combine technology focus and effort*"⁸⁷⁴, with a view to reduce general and administrative expenses, but also selling or marketing resources as well as R&D costs through the elimination of overlapping portfolios. HDGTs are specifically referred to as an area of significant product overlap ("*[quote from internal GE document – GE integration plans]*"⁸⁷⁵).
- (1025) As analysed in Section 8.5, the Commission considers that the Parties are close competitors in the market for 50 Hz HDGTs, in particular in the Large segment.
- (1026) The closeness of Alstom's GT26 with GE's F-class and H-class machines is acknowledged in the work of the integration team. In a document dated November 2014, GE considers that Alstom's GT26 is *[GE internal assessment of ALSTOM's GT]*. On this basis, the recommendation is to "*discontinue GT24/26 product marketing immediately*", to "*build last GT26 in 1H 2017*" and to *[GE strategic plans]*.⁸⁷⁶
- (1027) In a further document dated January 2015 and entitled "[title of internal GE document]", the integration team conducted a more in-depth comparison of the GT26 with GE's 9F.03, 9F.05, [GT frames] HDGTs. The conclusion is that the GT26 is "*[GE internal assessment of ALSTOM's GT]*".⁸⁷⁷ [GE internal assessment of ALSTOM's GT].
- (1028) The overall conclusion of the document is that "*GE currently has multiple Gas Turbine products in this space*", the GT26 has "*no substantial value differentiators*" compared to the GE machines, and is "*less competitive than GE products*". On this basis, the document, as a conclusion of this detailed analysis, recommends to "*discontinue product [GT26] for new unit application*".⁸⁷⁸

(ii) Market participants do not believe that the merged entity will have the long term incentives to continue actively marketing the GT26

- (1029) The market investigation analysed GE's incentives to continue to actively sell and support GT26 turbines after the Transaction. From a demand perspective, a number of customers⁸⁷⁹ believed there were potential grounds for discontinuing the GT26.⁸⁸⁰ While certain customers believed that GE would have the

⁸⁷³ See Annex 4708, slide 11.

⁸⁷⁴ See Annex 9, slide 9, presentation to GE Board dated 7 March 2014.

⁸⁷⁵ See Annex 12, slide 10, presentation to GE Board dated 7 March 2014.

⁸⁷⁶ See Annex 4686, slide 3.

⁸⁷⁷ See Annex 4695, slides 4 and 5.

⁸⁷⁸ See Annex 4695, slide 8.

⁸⁷⁹ See replies to question 57 of Phase I Questionnaire Q1 to customers of Gas fired power plant: 37 out of 59, and replies to question 84 of Q7: 29 out of 44.

⁸⁸⁰ See replies to question 57 and 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant, and replies to question 84 and 84.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

incentive to continue producing the GT26,⁸⁸¹ a number of other customers believed GE would not have such incentive.⁸⁸² Importantly, a significant proportion of customers who believed in the continuation of the GT26 indicated that they actually assumed a continuation of the servicing and upgrading of the current GT26 installed based, rather than an actual continuation of the production and marketing of new GT26 gas turbines.⁸⁸³

- (1030) Several customers explained that GE would have significant incentives to continue producing and develop GT26. In most cases, respondents argued that the GT26 is a very good technology that GE, therefore, would not discontinue its production. In this respect, market participants explained *"GT26 is a very good technology, meeting many market requirements"*⁸⁸⁴ and that it is a *"high technological standard."*⁸⁸⁵ That is a reason why customers *"expect that GE will actively develop and sell the GT 26 due to its technology, efficiency, low emissions and fuel flexibility."*⁸⁸⁶ For instance, a customer stated that *"GE is not likely to destroy the value of GT26"*⁸⁸⁷ since it has *"sequential combustion technology provides superior part-load efficiency."*⁸⁸⁸ One customer also argued that GE would continue the GT26 since it would grant GE *"positive margins from sales, services, and upgrading of existing fleet."*⁸⁸⁹
- (1031) However, several customers explained that GE will not have the ability to continue marketing the GT26 since it would require significant financial and technical resources. For instance, a customer stated that it *"does not believe GE will have the incentive to continue to sell new GT24/26 units because of their high cost, complexity and relatively small existing fleet."*⁸⁹⁰ Another customer further explained that *"post-merger it may be difficult [for GE] to justify the needed resources to continue GT26 R&D."*⁸⁹¹ Therefore, *"[GE] may continue to sell it in the short term, but they are unlikely to invest in future development which will result in the GT26 becoming less competitive in the longer term."*⁸⁹² Another market participant concludes that it is *"not sure [that a continuation] is justified from the economic perspective."*⁸⁹³ Overall, another customer indicated that *"it is not clear if they will continue to work on the ability to provide upgrades and continue to actively sell GT26 turbines."*⁸⁹⁴

⁸⁸¹ See replies to question 57 of Phase I Questionnaire Q1 to customers of Gas fired power plant: 12 out of 59, and replies to question 84 of Q7: 10 out of 44.

⁸⁸² See replies to question 57 of Phase I Questionnaire Q1 to customers of Gas fired power plant: 10 out of 59, and replies to question 84 of Phase II Questionnaire Q7 to customers of Gas fired power plant: 4 out of 44.

⁸⁸³ See replies to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant

⁸⁸⁴ See replies to question 84.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁸⁵ See replies to question 84.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁸⁶ See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁸⁷ See reply to question 84.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁸⁸ See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁸⁹ See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁹⁰ See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁹¹ See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁹² See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁹³ See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁹⁴ See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

- (1032) Customers also substantiated the relative closeness between GE and Alstom's technologies on this segment and, therefore, the lack of incentive for GE to continue developing GT26 technology. Thus, a customer exposed that *"GE has close competitors for the GT26 in their existing product line. It may be that some rationalisation of the product group occurs following the acquisition."*⁸⁹⁵ Along the same lines, a customer wondered *"why develop two similar products."*⁸⁹⁶ Another customer considers that it *"will not be economic sustainable to develop two close GT models."*⁸⁹⁷
- (1033) Finally, customers put forward the relative limited size of the market to justify GE's probable discontinuation of the GT26. In this respect, a market participant argued that *"the market is not big enough to justify two competing products."*⁸⁹⁸
- (1034) From a supply perspective, none of the market participants considered it credible that GE would continue the GT26. In fact, a close majority of competitors⁸⁹⁹ indicated that they did not expect GE to continue producing and developing the GT26. The remaining competitors explained that they lacked knowledge on the matter.
- (1035) During the market investigation, all competitors explained that, in general, an OEM has a clear incentive to discontinue one of two products that are closely positioned in its portfolio.
- (1036) Siemens explains that they *"would not expect an OEM to actively market new sales of two machines in its portfolio which are close in terms of efficiency, output and other technical characteristics due to: (i) a lack of synergies in R&D; (ii) increased product maintenance efforts; (iii) a lack of benefits in procurement (volume effects); and (iv) larger efforts in the tendering phase (costs calculations, thermodynamic design, etc.). The aim of the OEM will be to reach economies of scale through selling as many turbines of the same model as possible. This reduces complexity, both in manufacturing and in service as well as in marketing and bidding."*⁹⁰⁰
- (1037) Siemens further explains: *"Keeping two gas turbine models with similar features but different designs in the portfolio results in higher production costs in the manufacturing network (e.g., effort for maintaining specific tools and manufacturing know-how for two different engines) compared to focusing on standardisation of a single engine. Moreover, the OEM would need to maintain two supply chains with roughly double costs, i. e. purchasing, stock, spare parts, engineering, etc. In addition, this would also create higher efforts in terms of maintaining testing capability and capacity for both gas turbine models, which in turn could potentially also lead to bottlenecks at test facilities. Furthermore, expert knowledge in terms of human resources is short for turbine development. Development of two similar turbine types would most*

⁸⁹⁵ See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁹⁶ See reply to question 84.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁹⁷ See reply to question 57.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

⁸⁹⁸ See reply to question 84.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁸⁹⁹ See replies to question 57 of Phase I Questionnaire Q1 to customers of Gas fired power plant: 8 out of 15.

⁹⁰⁰ See competitor's reply to the Commission's Request for Information, 22.05.2015.

likely create bottlenecks in human resources in other R&D activities. Furthermore, actively marketing two very similar gas turbine models in parallel would increase the tender costs. For example, for both models calculations need to be carried out to decide which model should be offered to the customer in a tender. This also applies in the case of parallel offers of different models through third parties (e.g., EPCs)."⁹⁰¹

- (1038) Analysing the incentive for an OEM to offer two machines in parallel in response to the same tender, Siemens explains that "it would not make sense to submit direct parallel bids for two very similar gas turbine models in a given tender project, either, as this would double the tender costs. An OEM with two very similar gas turbine models would probably always favour an offer for the preferred gas turbine model, which generates higher margins. Alternatively, if at all, the OEM would rather offer the less attractive model (from a seller's perspective) at higher prices and higher net present value to the customer to ultimately make the customer decide for the preferred gas turbine model of the OEM. In the rare case that tender specifications exclude one of the two alternative gas turbine models, the OEM would offer the less attractive gas turbine model to win the project at all. In this case, the OEM might still attempt to re-negotiate the order after the award with the customer in favour of the OEM's preferred gas turbine model."⁹⁰²
- (1039) MHPS "does not see an OEM having any incentive to upgrade both machines which have similar characteristics because of two principal factors: (i) strong competitors will at the same be performing focused upgrades in order to gain a competitive advantage; and (ii) if the merged entity performs upgrades on both machines it will be forced to invest more heavily than its competitors. Doing so would result in a lower degree of pay-off than in the situation where the merged entity focuses its investment on one machine. Hence, one machine will become outdated and therefore actively marketing new sales of two machines is not realistic in the current competitive market."⁹⁰³
- (1040) In the particular case of the integration of Alstom's GT26 into GE's portfolio of HDGTs, all competitors consider that GE will have a clear incentive to discontinue one of the existing machines, most likely the GT26.
- (1041) Ansaldo explains that "considering the current GE gas turbine portfolio, the GT26 is completely overlapping with 9H01 and 9F05 with probably higher product and maintenance cost, therefore it's probable that after the merge the GT26 would not be promoted anymore into the market also because keeping such GT portfolio is quite expensive in terms of engineering and manufacturing support. Marketing is also expensive if the company wants to actively sell his products. If two machines have similar characteristic the merged company will probably decide to actively marketing only one of them." For this reason, Ansaldo considers that "the merged entity will probably decide to end actively marketing and developing major upgrades on one of the two GTs." More specifically, Ansaldo considers that "in the case of GT 26 and 9F.05 GE will

⁹⁰¹ See competitor's reply to the Commission's Request for Information, 22.05.2015.

⁹⁰² See competitor's reply to the Commission's Request for Information, 22.05.2015.

⁹⁰³ See competitor's reply to the Commission's Request for Information, 22.05.2015.

*probably decide to continue upgrades on its GT 9F.05 as this latter has better market acceptance and higher competitiveness."*⁹⁰⁴

- (1042) Siemens considers that *"Alstom's GT26 and GE's 9F.05 have certain similar technical characteristics (e.g. similar power output, efficiency and ramp rate for CCGT applications). The major difference is that the GT26 is able to reach nearly base-load efficiency down to an 80% load. Alstom's GT26 has specific features to operate with high flexibility and with high-part load efficiencies which make it particular well suited for the typical needs of EEA power generation customers. From a purely economic perspective, however, continuing to actively market both gas turbine models would imply double R&D expenses for GE. These R&D expenses and the respective cost allocations to the sold gas turbines could be halved by discontinuing one of the two gas turbine models. From a market perspective, despite the fact that the GT26 is adapted to the European requirements, Siemens assumes that GE would most likely continue with the 9F.05 and phase out the GT26. Siemens expects that GE will focus on its own product line which is better established on the market than the GT26."*⁹⁰⁵
- (1043) MHPS *"does not expect that the merged entity will continue developing major upgrades for both machines. As explained in MHPS' response to question 1, the merged entity will have no incentives to continue developing major upgrades for both machines. In particular, GE's 9HA class machine, which is currently being offered in the market, has as its basis the design philosophy of the 9F.05. The 9HA is a very large GT incorporating various new innovations following research and development efforts made by GE. In MHPS' opinion it would be relatively easy to upgrade the 9F.05 by introducing into it the ideas and innovations of the 9HA. On the other hand, the technology path and design philosophy of the GT26 is completely different from the 9F.05. As a result, and because the 9HA has as its basis the design philosophy of the 9F.05, GE will likely prefer to perform major upgrades on the 9F.05 rather than the GT26. Hence, one of these machines (in MHPS' opinion the GT26) will become outdated and therefore the active marketing of the GT26 would not be realistic in the current competitive market."*⁹⁰⁶
- (1044) Competitors also consider it unlikely that customers would purchase a gas turbine that is maintained by an OEM in its offering for customers that might request it, but that is not actively marketed by this OEM. Ansaldo explains: *"If a GT remains without any upgrades or without any marketing effort, it will be very hard to sell it in any geographical market."* Indeed, the *"GT market is a high technological market in which is very important to actively marketing and develop new upgrades in order to sell the machines."*⁹⁰⁷ On the same line, MHPS considers that *"customers would only request an OEM's gas turbine which is not actively marketed in the highly unlikely event that a machine is*

⁹⁰⁴ See competitor's reply to the Commission's Request for Information, 22.05.2015.

⁹⁰⁵ See competitor's reply to the Commission's Request for Information, 22.05.2015

⁹⁰⁶ See competitor's reply to the Commission's Request for Information, 22.05.2015.

⁹⁰⁷ See competitor's reply to the Commission's Request for Information, 22.05.2015.

unique and so outstanding in terms of performance that there is absolutely no competition existing for that machine."⁹⁰⁸

- (1045) Siemens also explains: *"Siemens expects that a customer would typically not purchase a gas turbine model that is passively marketed and not marketed as the OEM's lead product in that segment. The customer might have the following concerns: (i) there is a lack of sufficient references and proven operational hours; (ii) there are higher service costs because the OEM cannot take advantage of volume effects; (iii) there is a smaller user group and thus less knowledge exchange between utilities; (iv) the sub-suppliers and/or OEM partners are less familiar with the special features of a niche product which will likely lead to higher costs to cope with uncertainties; (v) financing will be more challenging due to a lack of references or a small number of units in operation; (vi) there may be no immediate support by an OEM in case of unscheduled outages (there will be less service experts at the OEM which are familiar with the niche products); (vii) problem solving for unexpected technical issues might take longer."*

(iii) Customers are unlikely to purchase an HDGT that is simply maintained by an OEM for "customers that may want it"

- (1046) As part of the market investigation, customers were asked whether, in a hypothetical post-merger scenario where GE would (i) continue to actively market GE's 9F.03, 9F.05, 9H.01 and 9H.02 machines in their respective segments, and (ii) make Alstom's GT26 available for those customers that might want it, without having any plans to operate the existing test facility of the GT26, they would consider purchasing the GT26.
- (1047) Out of eight responding customers, only one responded that they would consider purchasing the GT26, because they would rely on the OEM to offer the most suitable machine when responding to tenders: *"We would not specify a particular OEM machine but would provide a functional specification with technical, operational and environmental parameters etc. The OEM would make the decision as to which model machine they tender."*⁹⁰⁹
- (1048) Two customers responded that they had no plans to purchase the GT26 in the foreseeable future in any event, irrespective of GE's strategy after the Transaction, and as such could not comment.
- (1049) However, five customers responded that they would not consider purchasing the GT26 because they would be *"worried that GE may not have the incentive to support the GT26 in the long term (e.g. because of lack of differentiation with other GE products, cost of maintaining two competing products)"*.
- (1050) One customer for instance notes: *"Although we deem GT 26 as a very good gas turbine especially concerning efficiency and emissions in base and partial loads, long term support and technical development is very important to us in terms of reliability. Thus, having doubts as concerns the incentives of GE for*

⁹⁰⁸ See competitor's reply to the Commission's Request for Information, 22.05.2015.

⁹⁰⁹ See customer's reply to the Commission's Request for Information, 03.06.2015,.

*further long term supporting and developing GT 26, we most probably shall exclude it as a buying option".*⁹¹⁰

- (1051) Another customer comments: *"Based on our market knowledge and due to their technical specifications, the GT26 and the others GE's machines (i.e. 9F.3, 9F.05, 9H.01 and 9H.02) cover the same market segment, in terms of applications. That being said, in our view it seems unlikely that GE will bear the costs necessary to continuously develop and upgrade both the GT26 and the other machines with equivalent characteristics. Due to their technical characteristics and to optimize the investments in the same market, more probably GE will choose to support and upgrade only its own machines, to the detriment of the GT26. Therefore, from a customer perspective purchasing a GT26 would lead the real risk to operate with a machine which will not be effectively supported in a medium term period".*⁹¹¹ Along the same line, another customer adds: *"We do not believe that the new company would continue with two different technology GT models for same output".*⁹¹²
- (1052) As regards testing facilities in particular, a customer explains: *"If, following the merger, GE were to cease operating the GT26 test facility it would clearly demonstrate that they have little intention of developing the GT26 further. This would result in the GT26 gradually becoming less competitive in the market place as improvements are provided for other competing machines. If an alternative machine with similar performance capability, that was still being supported and developed, was available it would not make sense to proceed with a GT26."*⁹¹³

8.8.3.4. Conclusion

- (1053) The Commission notes that: (i) GE has consistently until at least the end of March 2015 worked under the assumption that the GT26 should be discontinued, in particular because of its closeness with other GE machines; (ii) competitors and a number of customers share the view that it will likely make no economic sense to continue marketing both products; and (iii) customers explain that they are unlikely to show interest in a machine that is merely maintained for customers that might want it.
- (1054) Therefore, the Commission considers that post-Transaction GE will not have the medium and long term ability and incentives to continue actively developing the GT26 in the same way as Alstom did pre-merger. Even if the merged entity were to try to *"sell [the GT26] to customers who may want it"*, customers would not accept to buy a machine not fully supported by the OEM. The medium and long term effect will thus in any event be tantamount to a discontinuation of the GT26 and the GT26 would no longer exert a meaningful competitive constraint in the market for 50Hz HDGTs.

⁹¹⁰ See customer's reply to the Commission's Request for Information, 03.06.2015,.

⁹¹¹ See customer's reply to the Commission's Request for Information, 03.06.2015,.

⁹¹² See customer's reply to the Commission's Request for Information, 03.06.2015,.

⁹¹³ See customer's reply to the Commission's Request for Information, 03.06.2015,.

8.8.4. *The discontinuation of the GT26 and GT36 will reduce GE's ability and incentives to develop upgrades for Alstom's installed base*

8.8.4.1. The Notifying Party's view

- (1055) In the reply to the Article 6(1)(c) Decision, the Notifying Party claims that the possible discontinuation of the GT26 and GT36 programmes will not affect GE's incentives to upgrade the existing installed base of Alstom's GT26 HDGTs. In fact, when upgrading one machine a supplier does not only benefit from selling upgrades but also from extending the lifetime of the HDGT, thus increasing the potential revenues from servicing. The Notifying Party also argues that GT26 customers could benefit from GE's improved ability to innovate. Finally, the Parties argue that the GT26 is almost at the frontier of possible upgrades. Therefore there are not many upgrades that could hypothetically be discontinued.

8.8.4.2. Commission's assessment

- (1056) Several Alstom's customers expressed concerns that the merged entity would stop or decrease investments in new upgrades of Alstom's existing models, in particular the GT26. These customers are concerned that a decrease in the rate of development of upgrades would slow down or stop the improvement of their existing Alstom's fleet, and therefore put them at a competitive disadvantage relative to other power producers using HDGTs from other OEMs that would continue to benefit from upgrades.
- (1057) This section makes the assumption that, following the evidence in GE internal documents and as described in the above Sections 8.8.2 and 8.8.3, the GT26 and the GT36 will be discontinued post-Transaction.

(i) Alstom's GT26 upgrades' path

- (1058) Regarding the argument of the Parties that the GT26 is "*at the end of its product lifecycle [...] reaching the end of the upgrading possibilities*",⁹¹⁴ according to its internal documents, Alstom had projected to double the investment in R&D in its F-class machines (GT26 and GT24) until 2017 with several upgrades foreseen.⁹¹⁵
- (1059) Alstom, in its recent internal documents (October 2014),⁹¹⁶ was planning *inter alia* to develop [ALSTOM strategic R&D plans].
- (1060) Even more importantly, in [date of completion of feasibility study], Alstom completed the feasibility study of the [name of pipeline program] (see Figure 58 below).⁹¹⁷ [details of pipeline program].⁹¹⁸ The R&D cost would amount to approximately [R&D cost] and would require around [R&D headcount].⁹¹⁹

⁹¹⁴ See Annex 1211, slide 14.

⁹¹⁵ See Annex 896, slide 18, 32 and 36.

⁹¹⁶ See Annex 3876.

⁹¹⁷ See Alstom's reply to the Commission's Request for Information N° 34, 12.05.2015, doc "0007081494".

⁹¹⁸ See Alstom's reply to the Commission's Request for Information N° 34, 12.05.2015, doc "0007081494".

⁹¹⁹ See Alstom's reply to the Commission's Request for Information N° 34, 12.05.2015, doc "0007080144".

Figure 58: GT26 upgrade strategy

[extract from internal ALSTOM document containing strategic plans]

Source: Alstom's reply to the Commission's Request for Information N° 34, 12.05.2015, doc "0007081494".

- (1061) The Commission, on the basis of the available evidence on its file, concludes that the GT26 is not at the frontier of its potential upgrade path (in particular in terms of CC efficiency) and therefore that Alstom, pre-merger, would have had the capabilities to offer further significant upgrades for its GT26.
- (ii) The discontinuation of the GT26 and GT36 will reduce GE's incentives to develop upgrades for Alstom's GT26 installed base**
- (1062) The Notifying Party argues that GE will have the same incentives to develop upgrades for Alstom's GT26 installed base that Alstom had pre-merger. The Commission does not argue that GE will not have any incentive to develop upgrades for Alstom's GT26 installed base; the Commission considers however that the discontinuation of the GT26 and GT36 will reduce GE's incentives compared to Alstom absent the Transaction because GE will lose the revenues coming from the sale of new HDGTs that include the upgrade(s).
- (1063) It is common practice in the industry and in the market for 50 Hz HDGTs to develop upgrades aiming at two revenue streams for the same investment: revenues from (i) the sales of new HDGTs that include the upgrade and (ii) the sales of the upgrade into the existing fleet ("retrofits").
- (1064) Concrete examples include: a) Alstom's MXL2 upgrade for the GT26 and b) GE's 9E.04. The GT26 MXL2 package can be sold in new HDGT and it can be retrofitted.
- (1065) GE's 9E.04 is a solution for both new units and retrofits (in this case it is called 9EMAX). When GE developed the business case for the 9E.04/9EMAX, in its decision making, it considered at the same time the revenues from new units and from retrofits.⁹²⁰ In this specific case, the estimated revenues from new units were even higher than the revenues from retrofits. GE likely would not have developed the 9E.04 without the revenues from new units.

Figure 59: Business case for GE's 9E.04/9EMAX included new units' sales

[extract from internal GE document containing business case of potential medium GT options]

Source: Annex 3858, slide 15.

- (1066) Absent the merger, Alstom would continue to develop new upgrades for its existing models; such investments would be paid back through (i) the sales of new HDGTs that include the upgrade and (ii) retrofits.
- (1067) Since the GT26 will likely not be sold anymore post-Transaction by GE, any new investment in upgrading this HDGT would have to be compensated through retrofits only, instead of being remunerated through both retrofits and the sales of new HDGTs.

⁹²⁰

See Annex 3858, slide 8, "Turb C" column.

- (1068) The merged entity will thus have less incentives to develop upgrades for the GT26, in particular the significant upgrades resulting in greater efficiency or output, or both (for example, turbine upgrades, compressor upgrades, combustor upgrades), thus reducing innovation in the market.

(iii) The discontinuation of the GT26 and GT36 will reduce GE's ability to develop upgrades for Alstom's GT26 installed base

- (1069) The merged entity will likely have less ability to develop upgrades the GT26, in particular the significant performance upgrades resulting in greater efficiency or output, or both (for example, turbine upgrades, compressor upgrades, combustor upgrades), given that innovation used for developing upgrades to some extent "trickles down" from R&D pursued in the development of new turbines conducted within the same technology family (for example new technologies that would be developed as part of [ALSTOM pipeline program] programme) and other HDGT technology-related activities.
- (1070) [GE integration plans].⁹²¹[GE integration plans]. GE would therefore lose Alstom's pre-merger fully fledged HDGT R&D ability, limiting significantly its ability to develop R&D-intensive upgrades for the GT26 and the positive spill-over from other HDGT technology-related activities. Just as an example, without a fully operating testing facility, the [name of ALSTOM pipeline program] would likely not be possible.[information concerning ALSTOM pipeline program].⁹²²
- (1071) The merged entity will thus have less ability to develop upgrades for the GT26, in particular the significant upgrades resulting in greater efficiency or output, or both.

8.8.4.3. Conclusion

- (1072) The Commission concludes that GE after the Transaction will likely have only limited incentives and ability to develop significant new upgrades for the GT26, compared to the incentives and ability that Alstom would have in the absence of the merger. In particular, upgrades that would have been cross-financed by sales from new HDGTs are likely not to be developed.

8.8.5. *The discontinuation of the GT26 and GT36 will reduce even further the competitive pressure on the market, most notably on Siemens*

- (1073) As discussed in Section 8.5.2, Alstom is a close and significant competitive constraint to Siemens in the Large segment. This evidence therefore suggests that the discontinuation of Alstom's GT26 after the Transaction is also likely to result in a significant loss of competition vis-à-vis Siemens, causing additional adverse effects in addition to the standard unilateral effects.
- (1074) With product discontinuation, competitive harm will spread over all tenders where Alstom participates, which represents [number of tenders] tenders, that is [60-70]% of competitive tenders ([40-50]% of all tenders in the Large segment). Alstom competes with Siemens in [number of tenders] of those

⁹²¹ See GE's reply to the Commission's Request for Information N° 24, 31.03.2015, questions 32 and 33 (document 40, slides 4 to 6).

⁹²² See Alstom's reply to the Commission's Request for Information N° 34, 12.05.2015, doc "0007081508".

tenders. For these [number of tenders] tenders, a significant proportion (around [50-60]%) has three participants or fewer, that is at most another participant in addition to Siemens and Alstom. The share of tenders where Siemens and Alstom face only another competitor rises to slightly below [60-70]% using data from competing OEMs. This suggests that the discontinuation of Alstom's GT26 is likely to lead to a significant reduction of competitive pressure on Siemens.

- (1075) Significant adverse effects on competition can also be expected under the alternative analytical framework proposed by the Notifying Party to assess the bidding data (that is to say, under a second-price auction framework). In the case of product discontinuation, the potential loss of competition will spread over all tenders where Alstom is either the successful OEM or the runner-up. Based on the Commission's assessment, Alstom is the winner or runner-up in almost half of competitive tenders in the Large segment ([number of tenders] tenders over [number of tenders] competitive tenders). In the EEA, the loss of competition will spread over [number of tenders] tenders, which represents [60-70]% of competitive tenders in the EEA.
- (1076) As regards the discontinuation of Alstom's GT36, significant additional adverse effects on competition can also be expected. As discussed in Section 8.5.3, MHPS (which has two Very Large HDGTs, the M701F5 and M701J HDGTs) and Alstom (with its Large GT26 HDGT) are exerting a similar competitive constraint on Siemens' Very large HDGTs. Therefore, this suggests that Alstom, with its new GT36 HDGT, could be an even more important alternative (in addition to GE) to Siemens in the Very Large segment. The discontinuation of Alstom's GT36 is therefore likely to lead to a significant loss of competition vis-à-vis Siemens on the Very Large segment.

8.8.6. Conclusion

- (1077) The Commission concludes that:
 - (a) post-merger, GE will likely eliminate most of Alstom's R&D capabilities related to HDGTs, and that as such the ability of the merged entity to pursue the development of Alstom's HDGT technologies will be greatly diminished, if not disappear, compared to Alstom's pre-merger ability to support the development of its product portfolio and of its specific technology path;
 - (b) post-merger, GE will likely discontinue Alstom's GT36;
 - (c) post-merger, GE will likely not have the long term incentives to continue actively marketing the GT26 in the same way as Alstom did pre-merger and thus the GT26 will stop exercising a meaningful competitive constraint in the market for 50Hz HDGTs. Even if the merged entity indeed decides to "*sell [the GT26] to customers who may want it*", the long term effect would be tantamount to a discontinuation of the GT26 and the GT26 will stop exercising a meaningful competitive constraint in the market for 50Hz HDGTs;
 - (d) post-merger, GE will likely have only limited incentives and ability to develop significant new upgrades for the GT26, compared to the incentives and ability that Alstom would have in the absence of the merger. In particular, upgrades that would have been cross-financed by sales from new HDGTs are unlikely to be developed;

- (e) the discontinuation of the GT26 and GT36 will reduce even further the competitive pressure on Siemens, thus further increasing the loss of competitive pressure on the market resulting from the Transaction.
- (1078) Given the previous factors, the Commission concludes that the Transaction is likely to negatively affect further the choices available to customers and to reduce the overall incentives to invest significantly in innovation.

8.9. The Transaction would have overall significant adverse effects on prices, product choice and innovation

- (1079) In this section, and in line with the previous sections, the Commission describes the harm on competition resulting from the Transaction. In the case of the Large segment, the Commission will also present, based on bidding data, an illustration of the price related harm.
- (1080) In order to assess the likely effects of the Transaction on prices, the Commission carried out an extensive market investigation through questionnaires to numerous customers as well as competitors of the Parties, as well as through follow up interviews.
- (1081) The questionnaires contained, firstly, a large number of specific questions related to facts and views concerning multiple aspects associated to the Transaction, namely about demand for 50 Hz HDGT and demand characteristics in different regions, the bidding process, competition between the different HDGTs in each of the three segments (Medium, Large and Very Large segments), the strengths and weaknesses of each OEM and of each HDGT, Alstom's role as an innovator, the relevance of the installed base, market leadership, etc.
- (1082) Secondly, the questionnaires also contained broad questions on the respondents' overall opinion about the impact of the transaction on the markets concerned.
- (1083) As explained in Recital (36) and subsequent, GE also carried out a wide ranging campaign targeting customers. This campaign served, first, to gauge the customers' views on the Transaction and assure them that there would be no negative impact on their business. On this basis, the Notifying Party produced a report that summarizes customers' reactions, including the concerns stated about the Transaction.⁹²³ According to this report, several of the biggest European customers expressed concerns to GE. Many of them expressed similar concerns during the Commission's investigation.
- (1084) GE's campaign was at least partly designed to influence the customers' replies to questionnaires and otherwise in their communication with the Commission, as this Decision provisionally finds in Recital (44). As a likely result of GE's campaign, a number of customers withdrew or reversed their concerns regarding the transaction.⁹²⁴ Concerning eight customers, the Commission will, as explained in Recitals (46) and (52), give more weight to GE's contemporaneous internal reports as well as the earlier submissions consistent

⁹²³ See GE's reply to the Commission's Request for Information N° 21, 16.03.2015, question 2.

⁹²⁴ See Recital (45).

with these reports than to contradicting subsequent statements devoid of a credible justification

- (1085) On this basis, the counting of customers' responses as described below consistently shows that a majority of customers which have formulated a view on the impact of the Transaction expect it to have negative effects on various parameters of competition, notably prices, innovation and product choice.
- (1086) In any case, the conclusion that the majority of customers which expressed their views on the impact on the transaction expect such impact to be negative for competition remains unaffected whether the opinions from those customers are taken into account or not.
- (1087) Finally, the Commission notes that the importance of competition concerns raised by third parties in the market investigation does not result from the percentage of respondents raising concerns, but from the representative nature and quality of these responses. Namely, these responses are clear and substantiated, and originate from numerous large HDGT customers, such as [name of customers], with a significant installed base, extensive expertise and experience in the market, which are active in a number of Member States and have a good understanding of the competitive dynamics of the market for 50 Hz HDGTs.

8.9.1. *The Transaction is likely to have a significant negative impact on competition and in particular on the commercial conditions and prices of HDGTs*

8.9.1.1. Market participants' views on the impact of the Transaction on the commercial conditions and prices of overall 50 Hz HDGTs, and in particular in the Large and Very Large segments

- (1088) During the Phase II investigation the majority of customers, including [name of customers], considered that the Transaction would have a negative impact on competition in the overall market for 50 Hz HDGTs, at both EEA⁹²⁵ and worldwide⁹²⁶ levels. If the opinion of the customers that changed position in Phase II questionnaires is also taken into account in the counting, there would still be a majority that would expect a negative impact on competition in the overall market for 50 Hz HDGTs, at both EEA and worldwide levels.
- (1089) These opinions are in line with the concerns expressed by a significant number of customers during the Phase I investigation.⁹²⁷
- (1090) Few customers mention without further explanation that there are "*sufficient alternative suppliers to ensure sufficient competition after the transaction*".⁹²⁸ However, most of the customers express a negative opinion. An EEA customer states: "*There is limited competition in the medium, large and very large HDGT market segments. The proposed transaction could result in a combination of Alstom and GEs machines being withdrawn from various market segments. This would reduce customer choice and have an adverse*

⁹²⁵ See replies to question 152.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹²⁶ See replies to question 152.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹²⁷ See replies to questions 178 and 179 of Phase I Questionnaire Q1 to customers Gas fired power plant.

⁹²⁸ See replies to question 152.2.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

effect on competition".⁹²⁹ Another customer states that: "Less competitors will remain on the market. There is already a limited number of players. Mitsubishi is not active in Europe. So there will be even less competition in EEA than worldwide".⁹³⁰

- (1091) Already in Phase I, an EEA customer stated that: "The manufacturers of gas turbines are very few and the exit of one of them from the market may result in a further concentration with risks to the competitiveness".⁹³¹ Another one explained: "There is already only a few OEM of HDGT left. MHPS is not strongly present in EEA. Ansaldo is in poor economical situation and is the smallest OEM with an expired license of Siemens. Only Siemens will be a strong alternate".⁹³²
- (1092) GE's customers also expressed some concerns where they were initially contacted by it. One customer stated that there will be "Less chance for Competition" and thus "Price increase". Another customer explained that "the acquisition of Alstom would reduce competition they have been trying to stimulating into this sector".⁹³³
- (1093) The customers' opinions are even more negative if GE would decide to discontinue some of Alstom's HDGTs.⁹³⁴ According to one customer: "In that case only two large GT's types in EEA are left (Siemens and GE). So the effect could be negative".⁹³⁵
- (1094) Similarly to the results of Phase I investigation, almost all competitors stated during Phase II that they expect a negative impact on competition of the overall 50 Hz market resulting from the Transaction, both at a worldwide level⁹³⁶ and an EEA-wide level⁹³⁷.
- (1095) A competitor mentions that "GE will certainly consolidate the product offerings eliminating the overlapping products possible forcing older units to upgrade or shutdown due to lack of support for the units that are phased out over time" and that "The more units discontinued the more competition and choice will be eliminated paving the way for GE life".⁹³⁸ Another competitor states that "fewer options are generally poorer for the buyer and hence utility rate-payers".⁹³⁹
- (1096) As regards commercial conditions and prices, a majority of customers and almost all competitors stated during Phase II investigation that they expect a

⁹²⁹ See reply to question 152.1.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹³⁰ See reply to question 152.2.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹³¹ See reply to question 178 of Phase I Questionnaire Q1 to customers Gas fired power plant.

⁹³² See reply to question 178 of Phase I Questionnaire Q1 to customers Gas fired power plant.

⁹³³ See GE's reply to the Commission's Request for Information N° 21, 23.03.2015, question 2.

⁹³⁴ See replies to questions 152.1.2 and 152.2.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹³⁵ See reply to question 152.2.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹³⁶ See replies to question 58.1 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹³⁷ See replies to question 58.2 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹³⁸ See reply to questions 58.1.1 and 58.1.2 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹³⁹ See reply to question 58.1.1 of Phase II Questionnaire Q10 to competitors on the gas business.

negative impact resulting from the Transaction, both in the EEA⁹⁴⁰ and worldwide⁹⁴¹. Once again, if the opinion of the customers that changed position during the Phase II questionnaires is also taken into account in the counting there would still be a majority that would expect a negative impact on commercial conditions and prices in the overall market for 50 Hz HDGTs, at both EEA and worldwide levels. This is in line with the concerns expressed by a significant number of customers and the majority of competitors during Phase I investigation.⁹⁴²

- (1097) A customer explains that post-Transaction there will be a "*Reduction of competition due to limited supply base and reduction of product portfolio*".⁹⁴³ During Phase I, a respondent explained that: "*Post transaction, the new entity will increase its market share. [We] consider that this new position might result in higher prices and less availability*".⁹⁴⁴ Another one stated: "*Consolidation between GE and Alstom will lead to an OEM having a very dominant market share. This may lead to reduced new product offering, less choices, less competition and potentially higher prices*".⁹⁴⁵
- (1098) A number of competitors in the servicing of HDGTs also believe that, due to reduced competitive pressure during the tender process, the Transaction will lead to worse conditions for customers on the LTSA associated with the new HDGT (for example, longer maturity of the LTSA).
- (1099) In fact, according to the majority of competitors, the Transaction will increase the ability of the merged entity to impose longer LTSA on customers.⁹⁴⁶ According to one competitor despite "*the choice remains at the customer [...] it is clear that reducing the number of competitors the choice of the customer is also reducing*".⁹⁴⁷ Another competitor states that "*Customers will have less or no other options and there is no counter-force in the market to prevent GE/Alstom from pressuring customers into this. They will almost become monopolist*".⁹⁴⁸ Finally a competitor also explains that "*GE will have significant market influence as they will control both the Alstom new units in the market as well as the GE units. The current tactics of bundling LTSA with new unit sales will now be fully deployed on the Alstom market as well as the GE market. The net result will be a reduction in addressable market for ISP to invest in and compete for. The customer will ultimately loose*".⁹⁴⁹

⁹⁴⁰ See replies to question 152.6 of Phase II Questionnaire Q7 to customers Gas fired power plant and to question 58.6 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹⁴¹ See replies to question 152.5 of Phase II Questionnaire Q7 to customers Gas fired power plant and to question 58.5 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹⁴² See replies to questions 180 and 181 of Phase I Questionnaire Q1 to Customers Gas fired power plant and to questions 159 and 160 of Phase I Questionnaire Q2 to competitors on the gas business.

⁹⁴³ See reply to question 152.6.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁴⁴ See reply to question 180 of Phase I Questionnaire Q1 to customers Gas fired power plant.

⁹⁴⁵ See reply to question 203 of Phase I Questionnaire Q1 to Customers Gas fired power plant

⁹⁴⁶ See Replies to question 20 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

⁹⁴⁷ See reply to question 20 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

⁹⁴⁸ See reply to question 20 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

⁹⁴⁹ See reply to question 20 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

- (1100) In the particular case of the Large segment, during Phase II, the majority of customers⁹⁵⁰ expressed concerns about the impact on competition in the EEA⁹⁵¹ and worldwide⁹⁵². The majority of customers also believe that the Transaction will have a negative effect on prices for Large HDGTs in the EEA⁹⁵³ and worldwide⁹⁵⁴. This is in line with the numerous and generally substantiated concerns raised by a significant number of customers during Phase I.⁹⁵⁵
- (1101) Although some customers mention that there will still be "*strong competition driven by pressure market*"⁹⁵⁶, many of them express serious concerns. A customer explains that it expects "*Less competition because one less player. We expect product line discontinuation in that class - thus one product offering less*".⁹⁵⁷ Another one states that "*It would reduce customer choice and based upon the historical behaviour of MHPS it would mean a straight choice between GE and Siemens*".⁹⁵⁸
- (1102) The opinions are even more negative if GE would decide to discontinue GT26.⁹⁵⁹ In fact, some customers that did not have an opinion or think the Transaction would not have a negative impact on price, state that if the GT26 is discontinued "*the competition will be affected with less choice for users*".⁹⁶⁰
- (1103) Almost all competitors also stated that they expect the Transaction to have a negative impact on competition and prices for Large HDGTs in the EEA⁹⁶¹ and worldwide⁹⁶². One competitor explains that "*This is because GE's product range matches almost all of Alstom's GT offering in terms of output of the GT. Post transaction, [...] thinks GE does not have significant incentives to continue marketing and developing Alstom GTs*".⁹⁶³
- (1104) In the particular case of the Very Large segment, during Phase II, the majority of customers⁹⁶⁴ expressed concerns about the impact on commercial conditions

⁹⁵⁰ In the particular case of the Large segment even if the opinion of the customers that change position in Phase II questionnaires is also taken into account in the counting still a majority would expect a negative impact on competition as well as on commercial conditions and prices in the overall market for 50 Hz HDGTs, at both EEA and worldwide levels.

⁹⁵¹ See replies to question 150.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁵² See replies to question 150.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁵³ See replies to question 150.6 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁵⁴ See replies to question 150.5 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁵⁵ See replies to questions 178, 179, 180 and 181 of Phase I Questionnaire Q1 to customers Gas fired power plant.

⁹⁵⁶ See reply to question 150.1.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁵⁷ See reply to question 150.1.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁵⁸ See reply to question 150.1.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁵⁹ See replies to questions 152.1.2, 152.2.2, 152.5.2 and 152.6.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁶⁰ See replies to questions 152.1.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁶¹ See replies to question 56.2 and 56.6 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹⁶² See replies to questions 56.1 and 56.5 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹⁶³ See reply to questions 56.1.2 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹⁶⁴ In the particular case of the Very Large segment even if the opinion of the customers that change position in Phase II questionnaires is also taken into account in the counting still a majority would expect a negative impact on commercial conditions and prices in the overall market for 50 Hz HDGTs, at both EEA and worldwide levels and, more general, on competition in the EEA.

and prices and, more generally, on competition in the EEA⁹⁶⁵ and worldwide⁹⁶⁶. This is in line with the concerns expressed by a significant number of customers during Phase I investigation.⁹⁶⁷

- (1105) According to one customer *"If Alstom were to discontinue developing the GT36 this would have a negative impact on competition as it would mean there would be less choice available in this market segment. It would reduce customer choice and based upon the historical behaviour of MHPS it would mean a straight choice between GE and Siemens"*.⁹⁶⁸ In fact, the number of customers expressing concerns about a negative impact on competition is even higher in a scenario where GT36 would be discontinued.⁹⁶⁹
- (1106) Several competitors also stated that they expect the Transaction to have a negative impact on competition and prices for Very Large HDGTs both in the EEA⁹⁷⁰ and worldwide⁹⁷¹. One competitor states that *"This depends on Alstom's development plans in this area. If Alstom was developing an HDGT in the market space then this competitive unit would likely be eliminated as a result of this transaction"*.⁹⁷²

8.9.1.2. Assessment of the impact on commercial conditions and prices of HDGTs

- (1107) In line with the Commission's investigation the Transaction is likely to result in a significant negative impact on commercial conditions and prices because (i) the market for 50 Hz HDGTs is an oligopolistic market with customers typically only having three to four alternative suppliers, (ii) the Transaction results in the elimination of a significant and close competitor of GE in every segment of the market for 50 Hz HDGT, and (iii) repositioning by competitors is unlikely and entry barriers are very high.
- (1108) The Commission's economic analysis of the bidding data confirms that the Transaction could lead to significant harmful effects on competition as regards pricing. The analysis concerns price effect only (innovation effects are discussed in Section 8.9.3) and focuses on the Large and Very Large segment (not on the Medium segment).
- (1109) As explained in Section 8.5 and in Annex I, the analysis of the bidding data shows that GE's contribution margins are negatively correlated in particular with Siemens' and Alstom's participation. In particular, as regards HDGTs, GE's margins appear to be around [GE margins] lower in average in tenders where Alstom participates (controlling for other factors). This is equivalent to lower GE's prices for HDGTs in the range of [5-10]%-[10-20]% in tenders

⁹⁶⁵ Seer replies to question 151.2 and 151.6 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁶⁶ See replies to question 151.1 and 151.5 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁶⁷ See replies to questions 178, 179 and 180 of Phase I Questionnaire Q1 to customers Gas fired power plant.

⁹⁶⁸ See reply to question 151.1.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁶⁹ See replies to question 150.1.2, 151.2.2, 151.5.2 and 151.6.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁷⁰ See replies to question 57.2 and 57.6 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹⁷¹ See replies to questions 57.1 and 57.5 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹⁷² See reply to questions 57.1.1 of Phase II Questionnaire Q10 to competitors on the gas business.

where Alstom participates. As regards the overall equipment sold by GE, GE's margins seems to be around [GE margins] lower in average in tenders where Alstom participates. This corresponds to lower GE's equipment price in the range of [0-5]%-[5-10]% in tenders where Alstom participates.

- (1110) As explained in Annex I, it is possible to derive an illustrative order of magnitude of the price effects deriving from the Transaction on the basis of the evidence of the correlation between Alstom's participation and GE's margins. On the basis of the average price of GE's equipment in the tenders where it competes with Alstom and of the average discounted value of the related LTSA contract, the Commission has computed an average price impact per tender in the order of [average LTSA price]. Based on bidding data, the average number of projects per year in the Large segment during the period 2009-2014 where the Parties met was of around [number of tenders] competitive projects, which implies an overall annual impact in the range of USD 73-142 million.
- (1111) Moreover, as the Commission assumes that Alstom's GT26 would be discontinued by GE (or effectively not offered in competitive tenders), competitive harm will spread to all tenders where Alstom participates, rather than just the tenders where Alstom and GE meet. This represents [number of tenders] tenders during the period 2009-2014 (that is [60-70]% of competitive tenders). Under this assumption, the overall harm would be in the range of USD 82-160 million per year. This adverse impact ignores the additional harm deriving from the fact that some customers would lose their preferred product under the assumption of product discontinuation (for example, [number of tenders] tenders awarded to Alstom's GT26 HDGT for the period 2009-2014). More generally, it should also be noted that this illustrative estimate of competition harm does not include potential non-price effects due to the Transaction (for example, loss of product choice or loss of innovation or of both).
- (1112) Significant adverse effects may also be expected under the alternative analytical framework proposed by the Notifying Party to assess the bidding data (that is, under a second-price auction framework). Based on the Commission's assessment of the number of tenders where GE and Alstom are winner and runner-up ([number of tenders] tenders), the annual adverse impact on competition can be estimated to be in the order of magnitude of USD 57 million. This effect is estimated using information from the winning margins of GE and Alstom (both on equipment and on LTSA), as these are informative on the distance between the successful bidder and the next best alternative. In the case of product discontinuation, the potential price effects spread to an additional [number of tenders] tenders where Alstom is either the winning OEM or the runner-up. On the basis of the [number of tenders] tenders affected by the loss of competition from Alstom, the total annual adverse effect on competition can be expected to be in the order of magnitude of USD 153 million.⁹⁷³

⁹⁷³

The competitive harm reported takes into account the comment of the Notifying Party in the Reply to the Statement of Objections (see Section 4.5.3 of Annex 1).

- (1113) As regards the Very Large segment, and in order to illustrate the harm due to potential loss of competition, the Commission has used pricing data submitted by GE to compute the average value of a tender in the Very Large segment. GE's average price for the overall equipment is [average price of very large GT equipment] for a tender in the Very Large segment. In comparison, for the Large segment, the average GE's equipment price was [average price of large GT equipment] per tender. Moreover, the Very Large segment is expected to grow significantly in the coming years, in particular in the EEA. Therefore, significant related harm can be expected. It should also be noted that this illustrative estimate of consumer harm does not include the potential loss of innovation due to the merger.
- (1114) As regards the Medium segment, the analysis of past bidding data (where GE was present with its 9E.03 HDGT) suggests a lack of closeness between the merging parties and a limited competitive harm, both for combined cycle applications and simple cycle applications. The Commission notes that past bidding data reflects the participations of GE with its 9E.03 HDGT. The new GE's HDGT, the 9E.04 HDGT, is not observed in the bidding data since GE started to offer it only in 2014. Therefore, past bidding data may understate the future level of closeness of competition between the merging parties. However, the market investigation did not reveal a reason that would justify that, based on the technical characteristics of the 9E.04 HDGT, GE and Alstom could become closer competitors in the future.

8.9.2. *The Transaction is likely to have a significant negative impact on choice of HDGTs*

- (1115) Almost all competitors⁹⁷⁴ and the majority of customers⁹⁷⁵ expressed concerns about the impact of the Transaction on product choice, which impact was considered even stronger if GE were to discontinue some of Alstom's HDGTs.⁹⁷⁶ If the opinion of the customers that changed position in Phase II questionnaires is also taken into account in the counting there would still be a majority that would expect a negative impact on choice.
- (1116) According to customers there will be "*Reduction of competition due to limited supply base*"⁹⁷⁷ and "*If Alstom were to discontinue developing the GT36 this would have a negative impact on competition as it would mean there would be less choice available in this market segment. It would reduce customer choice and based upon the historical behaviour of MHPS it would mean a straight choice between GE and Siemens*"⁹⁷⁸.
- (1117) The customers contacted by GE about the Transaction also expressed concerns about the level of choice. Customers stated that choices would be reduced to three alternatives: "*It could be a big monopoly by excluding a competitor from the current situation on some market segments. [...] is keen to have a broader range of players available. Today there are 4 technologies available for GT*

⁹⁷⁴ See replies to questions 55.4, 56.4, 57.4 and 58.4 of Phase II Questionnaire Q10 to competitors on the gas business.

⁹⁷⁵ See replies to question 152.4 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁷⁶ See replies to question 152.4.2 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁷⁷ See reply to question 152.4 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁷⁸ See reply to question 152.4 of Phase II Questionnaire Q7 to customers Gas fired power plant.

*and then they will become 3. The choice of technologies will be restricted”; or even to two alternatives: “[...] by principle doesn't like the idea of losing one OEM, considering they don't have any relationship with MHI nor Ansaldo. For that reason A and S would remain as main OEM's” and “serious GT supplier choice would be reduced to 2 relevant players (MHI ranked as non relevant in Germany)”.*⁹⁷⁹ Others more generally stated that “[...] doesn't like the idea of losing an OEM supplier in a sector with limited options”; “It could be an issue on competitiveness in the market excluding a competitor from the current situation. The choice of technologies will be restricted”, “Could be a big monopoly. Less chance for Competition”.⁹⁸⁰

- (1118) As regards each of the segments, a significant number of customers also stated that the Transaction would have a negative impact on choice.⁹⁸¹ This was particularly valid for the Large segment, where a clear majority expressed this opinion. In this case on customer mentions that “*It would reduce customer choice and based upon the historical behaviour of MHPS it would mean a straight choice between GE and Siemens*”.⁹⁸²
- (1119) In line with Section 7.2.3, the market for 50 Hz HDGTs is characterized by being highly differentiated, and therefore the number of alternative suppliers available to customers in a tender is relevant. This is confirmed by customers that consider that it is always better to have the maximum number of bidders participating in tenders and thus generally try to invite the five OEMs to participate in tenders.
- (1120) When looking at the Large and Very Large segments the Commission's investigation has shown that in many cases customers have only one alternative to the merged entity post-Transaction, and it is rare that all five OEMs participate in a tender.
- (1121) As such, the Transaction, by eliminating one important independent alternative in the market, would significantly reduce the choice available to customers in the market for 50 Hz HDGTs.

8.9.3. *The Transaction is likely to have a significant negative impact on innovation of HDGTs*

- (1122) During the Phase II investigation a significant number of customers (including some of the EEA's largest utilities) confirmed that they fear that the Transaction would have a negative impact on innovation in the overall market for 50 Hz HDGTs.⁹⁸³ This is in line with the concerns expressed by a significant number of customers during Phase I investigation.⁹⁸⁴
- (1123) A customer mentions that “*Siemens and MHI will continue putting pressure on innovation*”.⁹⁸⁵ Few others explain that the impact on innovation depends on

⁹⁷⁹ See GE's reply to the Commission's Request for Information N° 21, 16.03.2015, question 2.

⁹⁸⁰ See GE's reply to the Commission's Request for Information N° 21, 16.03.2015, question 2.

⁹⁸¹ See replies to questions 149.4, 150.4 and 151.4 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁸² See reply to question 150.4 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁸³ See replies to question 152.3 of Phase II Questionnaire Q7 to customers Gas fired power plant.

⁹⁸⁴ See replies to question 182 of Phase I Questionnaire Q1 to Customers Gas fired power plant.

⁹⁸⁵ See reply to question 152.3.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.

GE synergies and the competition remaining in the market. However, many customers explain that there will be *"Less competitiveness in the market and therefore less investment"*⁹⁸⁶, and *"There will be less need to develop to remain competitive"*⁹⁸⁷, since the *"the drive to innovate would be driven by response to other competitors which may be less"*⁹⁸⁸. Other customers explain that *"All investment and research carried on by Alstom will be lost"*⁹⁸⁹ since *"Overlapping GT sizes will lead to discontinue manufacturing of either GE or Alstom current technology"*⁹⁹⁰.

- (1124) During Phase I customers also stated that *"Introduction of higher efficiency machines in the market will be affected. Monopoly in certain product range could prevail"*⁹⁹¹, *"GE or Alstom technology research will have to be abandoned or merged"*⁹⁹² and *"Innovation is driven by competition and legislation. Therefore less competition may reduce innovation"*.⁹⁹³
- (1125) Customers contacted by GE also expressed that they had *"concerns about GE interest to support [the sequential combustion of Alstom] technology in the long-term"*, and more general that they had doubts *"about GE interest to support their current Alstom fleet technology"*.⁹⁹⁴
- (1126) Customers contacted by GE expressed particular concerns as regards the Large segment, namely whether *"upgrades on GT26 will be available in the future or there will be only a development of F technology"*, about *"GE-Alstom product line rationalisation that would potentially impact GE appetite to further develop upgrade for GT24 and GT26"* and *"about the availability of service and technology upgrade competences of GT26 technology"*.⁹⁹⁵
- (1127) Almost all competitors also expressed concerns regarding a negative impact of the Transaction on innovation.⁹⁹⁶ The main reason would be the fact that *"the number of current competitors will decrease"*.⁹⁹⁷ According to one competitor the impact on innovation: *"largely depends on Alstom's technology development plans. Regardless one less innovator in the market by definition means less innovation and challenge to the market space"*.⁹⁹⁸
- (1128) In line with Section 8.7, the Transaction would remove an important innovator in the market for 50 Hz HDGTs, thereby reducing the overall competitive pressure on the remaining competitors, with a reduction in the overall incentives to invest significantly in innovation.

⁹⁸⁶ See reply to question 152.3.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.
⁹⁸⁷ See reply to question 149.3.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.
⁹⁸⁸ See replies to question 150.3.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.
⁹⁸⁹ See reply to question 149.3.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.
⁹⁹⁰ See reply to question 149.3.1 of Phase II Questionnaire Q7 to customers Gas fired power plant.
⁹⁹¹ See reply to question 182 of Phase I Questionnaire Q1 to customers Gas fired power plant.
⁹⁹² See reply to question 182 of Phase I Questionnaire Q1 to customers Gas fired power plant.
⁹⁹³ See reply to question 182 of Phase I Questionnaire Q1 to customers Gas fired power plant.
⁹⁹⁴ See GE's reply to the Commission's Request for Information N° 21, 16.03.2015, question 2.
⁹⁹⁵ See GE's reply to the Commission's Request for Information N° 21, 16.03.2015, question 2.
⁹⁹⁶ See replies to question 58.3 of Phase II Questionnaire Q10 to competitors on the gas business.
⁹⁹⁷ See replies to question 58.3.1 of Phase II Questionnaire Q10 to competitors on the gas business.
⁹⁹⁸ See reply to question 58.3.1 of Phase II Questionnaire Q10 to competitors on the gas business.

- (1129) The Commission considers that, due to the very high barriers to entry in the market for 50 Hz HDGTs, by removing an important innovator, the Transaction is likely to lead to significant and lasting harm on innovation.

8.9.4. *Conclusions*

- (1130) In line with its investigation, the Commission considers that the Transaction is likely to have a significant negative effect on commercial conditions and prices, product choice and innovation, in particular in the Large and Very Large segments of the market for 50 Hz HDGTs. These likely effects are even stronger when taking into account that GE would likely discontinue the GT26 and GT36 HDGTs.
- (1131) On the basis of the replies of market participants, the Commission considers that the Transaction would have a negative impact on competition and in particular on the commercial conditions and prices of HDGTs as well as product choice and innovation.
- (1132) The Commission's economic analysis of the bidding data suggests that the Transaction could lead to significant harmful price effects. For example, in the Large segment the harm the overall harm could be quantified in the range of USD 82-160 million per year. In the Very Large segment significant harm can also be expected.

8.10. **Alstom's financial situation past and present, leaves unaffected its ability to compete in the market for 50 Hz HDGTs**

8.10.1. *The Parties' view*

- (1133) Alstom essentially claims that financial and other constraints on its future competitiveness should be taken into account in the assessment of the Transaction.
- (1134) The Parties however do not claim that Alstom is a failing firm.⁹⁹⁹ Alstom admits that it does not meet the cumulative conditions for that defence, which are: (i) the allegedly failing firm would be forced out of the market in the near future; (ii) there is no alternative purchaser leading to an acquisition raising less anticompetitive effects; and (iii) the effect on competition in the market would not be worse if the transaction were approved compared to the alternative scenario (namely the competition in the market absent the merger), which could be the case for instance if the acquirer would in any event gain all the market share of the acquired company, or if the acquired company's assets would, in the absence of the merger, inevitably exit the market.
- (1135) According to Alstom's submissions of 21 and 30 April 2015, [information on ALSTOM]. The submission of 30 April 2015 purports in particular to set out evidence of such constraints pre-dating the Transaction announcement.
- (1136) The alleged constraints pre-dating the Transaction include:¹⁰⁰⁰

⁹⁹⁹ See Annex 4869, pages 2-3.

¹⁰⁰⁰ See Annex 4869, pages 2-3.

8.10.1.1.At group level

- (1137) Alstom argues that the company is cash strapped (declining Income from Operation ("IFO"¹⁰⁰¹) and negative Free Cash Flow ("FCF")) and highly leveraged (net debt exceeding [value of ALSTOM group's net debt]):*[information on ALSTOM]*.
- (1138) This argument has been further developed in the expert report *[information on ALSTOM]*.¹⁰⁰² *[information on ALSTOM]*.
- (1139) *[information on ALSTOM]*.¹⁰⁰³

8.10.1.2.At thermal power division level

- (1140) According to Alstom, there is a widening gap between the need to accelerate R&D spending and the ability to do so in view of the broad product portfolio requiring R&D expenditure, smaller volumes and lower revenues than competitors:
- (1141) *"Alstom has committed to pursuing its R&D efforts, yet it has struggled to find success with its new or upgraded products. The current status of the GT36 reflects Alstom's struggle to translate its R&D expenditures into market success and growth. [information on ALSTOM]."*
- (1142) *[information on ALSTOM]*.¹⁰⁰⁴
- (1143) According to Alstom, *"ALSTOM will need at least a 20% reduction in R&D spend and a corresponding 50% reduction in Capex, along with additional cuts, to achieve some degree of liquidity to sustain operations."* *[information on ALSTOM]*.¹⁰⁰⁵

8.10.1.3.At gas business level

- (1144) Alstom claims that its ability to effectively compete with its gas turbine business is constrained by the following structural deficiencies:
- (a) *[information on ALSTOM]*. Alstom mainly sells GT13 and GT26 machines, while its GT24 cannot be considered as viable in North America. *"ALSTOM's future competitive viability largely depends upon its ability to introduce a successful VLGt product and to expand its GT portfolio more generally. ALSTOM's existing financial constraints and competitive market conditions make this product portfolio expansion highly unlikely."*
- (b) Alstom contends that *"even when it introduces new products, ALSTOM tends to fall even further behind as competitors improve their technology and ALSTOM's investments quickly become obsolete. ALSTOM cannot remain competitive in this high-innovation industry."* For example, its GT26 product was internally considered as not fulfilling the new market requirements for

¹⁰⁰¹ A measure of operational profitability.

¹⁰⁰² See Annex 4870.

¹⁰⁰³ See Annex 4872.

¹⁰⁰⁴ See Annex 4872, page 16.

¹⁰⁰⁵ See Annex 4872.

reliable, simple and inexpensive gas turbines. Alstom would also lack a small product in the small GT segment.¹⁰⁰⁶

- (c) Lack of scale: *"ALSTOM's lack of scale impairs its cost competitiveness, and will increasingly hamper its ability to invest in R&D to bid competitively on large, profitable projects. As a stand-alone, given its structural and financial constraints, ALSTOM will not be able to increase the scale of its operations to remain competitively viable."*
- (d) Limited cost competitiveness: *"ALSTOM's products are not cost-competitive, in large part due to its lack of scale and its complex products"*. Programs to improve the cost structure have been put in place but are allegedly insufficient to make Alstom truly cost competitive for two reasons: (1) theoretical cost savings can only be applied to new units, (2) due to the complexity of GT26, cost cutting measures are not sufficient to completely close the gap to other comparable machines.
- (e) Overexposure to allegedly declining European markets: *"The decline in the European market is coupled with growth in regions where ALSTOM has a very limited presence and cannot compete effectively. ALSTOM's competitors are less affected by these market conditions because they have (1) diversified portfolios that allow them to withstand economic cycles, (2) broader geographic outreach, and (3) a stronger financial profile or balance sheet."*¹⁰⁰⁷
- (1145) According to Alstom, the claimed constraints are structural in nature and cannot be remedied by a simple strategy shift or a capital injection. As a result, *"absent the proposed GE transaction, ALSTOM's competitive significance will continue to decline and it will not be able to compete effectively in the future."* Consequently, *"ALSTOM's historic competitive position and market shares do not reflect its future competitive significance"*.¹⁰⁰⁸
- (1146) Therefore, Alstom concludes that *[information on ALSTOM], further constrain its ability to compete. [information on ALSTOM]. To date, ALSTOM has sought to maintain its R&D spending, [information on ALSTOM].*¹⁰⁰⁹ Instead, *"ALSTOM would move to operating as an EPC and service provider company with a limited portfolio of legacy products."*¹⁰¹⁰
- (1147) To summarise, Alstom contends that the Commission's Decision pursuant to Article 6(1)(c) of the Merger Regulation was limited to historic and static pre-merger parameters for the assessment of Alstom's competitive position. However, past indicators of Alstom's competitiveness *"should be discounted as they do not account for ALSTOM's diminished future competitive significance"*.¹⁰¹¹ Instead, the Commission's assessment should take into account, in accordance with Article 9 of the Horizontal Merger Guidelines, the correct framework of analysis, as summarised in preceding paragraphs, and it should be based on *"the effect of market conditions that can reasonably be*

¹⁰⁰⁶ See Annex 4872, page 2.

¹⁰⁰⁷ See Annex 4872, page 19.

¹⁰⁰⁸ See Annex 4869, pages 2-3.

¹⁰⁰⁹ See Annex 4872, page 1.

¹⁰¹⁰ See Annex 4872, page 17.

¹⁰¹¹ See Annex 4872, page 1.

predicted"¹⁰¹². In other words, the Commission should undertake a forward looking analysis, akin to the one undertaken in *JCI/Fiamm*.¹⁰¹³

8.10.2. Legal framework for assessing the Notifying Party's claim

- (1148) A concentration that significantly impedes effective competition in the internal market or a substantial part of it shall be declared incompatible with the internal market; its implementation shall be prohibited.¹⁰¹⁴ There is no basis for a prohibition, however, if the competitive structure of the market would deteriorate to the same or to a greater extent even without the concentration: "*if a concentration is not the cause of the creation or strengthening of a dominant position which has a significant impact on the competitive situation on the relevant market, it must be declared compatible with the common market.*"¹⁰¹⁵
- (1149) Thus, to assess whether a concentration significantly impedes effective competition, the Commission must compare the competitive conditions that prevail without the concentration with the conditions that would result from the concentration.¹⁰¹⁶
- (1150) Difficulties of a financial and structural nature, such as those invoked by the Parties, can be taken into account in the Commission assessment in two situations.
- (1151) Under a "failing firm defence", the Commission can decide that an otherwise problematic merger is nevertheless compatible with the common market if one of the merging parties is a failing firm. There are three criteria which are especially relevant for the application of a "failing firm defence". First, the allegedly failing firm would in the near future be forced out of the market because of financial difficulties if not taken over by another undertaking. Second, there is no alternative purchase which is less anti-competitive than the notified merger. Third, in the absence of a merger, the assets of the failing firm would inevitably exit the market.¹⁰¹⁷
- (1152) Even where the criteria for the application of the "failing firm defence" are not met, the development of competitive conditions could lead to the conclusion that the deterioration of competition in the market is not a consequence of the merger. In such situations, the Commission can undertake a general causation test in applying Article 2(3) of the Merger Regulation and paragraph 9 of the

¹⁰¹² See Annex 4869, pages 1-2.

¹⁰¹³ Case M.4381 – JCI / Fiamm.

¹⁰¹⁴ Articles 2(3), 8(3) and 14(2)(c) of Regulation (EC) No 139/2004.

¹⁰¹⁵ See, to that effect, Joined cases C-68/94 and C-30/95, *France and Société commerciale des potasses et de l'azote et Entreprise minière et chimique / Commission* [1998] ECR I-1375, "*Kali & Salz*", Paragraphs 109 to 124. See also Paragraph 89 of the Commission's Guidelines on the assessment of horizontal merger under the Council Regulation on the control of concentrations between undertakings ("*Horizontal Merger Guidelines*"), (OJ C 31, 5.2.2004, page 5).

¹⁰¹⁶ Horizontal Merger Guidelines Paragraph 9.

¹⁰¹⁷ Horizontal Merger Guidelines, paragraphs 89-91. See also Commission Decision of 21 July 1994 in Case M.308 – Kali+Salz/MdK/Treuhand (OJ L 186, 21.07.1994), Recital 71; Commission Decision of 11 July 2001 in Case M.2314 - BASF/Eurodiol/Pantochim (OJ C102 of 31.03.2001), Recitals 136-143; Commission Decision of 10 May 2007 in Case M.4381 - JCI / FIAMM, Recitals 689-690; Commission Decision of 26 January 2011 in Case 5830 - Olympic/Aegean Airlines, Recital 1811; Commission Decision of 30 March 2012 in Case M.6447 - IAG/BMI, Recitals 608-610.

Horizontal Merger Guidelines. This can allow the Commission to conclude that the material cause of a deterioration of the competitive structure that follows the concentration is not the concentration, since the competitive structure of the market would in any event deteriorate to at least the same extent without the concentration.¹⁰¹⁸ In that case, the Commission will assess how the deterioration of competition absent the merger would compare to long-term structural effects of the merger on the market.¹⁰¹⁹

- (1153) There is no presumption of a causal link between a company's financial difficulties and the competitive pressure that the company can exert on the market.¹⁰²⁰ Financial difficulties will not necessarily call in question a company's ability effectively to compete in the market, in particular where that company has solid assets. On the contrary, financial difficulties may prompt the company to explore available operational alternatives (for example, rationalisation, price repositioning) to become a stronger competitor.^{1021 1022}
- (1154) It is for this and similar reasons that the Commission will, as a rule, assess merger-specific competitive harm by comparing it to the competitive conditions existing at the time of the merger. As explained in paragraph 9 of the Horizontal Merger Guidelines, "*in most cases the competitive conditions existing at the time of the merger constitute the relevant comparison for evaluating the effects of a merger.*" The Commission can however, in certain circumstances, take into account future changes to the market provided that they "*can reasonably be predicted*".¹⁰²³ This is consistent with the observations that Alstom itself invokes in its submissions, and which contend that such alternative scenarios should rely on "*highly likely*" future developments.¹⁰²⁴
- (1155) Finally, it is for the notifying parties to provide in due time all the relevant information necessary to demonstrate that a deterioration of the competitive

¹⁰¹⁸ See, to that effect, Case M.4381 – JCI/Fiamm, paragraphs 750-816.

¹⁰¹⁹ See, for example, Case M.4381 – JCI/Fiamm, paragraph 795.

¹⁰²⁰ There is no such presumption even for the companies in significantly worse financial situation, for example having negative equity: "*negative equity in itself cannot be considered as a proof that a company will be forced into bankruptcy.*" Case M.5830 - Aegean / Olympic, paragraph 2009.

¹⁰²¹ See for example, the remarks of Carl Shapiro, Deputy Assistant Attorney General for Economics, Antitrust Division, US Department of Justice, Prepared for Delivery to ABA Antitrust Symposium, Competition as Public Policy, Competition Policy in Distressed Industries, May 13, 2009, as quoted in the United States' paper for the OECD Roundtable on Failing Firm Defence.

¹⁰²² As explained in the United States' contribution to an OECD roundtable, "[f]inancial weakness, while perhaps relevant in some cases, is probably the weakest ground of all for justifying a merger, and certainly cannot be the primary justification for permitting one." ¶41 Moreover, as one antitrust official noted, "[a]nyone who seeks to limit competition and pleads financial distress as a justification must make a convincing case that consumers will not be harmed by the proposed limitation on competition." [original emphasis].

¹⁰²³ Horizontal Merger Guidelines, paragraph 9.

¹⁰²⁴ "[T]he development of prospective analysis leads to more sophisticated counterfactuals which incorporate future events, such as the target's bankruptcy in the absence of the transaction. This forward-looking counterfactual should be based on highly likely future events; the Commission and the parties should not contemplate hypothetical scenarios which cannot be predicted with a high degree of certainty." [emphasis added] Geradin & Girgenson, "The Counterfactual Method in EU Competition Law: The Cornerstone of the Effects-Based Approach", quoted in Alstom's submission dated 21 April 2015, pages 5-6.

structure that follows the concentration would also have occurred in the absence of the concentration.¹⁰²⁵

- (1156) Overall, the Commission considers that the relevant comparison scenario for evaluating the effects of the Transaction should be (i) the pre-merger operational and financial performance of Alstom's gas business and (ii) Alstom's best estimates of the future performance of its gas business in the absence of the merger, as captured in its pre-merger, forward-looking projections. In addition, the Commission takes into account (iii) events that can reasonably be expected to have impacted Alstom's gas business and would have still occurred in the absence of the merger, but also (iv) all possible alternative steps that could reasonably have been taken by Alstom to maintain or strengthen the competitiveness of its gas business, other than the planned merger.

8.10.3. Commission's assessment

- (1157) Alstom essentially claims that in the absence of the Transaction, its competitiveness would be progressively impaired by financial and structural difficulties, so that it would eventually cease to be an effective competitor. This Decision examines whether those difficulties were reasonably predictable, namely whether they would be more likely to occur in the future than the maintenance of *status quo* of Alstom's competitiveness in the gas turbine markets at the time of the merger.
- (1158) As regards the alleged structural difficulties faced by Alstom's gas turbine business, the Commission refers to the relevant sections of this Decision:
- (a) as regards the argument that Alstom's portfolio of HDGTs is poorly positioned, the Commission refers to market shares data in Section 8.4 and to the analysis of bidding data conducted in Annex I, showing that Alstom has successfully maintained or strengthened its market shares and bidding participation over the years preceding the merger;
 - (b) as regards the argument that Alstom has structurally been unable to bring marketable innovation to the market for 50 Hz HDGTs, the Commission refers to Section 8.7, showing that Alstom is an important innovator in the market for 50 Hz HDGTs;
 - (c) as regards the argument that Alstom is overexposed to declining European markets, the Commission refers to Section 8.2, showing that overall demand for HDGTs is expected to increase in the future in Europe, and Section 8.4 and Annex I, showing that the EEA represented approximately [10-20]% of the projects won by Alstom over the past 5 years and that Alstom is a globally strong competitor.
- (1159) The subsequent headings will examine (i) whether Alstom's gas business is a structurally profitable and cash generating business; (ii) whether Alstom as a whole is a structurally profitable and cash generating business; (iii) the extent of Alstom's liquidity problems; (iv) the extent to which Alstom's financial difficulties impacted its ability to compete in the market for 50Hz HDGTs pre-

¹⁰²⁵

Horizontal Merger Guidelines, paragraph 91.

merger; (v) restructuring measures envisaged by Alstom pre-merger to improve its financial standing; (vi) the extent to which the deterioration of Alstom's financial situation after the Transaction can be taken into account when assessing Alstom's competitive strength in the absence of the merger; (vii) additional steps that Alstom could reasonably have considered to maintain or strengthen the competitiveness of its gas business.

8.10.3.1. The gas business is Alstom's most profitable and cash generating business unit

- (1160) The Commission first notes that Thermal Power has consistently been the largest contributor to Alstom's profitability, looking at both IFO¹⁰²⁶ margin (in 2014, 10.6% against 7.0% for the whole of Alstom) and IFO to capital employed¹⁰²⁷ (34% against 17%).
- (1161) Thermal Power has consistently been cash flow positive over the past years and was expected to remain significantly cash-flow positive in the coming years. Thermal Power has over the past years consistently financed the operations of the remaining parts of Alstom's business.

Table 38: Yearly Free Cash Flow 1 of Alstom 2010-2015 (actuals)

FCF1	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
Thermal	[Alstom thermal free cash flow]	[Alstom thermal free cash flow]	[Alstom thermal free cash flow]	[Alstom thermal free cash flow]	[Alstom thermal free cash flow]	[Alstom thermal free cash flow]
rest of Alstom + corporate	[remaining Alstom free cash flow]	[remaining Alstom free cash flow]	[remaining Alstom free cash flow]	[remaining Alstom free cash flow]	[remaining Alstom free cash flow]	[remaining Alstom free cash flow]
Total	[total Alstom free cash flow]	[total Alstom free cash flow]	[total Alstom free cash flow]	[total Alstom free cash flow]	[total Alstom free cash flow]	[total Alstom free cash flow]

Source: Reply to the Statement of Objections.

- (1162) Within Thermal Power, the gas business is by far Alstom's most profitable and most cash generating business. IFO margins of the gas business stood at approximately [IFO margins]% in 2014,¹⁰²⁸ against [IFO margins]% for Thermal Power and [IFO margins]% for Alstom as a whole. The gas business also accounted for approximately [80-90]% of Thermal Power's FCF.¹⁰²⁹
- (1163) Within Thermal Power, Alstom considers that the gas business also "offers a strong outlook over 2014-2017", with orders expected to grow 5.9% per year

¹⁰²⁶ Income from Operations, a measure of operating profit.

¹⁰²⁷ Capital employed = fixed assets + working capital.

¹⁰²⁸ Weighted average 2014 IFO margin on sales of new equipment for combined cycle power plants, and on the servicing of Alstom's HDGT installed base.

¹⁰²⁹ See Annex 3561, slide 10.

over the period.¹⁰³⁰ Alstom also considers that it is "*the most cash generative business*" of Alstom.¹⁰³¹

(1164) [information concerning evaluation of ALSTOM business].

Figure 60: [information on ALSTOM]

[extract from internal ALSTOM document concerning evaluation of ALSTOM business]

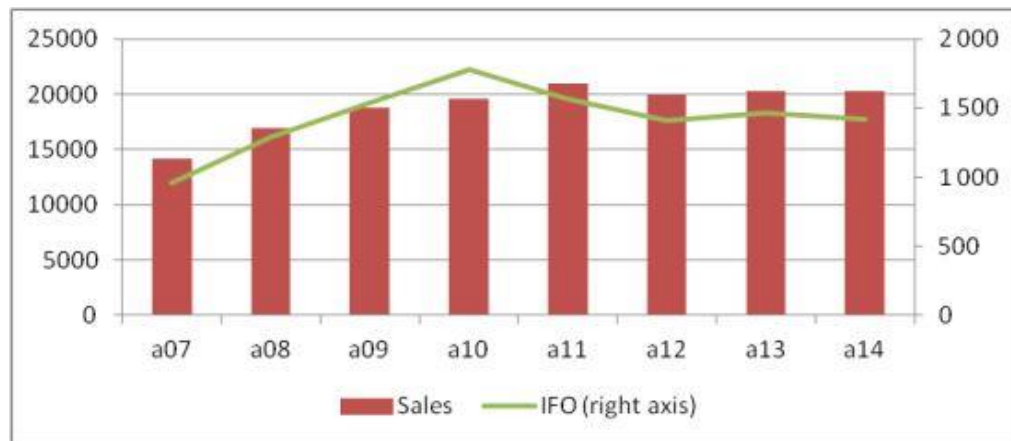
Source: Annex 818.

8.10.3.2. Alstom as a whole is a structurally profitable company with sound order intake and stable sales

(1165) The Notifying Party argues that Alstom's orders, sales and profitability [information concerning evaluation of ALSTOM business].

(1166) Looking at Alstom's level, both sales and operating profit were on the rise or stable over the eight years preceding the merger, as shown in Figure 61 below.

Figure 61: Overview of Alstom's sales and IFO over 2007-2014, including Grid (from 2011 onwards)



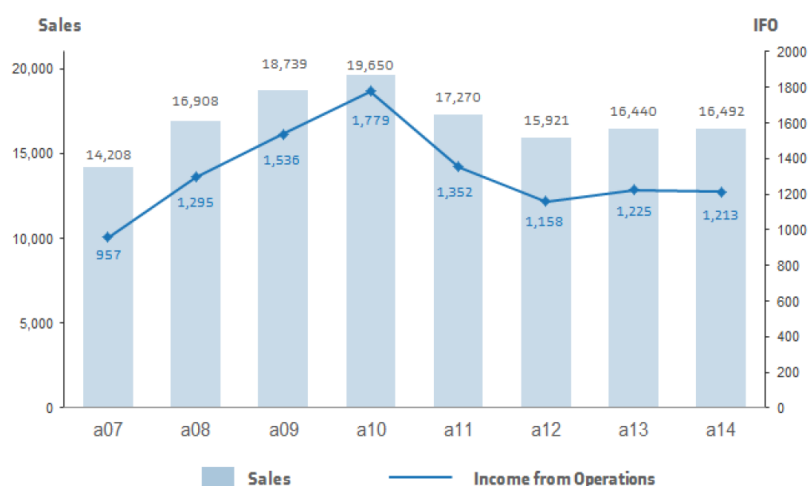
Source: Alstom annual reports, as published on Alstom's website.

(1167) When excluding Grid (acquired in 2010), sales and IFO can be considered in decline when compared to the period 2008 to 2010. The years 2008 to 2010 were however very good years for Alstom. Taking a longer view, sales were in recent years back or above to their pre-boom levels observed in 2007 and 2008.

¹⁰³⁰ See Annex 3561, slide 11.

¹⁰³¹ See Annex 3561, slide 9.

Figure 62: Overview of Alstom's sales and IFO over 2007-2014, excluding Grid



Source: Alstom annual reports, as published on Alstom's website.

- (1168) The stability of Alstom's sales and operating profits was recognised pre-merger by financial analysts, for instance by S&P in its 13 June 2014 report: "We assess Alstom's business risk profile as "satisfactory". This assessment is primarily supported by the low volatility of the group's earnings, evident from the resilience of its operating profits over the past seven years. Our assessment also reflects the group's significant market positions globally, high barriers to entry, and positive long-term demand prospects in most of its business lines. Alstom also benefits from a meaningful degree of business, customer, and geographic diversity."¹⁰³²
- (1169) In the years preceding the merger, Alstom enjoyed moderate but stable profitability. Alstom's operating profitability (IFO %) has been fairly stable over the past years, in the range of 7-8%, as shown in Table 39 below. Compared to its competitors, it has typically been below that of GE and Siemens, but above that of MHPS and Ansaldo.¹⁰³³

Table 39: Alstom's IFO margins, for Alstom as a whole and by business unit, over the period 2007-2014

	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014
IFO %	6,7%	7,7%	8,2%	9,1%	7,5%	7,1%	7,2%	7,0%
o/w Thermal	8,0%	8,9%	11,1%	11,2%	9,0%	9,7%	10,4%	10,6%
Renewables				6,4%	8,9%	7,4%	4,9%	4,5%
Grid	n/a	n/a	n/a	n/a	6,0%	6,2%	6,2%	5,6%
Transport	6,6%	7,2%	7,2%	7,2%	7,1%	5,1%	5,4%	5,6%

Source: Alstom annual reports.

- (1170) Pre-merger, Alstom is thus a company with a satisfactory business profile, a stable order book and moderate profitability, which was in particular driven by the Thermal Power business.

¹⁰³² See Annex 1420.

¹⁰³³ See Annex 831, slide 8.

- (1171) Looking at Thermal Power in particular, new orders and sales can be considered in significant decline when compared to the period 2008 to 2010 (as the Parties are doing). However, the years 2008 to 2010 were years of strong growth for the Thermal business. In the long run, as illustrated in Table 40 below, Thermal Power sales were in recent years back to their pre-boom levels observed in 2007 and 2008.
- (1172) Importantly, the decline in the number of orders experienced by the Thermal business since 2010 is a market trend. In this context, it can be noted that Alstom Thermal Power's new orders have been stable since 2011, while those of competitors have declined.¹⁰³⁴

Table 40: Overview of Orders received and Sales over 2007-2014 (actuals) and 2015-2017 (projections as of March 2014), for Alstom as a whole and by business unit

	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	p2015	p2016	P2017
Orders received	19 029	23 472	24 590	14 919	19 054	21 706	23 770	21 498	[order forecast]	[order forecast]	[order forecast]
o/w Thermal	13 593	15 970	13 984	8 308	7 975	9 366	9 574	9 017	[order forecast]	[order forecast]	[order forecast]
Renewables			2 482	1 127	1 936	2 026	2 029	2 565	[order forecast]	[order forecast]	[order forecast]
Grid	0	0	0	0	3 434	4 003	5 058	3 514	[order forecast]	[order forecast]	[order forecast]
Transport	5 388	7 467	8 114	5 484	5 709	6 311	7 109	6 402	[order forecast]	[order forecast]	[order forecast]
										[order forecast]	[order forecast]
Sales	14 208	16 908	18 739	19 650	20 923	19 934	20 269	20 269	[sales forecast]	[sales forecast]	[sales forecast]
o/w Thermal	8 871	11370	11 257	12 099	9 725	8 726	9 179	8 787	[sales forecast]	[sales forecast]	[sales forecast]
Renewables			1 797	1 802	1 941	2 027	1 803	1 829	[sales forecast]	[sales forecast]	[sales forecast]
Grid	0	0	0	0	3 653	4 013	3 829	3 777	[sales forecast]	[sales forecast]	[sales forecast]
Transport	5 288	5 509	5 685	5 749	5 604	5 168	5 458	5 876	[sales forecast]	[sales forecast]	[sales forecast]

Source: Alstom annual reports; Annexes 831 and 1553.

- (1173) Overall, new orders in Thermal Power have stabilised over the past few years and were projected pre-merger to [ALSTOM financial projections].

8.10.3.3. Although facing challenging cash volatility, Alstom's liquidity position remained satisfactory

- (1174) Alstom faced over the past years challenging cash volatility, which resulted in:
- (a) Alstom showing negative FCF during four out of the past five years preceding the merger;

¹⁰³⁴

See Annex 831, slide 8.

- (b) a significant increase in net debt over the same period – half of which due to working capital variations, another half due to large M&A transactions (first of which the acquisition of Areva's grid business in 2010);
 - (c) a reduction in new activities compared to 2009;
 - (d) no dividend paid in 2014.
- (1175) The above elements resulted in a downward trend in performance assessment by certain financial market metrics: declining share price; downgrades in credit rating; increases in credit default swaps spreads.¹⁰³⁵
- (1176) However, despite the challenges referred to in recital (1171):
- (a) cyclical variations in working capital are normal in an industry with large project prepayments and cyclical, lumpy demand patterns.¹⁰³⁶ Deterioration in the working capital position typically stems from the mere execution of the orders received in previous years, with cash outflows reflecting to some extent the working capital cash inflows of previous years. The sharp increase in working capital experienced by Alstom in 2010 to 2012 for instance largely stemmed from the due execution of the very large amount of orders received in 2008 and 2009;
 - (b) changes in working capital only justify approximately [value of net debt increase] of the increase in net debt over 2010-2014, with acquisitions (mostly outside of the Thermal Power field) accounting for approximately [value of net debt increase];
 - (c) Alstom was in the years preceding the Transaction more dependent on advance payments than its competitors, which can be partly explained by Alstom's larger share of turnkey projects (typically yielding larger down payments). As such, the increase in working capital experienced by Alstom over the 2012-2014 is actually bringing it back to the level of its competitors and its own historical ratios, as recognised in a due diligence report to GE.¹⁰³⁷
 - (d) in that same report, referred to in point (c), the view is expressed that Alstom's working capital is "likely not cause for concern" and that "there is reason to believe that it has reverted to a sustainable level". According to McKinsey, "analyst community and corporate finance experts are not concerned about [Alstom's] net working capital evolution".¹⁰³⁸
- (1177) Despite reduced financial flexibility and less buffer to absorb further negative cash flows, Alstom was still considered by analysts, pre-merger, as enjoying

¹⁰³⁵ See Annex 4870, pp11-18; see Annex 5150, pp 21-41.

¹⁰³⁶ Indeed, when the market is growing, prepayments received on new orders can exceed the cash outflows required for the execution of the existing backlog of contracts. In this case, working capital decreases (or becomes even more negative in the case of Alstom) and positively impacts free cash flow. All other things being equal, the company reduces its net debt (more cash or less debt or both). When the market is slowing down, in contrast, prepayments received on new orders do not cover the cash outflows required for the execution of the backlog. Working capital increases (or becomes less negative) and negatively impacts free cash flow. All other things being equal, the company increases its net debt (less cash or more debt or both).

¹⁰³⁷ See Annex 1513, slide 6, produced by GE's external advisor McKinsey.

¹⁰³⁸ See Annex 1513, slide 5.

significant liquidity. In addition to its cash and cash equivalents (EUR 2.7 billion as at March 2014), Alstom had access to a committed, undrawn EUR 1.35 billion revolving credit facility ("RCF") maturing in December 2016. As of March 2014, Alstom had significant leeway under the facility covenants.¹⁰³⁹

(1178) This sound liquidity position was reflected, shortly before the Transaction was announced, in the following credit rating agencies statements:

- (a) Moody's, 4 February 2014: *"Alstom's liquidity profile is satisfactory and characterized by limited cash flow generation, cash balances largely reflecting customer advance payments, sizable committed bank and bonding facilities, and significant but well spread debt maturities";*¹⁰⁴⁰
- (b) S&P, 13 June 2014: *"We view Alstom's liquidity and financial flexibility as "strong" according to our criteria. We anticipate that sources of liquidity will exceed uses by at least 1.5x for the next year, and that sources would exceed uses even if EBITDA were to fall by 30%. We believe that Alstom has sound relationships with banks and good standing in the capital markets.*
- (c) *Alstom's €1.35 billion revolving credit facility (RCF) and €9 billion committed bonding facility agreements include two maintenance financial covenants [...]. As of March 31, 2014, Alstom had more than 30% headroom under these covenants and we expect the company to maintain an ample cushion over the medium term.*

Alstom's principal liquidity sources comprise: (i) cash of about €2.3 billion as of March 31, 2014; (ii) access to an undrawn €1.35 billion RCF due in 2016; FFO of about €900 million-€1 billion over the next two years; and (iv) up to €1 billion of proceeds from asset disposals that we include in our forecast."¹⁰⁴¹

- (1179) Looking ahead, Alstom projected pre-merger that its Free Cash Flow ("FCF") would turn back to positive in 2015 and increase up to [ALSTOM free cash flow forecast] in 2017.¹⁰⁴² Net debt would have slowly declined by the same order of magnitude, bringing leverage ratios down.¹⁰⁴³
- (1180) Therefore, while Alstom was indeed facing some liquidity problems at the time of the merger announcement, those problems were not threatening the viability of Alstom's business model, in particularly its Thermal Power business unit, and its gas business within Thermal Power.

8.10.3.4. Alstom's financial situation did not appreciably affect Alstom's ability to compete on the market for 50 Hz HDGTs

- (1181) The Notifying Party argues that Alstom's financial situation was, pre-merger, constraining its ability to effectively compete in the market for 50 Hz HDGTs, by limiting the level of (i) R&D and capital expenditure that Alstom could incur to support its HDGT business, (ii) working capital that Alstom could

¹⁰³⁹ EBITDA/net interest of 5.1x against minimum 3.0x covenanted, and net debt/EBITDA of 1.9x against maximum 3.6x covenanted.

¹⁰⁴⁰ See Annex 1414.

¹⁰⁴¹ See Annex 1420.

¹⁰⁴² See Annex 837.

¹⁰⁴³ See Annex 831, slide 218.

allocate in support of its projects, and (iii) financial guarantees and risk-sharing that Alstom could offer in support of its bids.

- (1182) However, Alstom's annual reports and internal documents show R&D and capital expenditure on the rise over the past years, both at group level¹⁰⁴⁴ and looking at the Thermal Power level¹⁰⁴⁵ and gas businesses in particular.¹⁰⁴⁶ As explained in Section 8.7.3, Alstom's HDGT-related R&D expenditure compares favourably relative to that of its competitors. In 2014, Alstom had the second largest R&D spend behind GE, but higher than that of all other competitors. Looking ahead, R&D, capital expenditure and selling expenditures related to Alstom's gas business were planned to remain stable or slightly increase as part of Alstom's broad restructuring plan undertaken in November 2013.¹⁰⁴⁷
- (1183) The Notifying Party has not provided substantive evidence that Alstom's financial situation had pre-merger announcement a material impact on the number of tenders in which Alstom was able to participate (participation rate) or on its ability to win such tenders (success rate) or on both.
- (1184) As regards participation rate it should be noted that Alstom's Group Instructions, which provide for Alstom's internal approval process for tendering for new projects,¹⁰⁴⁸ constrain Alstom's participation in tenders resulting in, among others, a negative cash flow. Nevertheless the Commission notes that negative cash flow or other financial issues are mentioned as the reason for not participating in a tender only in one case out of 34 observations and that one tender was for an unusually large tender process involving the award of many HDGTs in Algeria.¹⁰⁴⁹ Another internal document shows that Alstom continued over the past few years to bid for certain projects which implied very large working capital requirements.¹⁰⁵⁰
- (1185) As regards success rates, the Parties refer to only two projects over the recent years in which cash flow constrained Alstom's ability to win the tender. The first one, [name of project], was again an unusually large tender involving the award of many HDGTs, in [location of project]. As regards the second one, [name of project], Alstom managed to participate through a different project structure and eventually won the tender.¹⁰⁵¹ As explained in Annex I, bidding data actually rather points to an increase in Alstom's participation and success rates over the past few years in the Large segment.
- (1186) As regards the Parties' argument that Alstom was at a competitive disadvantage due to its more limited ability to provide adequate guarantees and risk-sharing

¹⁰⁴⁴ Net R&D expenses increased from EUR 456 million in 2007 to [ALSTOM R&D expenditure] in 2014, while capital expenditure rose over the same period from EUR 395 million to EUR [ALSTOM R&D expenditure].

¹⁰⁴⁵ See Annex 831, slide 54.

¹⁰⁴⁶ See Annex 1509, slide 6.

¹⁰⁴⁷ See Annex 837.

¹⁰⁴⁸ See Alstom reply to the Commission's Request for Information N° 13, 23.01.2015, question 25.

¹⁰⁴⁹ See Alstom submission of 29 May in reply to question 5 of the Commission's Request for Information N°35.

¹⁰⁵⁰ See Annex 2609.

¹⁰⁵¹ See Alstom reply to Commission's Request for Information N°13, of 23.01.2015, question 25.

in support of its bids, a very large majority of customers explained during the market investigation that they require from Alstom the same level of financial guarantees and risk sharing as from its competitors,¹⁰⁵² and that Alstom's ability to meet such requirements is on par with that of competitors.¹⁰⁵³ In addition, customers do not regard an OEM's capacity to facilitate or arrange customer financing or both as a significant competitive advantage, with a majority actually responding that it is never the role of the OEM to facilitate such financing.¹⁰⁵⁴ In any event, a large majority of customers considers that Alstom's ability to arrange financing is on par with its competitors.¹⁰⁵⁵ A large European utility states for instance: *"Alstom is not supposed to arrange/facilitate financing. In any event, Alstom has similar financial strengths compared to its competitors"*.¹⁰⁵⁶

- (1187) Contrary to the Parties' argument there is evidence in the file suggesting that faced with structural or financial difficulties or both, Alstom could have competed even more aggressively in order to be successful in the reduced number of bidding opportunities.¹⁰⁵⁷ There is thus no direct causal link between its argued financial difficulties and reduced competitive pressure on the part of Alstom. Figure 63 below is for instance evidence that, in a tender dated April 2014, GE regarded Alstom as an even more aggressive competitor (*"Alstom – Biggest competitor!!! Very hungry!"*), precisely because Alstom had won a limited number of tenders in the previous months.

Figure 63: GE's perception of Alstom's competitive constraint for the [name of project] project, April 2014

[extract from internal GE document concerning evaluation of competition in project]

Source: GE's reply to Commission's Request for Information N° 20, 12.03.2015, doc "GE_0014120_GE - Strictly Confidential - Contains Business Secrets.msg/740311 and 932188 - [name of project] – Update".

- (1188) The Commission notes that pre-merger Alstom considered as a credible threat a possible downgrade to sub-investment grade.¹⁰⁵⁸ That downgrade would have increased Alstom's financing costs, with "[quote from internal ALSTOM document]".¹⁰⁵⁹ Overall, this would have resulted in a *"competitive disadvantage compared to Siemens A+/Aa3 and GE AA+/A1"*.
- (1189) However, a further downgrade was not explicitly considered pre-merger by credit rating agencies on the basis of their and Alstom's future financial projections at the time. Also, the same internal documents recognise that in the

¹⁰⁵² See replies to question 111 of Questionnaire Q1 to customers of gas-fired power plant.

¹⁰⁵³ See replies to question 110 of Questionnaire Q1 to customers of gas-fired power plant.

¹⁰⁵⁴ See replies to question 112 of Questionnaire Q1 to customers of gas-fired power plant.

¹⁰⁵⁵ See replies to question 113 of Questionnaire Q1 to customers of gas-fired power plant.

¹⁰⁵⁶ See reply to question 113 of Questionnaire Q1 to customers of gas-fired power plant.

¹⁰⁵⁷ See for example, the remarks of Carl Shapiro, Deputy Assistant Attorney General for Economics, Antitrust Division, US Department of Justice, Prepared for Delivery to ABA Antitrust Symposium, Competition as Public Policy, Competition Policy in Distressed Industries, May 13, 2009, as quoted in the United States' paper for the OECD Roundtable on Failing Firm Defence.

¹⁰⁵⁸ See Annex 831, slide 219.

¹⁰⁵⁹ See Annex 831, slide 220.

event of a downgrade, "[quote from internal ALSTOM document]¹⁰⁶⁰)" and that "[quote from internal ALSTOM document]".

- (1190) On balance, the Commission concludes from the above that there is no evidence that Alstom's financial situation appreciably affected its ability to effectively compete in the market for 50 Hz HDGT, nor that it could be reasonably predicted that it would have been constrained in the future absent the Transaction. On the contrary, the evidence rather shows that Alstom continuously supported its HDGT business through significant R&D and Capex investment, and fought strongly to attract new orders.

8.10.3.5.Pre-merger, Alstom had planned restructuring measures to improve its financial standing

- (1191) Pre-merger, Alstom had launched various restructuring and cost competitiveness measures for its Thermal business,¹⁰⁶¹ consisting of both business structure streamlining measures¹⁰⁶² and footprint optimisation measures¹⁰⁶³, and going beyond the existing "Dedicated to Excellence" cost-reduction program. Main measures included the "[ALSTOM restructuring plans].
- (1192) The overall objective of the various measures was to reduce the cost base of Alstom's Thermal business "[value and timeframe of cost reduction]", thus "reducing the financial impact of overcapacity".¹⁰⁶⁴ The strategic approach was to "[ALSTOM restructuring plans]".¹⁰⁶⁵ The overall restructuring cost was estimated at [value of restructuring cost], spreading accounting costs and cash outflows over 3 to 5 years.
- (1193) Ambitious restructuring and cost competitiveness measures were also introduced in other Alstom's business branches.¹⁰⁶⁶
- (1194) Alstom's latest three-year plan, adopted by the Board in March 2014 and covering financial years 2015-2017, anticipated at Alstom's level an increase in orders received in 2015, followed by a stabilisation around [forecasted value] in 2016 and 2017, translating into a slow increase in sales until 2017.¹⁰⁶⁷ It was envisaged that IFO was to increase from EUR 1.4 billion in 2014 to [forecasted ALSTOM IFO] in 2017. FCF was to turn back to positive in 2015 and increase up to [forecasted increase of ALSTOM IFO] in 2017. Net debt was expected to decrease from EUR 3.5 billion to [forecasted value of net debt] despite planned dividend payments of [forecasted value of dividend prepayments].¹⁰⁶⁸

¹⁰⁶⁰ [...] %.

¹⁰⁶¹ See Annex 1550, slide 5.

¹⁰⁶² See Annex 1550, slides 9 to 11.

¹⁰⁶³ See Annex 1550, slides 13 to 17.

¹⁰⁶⁴ See Annex 1509.

¹⁰⁶⁵ See GE's reply to the Commission's Request for Information N° 11, 19.12.2014, question 3.

¹⁰⁶⁶ See Annex 837.

¹⁰⁶⁷ From EUR 20.2 billion in 2014 to [forecast of order value] in 2017.

¹⁰⁶⁸ See Annex 831, slide 211.

Figure 64: [information on ALSTOM]

[financial information on ALSTOM Group in the period 2014-2017]

Source: Annex 832, slide 3.

- (1195) Looking at the Thermal business in particular, Alstom's latest three-year plan forecast a stabilisation of orders and sales until 2017, to respectively above [forecasted value] in orders and [forecasted value] in sales. IFO would decrease in 2015 (due to restructuring costs) but pick up by 2017, with IFO margin reaching [forecasted IFO] in 2017. [forecasted IFO].¹⁰⁶⁹

Figure 65: [information on ALSTOM]

[financial information on ALSTOM thermal business in the period 2014—2017]

Source: Annex 1553.

- (1196) Alstom notes that, overall, the three-year plan is based on "*more conservative assumptions*" than the previous plan,¹⁰⁷⁰ but that it "*remains challenging*" because "*no significant buffer embedded in Plan to address further market deterioration or execution shortfalls*".¹⁰⁷¹
- (1197) The Parties argue that Alstom's three-year plan is not an appropriate basis for assessing Alstom's financial situation, because that plan was "over-optimistic when it was prepared".¹⁰⁷² The Commission however notes that that plan was prepared for and endorsed by Alstom's Board of Directors, and constitutes the basis of Alstom internal strategic planning – including Alstom's financial strategy. The three-year plan also include Alstom's budget for the 12 month ahead, used internally for short term and medium term liquidity management. The Commission additionally notes that it can reasonably be expected that a forward-looking plan could overshoot its targets when the overall market is showing a downward trend (as was the case in the past 3 years), and that it has not been shown or argued by the Parties that the three-year plan never overshoot its targets when the market was in an upward trend. Overall, the Commission considers that Alstom's three-year plan is a relevant document to assess Alstom's internal best estimates, at the time of preparation of the document, of its financial standing in the years ahead.
- (1198) The Commission also notes that, in addition to the cost measures included in the three-year plan, Alstom was working on additional restructuring of the business structure streamlining and footprint optimisation ([ALSTOM restructuring plan]) measures.¹⁰⁷³ [ALSTOM strategic plans].¹⁰⁷⁴

¹⁰⁶⁹ See Annex 1553.

¹⁰⁷⁰ See Annex 831, slide 229.

¹⁰⁷¹ See Annex 831, slide 230.

¹⁰⁷² See Reply to the Statement of Objections, Annex 7, paragraph 30.

¹⁰⁷³ See Annex 1550, slide 7.

¹⁰⁷⁴ See Annex 831, slide 11.

- (1199) Additionally, at Alstom corporate level, Alstom at that time also considered certain more structural remedies, [ALSTOM strategic plans].¹⁰⁷⁵ [information on ALSTOM].
- (1200) [information on ALSTOM].¹⁰⁷⁶ As explained by the head of the Thermal business in a memorandum, *"one of the solutions to move would be to refocus [Alstom's] activities on Power related businesses and to get into the top 3 of this sector"*. As late as of mid-January 2014, the head of Alstom's Thermal business was thus considering that it was realistic to [information on ALSTOM] in order to strengthen the Power businesses of Alstom (Thermal, Grid and Renewables) and Alstom's position as a global leader in energy infrastructure. As regards gas specifically, the proposed plan *"would not trigger a big overhead reduction, it would allow a better integration of Engineering and Manufacturing which should improve time to market, Lead time and Costs."* Overall, [name of ALSTOM individual] was of the view that *"the proposed move would: (i) automatically increase [Alstom's] IfO of 1 pt and most certainly more after the de-layering; (ii) make [Alstom's] strategy more readable; and (iii) allow [Alstom] to make some move in acquisition."*

8.10.3.6. The recent deterioration of Alstom's financial situation in so far as it would not have occurred in the absence of the proposed merger cannot be taken into account

- (1201) The Parties argue that Alstom's financial situation has further deteriorated since the announcement of the merger, and that such deterioration should be taken in consideration when assessing the competitive constraint likely exerted by Alstom, in the absence of the merger.
- (1202) At the same time, the Parties argue that uncertainty surrounding the closing of the Transaction is heavily weighting on Alstom's orders intake and largely explains the further deterioration of Alstom's financial situation.
- (1203) The Parties have on several occasions explained to the market and to the Commission that the uncertainty surrounding the Transaction was significantly and negatively impacting Alstom's ability to secure new orders in all markets for power generation equipment.
- (1204) Therefore, the recent deterioration of Alstom's financial situation after the merger announcement, in so far as it would not have occurred in the absence of the proposed merger cannot be taken into account.
- (1205) The Parties however argue further that Alstom suffered from deteriorating market conditions since after the merger announcement 8 power generation projects which had been included in Alstom's budget for the year 2014/2015 were either postponed (7 projects) or shelved (1 project) for reasons allegedly unrelated to the merger.
- (1206) Despite an information request from the Commission, the Parties have not provided internal documents or other documentary evidence supporting their claim that the delays or cancellation experienced by these projects were unrelated to the merger.

¹⁰⁷⁵ See Annex 831, slides 217 and 231; Annex 837, slides 195 and 231.

¹⁰⁷⁶ See Sub-Annex 43, [title of internal ALSTOM document].

- (1207) In any case, even when taking into account all projects affected by delays or projects which were cancelled since the Transaction was announced (including those for which the Parties have not provided any explanation) and applying the Parties' (undocumented) assumption that these projects would have yielded [percentage] in down-payments, the additional working capital requirement amounts to a maximum of [value of working capital]. Such financing gap is temporary, since all but one project were delayed and not cancelled.
- (1208) Overall, the Commission considers that it is not likely that such a temporary financing gap could not have been absorbed in the forecast liquidity buffer of Alstom¹⁰⁷⁷ or through the cash raised by the disposals envisaged by Alstom pre-merger.¹⁰⁷⁸
- (1209) The Commission agrees that the USD 772 million fine imposed by the Department of Justice of the United States ("DoJ") on Alstom for charges of bribery should be taken into consideration when assessing the forward-looking liquidity profile of Alstom, since this fine would have been imposed even in the absence of the merger and it was reasonably predictable.
- (1210) [information on ALSTOM]. They also argue that "*it can be reasonably predicted that, in light of the DoJ fine and [information concerning evaluation of ALSTOM business], Alstom would have been downgraded below investment grade*".¹⁰⁷⁹
- (1211) The Commission considers, first, that the negative effects [information on ALSTOM] due to a one-off event such as the DoJ fine could likely be limited, mitigated or even prevented by Alstom through absorption of the fine in the forecast liquidity buffer or through cash raised through disposals.
- (1212) Secondly, if Alstom would have been downgraded as a result of the DoJ fine or worsened market conditions or both, it is true that such downgrade might indeed have increased Alstom's financing costs, with "*commercial paper market closed and therefore need to keep more cash on balance sheet at closing to cover intra year working capital swings*", and "*revolving credit facility and bonding line extension more difficult*".¹⁰⁸⁰ Overall, this could also have resulted in a "*competitive disadvantage compared to Siemens A+/Aa3 and GE AA+/A1*". However, the same internal documents recognise that, even in case of downgrade, "*debt capital market [would] still [be] open to refinance existing bonds but at a higher cost (50-100bp¹⁰⁸¹ more)*" and that "*A sub investment grade rating would not prevent Alstom from doing business (Bombardier BB-/Ba3)*".
- (1213) On balance, the Commission considers that the fine, especially if paid over two years, was likely to be absorbed in Alstom's forecast liquidity buffer¹⁰⁸² or through the cash raised by the disposals envisaged by Alstom pre-merger.¹⁰⁸³

¹⁰⁷⁷ See Annex 831, slide 217.

¹⁰⁷⁸ See Annex 831, slide 215.

¹⁰⁷⁹ See Annex 4871; see Reply to the Statement of Objections, Annex 7, paragraph 39.

¹⁰⁸⁰ See Annex 831, slide 220.

¹⁰⁸¹ 0.5-1%.

¹⁰⁸² See Annex 831, slide 217.

¹⁰⁸³ See Annex 831, slide 215.

Should the fine or market conditions or both have led to a further downgrade of Alstom, Alstom internal documents show that a downgrade would have translated into higher financing costs, but would not have "prevent[ed] Alstom from doing business".¹⁰⁸⁴

8.10.3.7. It is unlikely that the planned Transaction was the only option available to maintain or strengthen the competitiveness of Alstom's gas business

- (1214) Neither Alstom nor its Thermal or gas businesses can in view of the above be seen as either a failing firm or an operator whose future competitive importance would likely be significantly reduced.
- (1215) Alstom compares its situation with that of the target companies in *Fiamm*, *Boeing/McDonnell Douglas*, *AEE / Lentjes*, *Microsoft / Yahoo*, and other cases. In these cases, the Commission accepted that historic market shares and other parameters of competition were not necessarily representative of the competitive constraint these companies would exercise in the future.
- (1216) However, these cases concern structural shortcomings of competitors (i) which had been making heavy losses for a number of years and facing insolvency and liquidation¹⁰⁸⁵; (i) relied on old, legacy product lines¹⁰⁸⁶, (ii) represented only a weak innovative force in the market;¹⁰⁸⁷ (iii) which were scarcely visible on the market and were unable to bid successfully in any tenders over a two year period,¹⁰⁸⁸ (iv) were incurring significant market share losses¹⁰⁸⁹, (v) repeatedly failed to restructure the business to return to profitability situation.¹⁰⁹⁰
- (1217) In contrast, Alstom is an R&D driven HDGT competitor which, until the merger, remained committed to launching major new products such as GT36, and with one of the highest R&D expenditure in the sector. Its Thermal Power overall, and its gas business in particular, are profitable businesses which enjoy a stable amount of orders and stable market shares.
- (1218) The Commission also considers that a reasonable economic operator would seek to restructure its business so as to avoid the erosion of the market value of its most profitable business division – namely the Thermal Power division, and the gas business in particular. Looking at spending projections for 2015-2017, it can be noted that Alstom's restructuring plan would have left Capex, R&D and commercial costs of the gas business untouched or even slightly on the rise, while the other business units would have faced cuts in R&D overheads and Capex.¹⁰⁹¹

¹⁰⁸⁴ See Annex 831, slide 220.

¹⁰⁸⁵ Case M.4381 – JCI/Fiamm, paragraphs 692-720.

¹⁰⁸⁶ Case M.877 – Boeing / McDonnell Douglas, paragraph 59.

¹⁰⁸⁷ Case M.877 – Boeing / McDonnell Douglas, paragraph 59, Case M.5727 – Microsoft/Yahoo Search Business, paragraph 140-141.

¹⁰⁸⁸ Case M.4647 – AEE/Lentjes, paragraph 105.

¹⁰⁸⁹ See, for example, Case M.5727 – Microsoft/Yahoo Search Business, paragraphs 138-139, Case M.877 – Boeing / McDonnell Douglas, paragraph 59.

¹⁰⁹⁰ Case M.4647 – AEE/Lentjes, paragraph 107.

¹⁰⁹¹ See Annex 837, slides 5 and 9; Annex 1553, slides 12, 25, 28 and 30.

- (1219) The Commission considers that it is unlikely that a merger with the number one HDGT competitor was the only option available to maintain or strengthen the competitiveness of Alstom's gas business.
- (1220) As recognised by the Parties,¹⁰⁹² a rights issue could have been envisaged. In view of Alstom's main shareholder's reluctance to participate in a rights issue and challenging market conditions, such operation would likely have required a significant discount over the traded share price, with uncertainty on the overall capital raised. It would however have allowed Alstom to raise additional fresh capital.
- (1221) Further, in order to maintain or strengthen the competitiveness of its gas business, Alstom could also have proceeded with the sale of certain other business divisions. As explained, Alstom had pre-merger advanced plans to divest certain activities and to proceed with an IPO for part of its Transport business.
- (1222) Alstom's CEO also envisaged [information on ALSTOM strategic plans], with a view to strengthen Alstom's energy activities and make it one of the "top 3" energy players globally.¹⁰⁹³
- (1223) [information on ALSTOM strategic plans].¹⁰⁹⁴
- (1224) Finally, Alstom could have investigated the feasibility of selling its Renewables business. While there is more uncertainty as to the price that Alstom could have obtained for this business given [information concerning evaluation of ALSTOM business], it could *a minima* have freed up cash to strengthen Alstom's thermal and gas activities.
- (1225) As an alternative approach, the Commission notes that, in view of the sound profitability and cash generation profile of Alstom's Thermal business in general and gas business in particular, it is likely that Alstom would have been able to divest its Thermal or gas business, on a stand-alone basis, to an appropriate investor, other than the number one player in the market. While the Parties argue that Alstom has over the years preceding the Transaction been unsuccessful in its attempts at entering into "partnerships of equals" with various industrial players in relation to its gas business,¹⁰⁹⁵ there is no evidence that Alstom has envisaged the possibility of divesting the thermal or gas business on a stand-alone basis.

8.10.4. Conclusion

- (1226) In view of the above considerations and assessment, the Commission concludes on balance that before the Transaction Alstom's financial situation did not appreciably limit its ability to compete effectively in the market for 50 Hz HDGTs.

¹⁰⁹² See Annexes 4870 and 4871.

¹⁰⁹³ See Sub-Annex 43, "Proposal for a WAY FORWARD or From an Infrastructure company to a Power Company", prepared by M. Cochet, Alstom, 14 January 2014, page 2.

¹⁰⁹⁴ See Annexes 4870 and 4871.

¹⁰⁹⁵ See Annex 1209, slides 10 and 11.

- (1227) The Commission notes that Alstom's gas business is a structurally profitable and cash generating business, and that it is unlikely that, absent the merger, a rational economic operator such as Alstom would allow its most profitable and most cash generating business unit to weaken, when steps to maintain or strengthen the competitiveness of this business could reasonably be taken. The Commission also notes that several industrial players have over the course of the Phase II investigation expressed interest in acquiring parts or the whole of Alstom's gas business.
- (1228) The Commission concludes on balance that it cannot be reasonably predicted that Alstom's gas business would, absent the Transaction, not continue to exert the same level of competitive pressure on the market for 50Hz HDGTs as today – as part of Alstom or as part of another suitable purchaser raising fewer competition concerns.

8.11. The Notifying Party has not demonstrated that the Transaction would give rise to countervailing verifiable, merger-specific efficiencies which benefit customers and outweigh the harm to competition caused by the Transaction

8.11.1. Legal framework for assessing the Notifying Party's claim

- (1229) As recognised in the Horizontal Merger Guidelines, efficiencies brought about by mergers may bring benefits which may counteract the negative effects of the merger on competition.¹⁰⁹⁶ This will be the case when the Commission can conclude on the basis of sufficient evidence that the efficiencies generated by the merger are likely to enhance the ability and incentive of the combined entity to act pro-competitively for the benefit of consumers, thereby counteracting the adverse effects on competition which the merger might otherwise have.
- (1230) For the Commission to take account of efficiency claims in its assessment of the merger, the efficiencies have to cumulatively fulfil the following three criteria:
- (1231) Firstly, the merger must benefit consumers; at the very least the consumers should not be worse off as a result of the merger. Efficiencies should be substantial and timely, and should, in principle, benefit consumers in those relevant markets where it is otherwise likely that competition concerns would occur.¹⁰⁹⁷
- (1232) Mergers may bring about various types of efficiency gains that can lead to lower prices or other benefits to consumers; in this respect, cost efficiencies that lead to reductions in variable or marginal costs are more likely to be relevant to the assessment of efficiencies and result in lower consumer prices than reductions in fixed costs. Efficiencies may also include efficiency gains in the sphere of R&D and innovation. However, cost reductions, which merely result from anti-competitive reductions in output, cannot be considered as efficiencies benefiting consumers.¹⁰⁹⁸

¹⁰⁹⁶ Horizontal Merger Guidelines, paragraph 76.

¹⁰⁹⁷ Horizontal Merger Guidelines, paragraph 79.

¹⁰⁹⁸ Horizontal Merger Guidelines, paragraphs 80 and 81.

- (1233) Finally, the efficiencies need to be passed on to consumers: *"the incentive on the part of the merged entity to pass efficiency gains on to consumers is often related to the existence of competitive pressure from the remaining firms in the market and from potential entry. The greater the possible negative effects on competition, the more the Commission has to be sure that the claimed efficiencies are substantial, likely to be realised, and to be passed on, to a sufficient degree, to the consumer."*¹⁰⁹⁹
- (1234) Second, the efficiencies must have a causal link to the merger. They need to be a direct consequence of the merger and cannot be achieved to a similar extent by less anticompetitive alternatives. It is for the merging parties to provide all relevant information showing that the merger was indispensable to attain these efficiencies. The Commission will however only consider those alternatives which are reasonably practical in the business situation faced by the merging parties.¹¹⁰⁰
- (1235) Third, claimed efficiencies need to be verifiable, allowing the Commission to be *"reasonably certain that the efficiencies are likely to materialise, and be substantial enough to counteract a merger's potential harm to consumers"*. Efficiencies and the resulting benefit to consumers should be quantified where reasonably possible. Where quantitative analysis is not practicable, it must be possible to foresee a clearly identifiable positive impact on consumers, which should not be a marginal one. *"[T]he longer the start of the efficiencies is projected into the future, the less probability the Commission may be able to assign to the efficiencies actually being brought about."*¹¹⁰¹
- (1236) It is incumbent upon the Notifying Parties to provide in due time all the relevant information necessary to demonstrate that the claimed efficiencies are merger-specific, are likely to be realised and to what extent the efficiencies are likely to counteract any adverse effects on competition that might otherwise result from the merger, and therefore benefit consumers.
- (1237) Evidence relevant to the assessment of efficiency claims could include, in particular, internal documents that were used by the management to decide on the merger, statements from the management to the shareholders and financial markets about the expected efficiencies, historical examples of efficiencies and consumer benefit, and pre-merger external experts' studies on the type and size of efficiency gains, and on the extent to which consumers are likely to benefit.¹¹⁰²

8.11.2. The Notifying Party's view

- (1238) According to the Notifying Party, before the Transaction was formally signed and announced, GE had access to only a limited amount of information and on this basis estimated synergies of USD 1.6 billion annually by year five.¹¹⁰³ This estimate consisted of USD 1.2 billion of cost synergies and USD 400 million of growth synergies.

¹⁰⁹⁹ Horizontal Merger Guidelines, paragraph 84.

¹¹⁰⁰ Horizontal Merger Guidelines, paragraph 85.

¹¹⁰¹ Horizontal Merger Guidelines, paragraph 86.

¹¹⁰² Horizontal Merger Guidelines paragraphs 87 and 88.

¹¹⁰³ Annex 5159, paragraph 4.

- (1239) After updating its estimates, the Notifying Party claims that the Transaction would create annual synergies of USD 3 billion in cost savings and [value of growth synergies] in growth synergies across all business units [timing of efficiencies].¹¹⁰⁴ Annual cost savings would amount to [value of cost savings] in thermal products and to [value of cost savings] in thermal services, [timing of efficiencies].
- (1240) The Notifying Party has submitted an economic paper, dated 16 April 2015,¹¹⁰⁵ with a first evaluation of the servicing efficiencies brought about by the Transaction. This paper was accompanied by a briefing on efficiencies submitted on 6 May 2015,¹¹⁰⁶ which offered a more detailed overview of the efficiency claims for both thermal products and thermal services. Additional information was then provided in response to a subsequent Commission's Request for Information of 12 May 2015.¹¹⁰⁷ This evidence was evaluated by the Commission in its Statement of Objections.
- (1241) In its Reply to the Statement of Objections, the Notifying Party confirmed the overall efficiencies brought about by the Transaction of USD 3 billion but performed certain modifications compared to its previous submissions.¹¹⁰⁸ These modifications led to slightly lower annual variable cost savings estimations for the thermal gas business as a whole ([value of cost savings] instead of [value of cost savings]) as well as for the HDGT business alone ([value of cost savings] instead of [value of cost savings]).
- (1242) Additional information was then provided in response to a subsequent Request for Information.¹¹⁰⁹ Amongst others, this information covers the rationale of these modifications and distinguishes "utilisation efficiencies", which are understood to stem from more efficient asset utilisation (footprint and organisational restructuring and plant closures), and from "other cost savings", which are defined to rely on non-utilisation related savings, such as sourcing related savings and savings from in-sourcing equipment.¹¹¹⁰
- (1243) The Commission notes that this information on variable cost savings pools savings associated with the Large segment and those associated with the Medium segment, covers both 50Hz frequency areas and 60Hz frequency areas and includes China and Iran. To obtain a variable cost savings estimate that is only attributable to 50Hz areas excluding China and Iran, the Notifying Party multiplies the overall variable cost savings by [40-60]%.^{1111 1112}

¹¹⁰⁴ See the Reply to the Commission's Statement of Objections, paragraph 526, and Annex 5159, paragraph 17.

¹¹⁰⁵ "GE/Alstom: Net Benefits to Heavy-Duty Gas Turbine Customers", [Professors] (Charles River Associates), Section VI.

¹¹⁰⁶ See Annex 5159.

¹¹⁰⁷ See GE's reply to the Commission's Request for Information N° 34, 12.05.2015, question 13 to 27.

¹¹⁰⁸ See the Reply to the Statement of Objections, paragraph 527.

¹¹⁰⁹ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015.

¹¹¹⁰ GE's reply to the Commission's Request for Information N° 49, 08.07.2015, question 1.

¹¹¹¹ See the Reply to the Statement of Objections, paragraphs 532 and 533.

¹¹¹² The Commission notes that efficiency figures are not sufficiently detailed, and therefore it is not possible to recover the corresponding efficiencies for the EEA. However, as the market is defined to be EEA or worldwide 50 Hz excluding China and Iran, an analysis of the Notifying Party's efficiency claims that relies on the worldwide market for 50Hz HDGTs excluding China and Iran is appropriate.

- (1244) In addition, the Notifying Party provided the Commission with more specific information on the efficiencies that the Transaction would allegedly bring about in the Medium segment. More specifically, the Notifying Party submitted a briefing on 6 July 2015 presenting the variable cost savings of HDGTs alone in the Medium segment of the worldwide market for 50Hz HDGTs.¹¹¹³ This information was complemented by i) a presentation, dated 13 July 2015,¹¹¹⁴ ii) the Notifying Party's reply to the Commission's Request for Information N° 49¹¹¹⁵, where additional information on efficiencies concerning other CCPP equipment in Medium 50Hz (STs, Generators and HRSGs) was provided, also distinguishing utilisation efficiencies from other cost savings, and ii) the Notifying Party's reply to the Commission's Request for Information N° 52,¹¹¹⁶ where information on HDGT related efficiencies in the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran was provided.
- (1245) The following Sections 8.11.2.1 to 8.11.2.4 summarise the efficiencies currently claimed by the Notifying Party.

8.11.2.1. Overview of efficiencies related to thermal products

- (1246) As regards thermal products (newly-built equipment for thermal power plants), the Notifying Party claims that annual cost savings will reach [value and timeframe of cost savings], with gas products (HDGTs and other equipment used in CCPPs) accounting for approximately [40-60]% of annual cost synergies.¹¹¹⁷ Annual variable cost savings for gas products, which relate to manufacturing, sourcing and Selling, General and Administrative Expenses (SG&A), are estimated to amount to [value and timeframe of cost savings] of which [value of cost savings] are solely related to HDGTs.¹¹¹⁸ Utilisation efficiencies are claimed to account for [value and timeframe of efficiencies].¹¹¹⁹
- (1247) The Notifying Party estimates that [value of cost savings] (of the [value of cost savings]) are attributable to gas products in the Medium segment of the worldwide market for 50 Hz HDGTs of which [value of cost savings] represent utilisation efficiencies.¹¹²⁰ To obtain an estimate for the claimed variable cost savings in the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran, the Notifying Party proposed to multiply "*the total 50Hz Medium GT variable costs by the proportion of 50Hz Medium GTs outside China and Iran to all 50Hz Medium GTs*",¹¹²¹ which yields variable

¹¹¹³ See presentation submitted by GE on 6 July 2015, "Medium GT Efficiencies".

¹¹¹⁴ See presentation submitted by GE on 13 July 2015, "Efficiencies from GE/Alstom Transaction: Presentation to European Commission".

¹¹¹⁵ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, question 1, Annex 1.2.

¹¹¹⁶ See GE's reply to the Commission's Request for Information N° 52, 17.07.2015.

¹¹¹⁷ See Annex 5159, paragraph 7.

¹¹¹⁸ See the Reply to the Statement of Objections, Section XII, A.

¹¹¹⁹ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, question 1, Annex 1.2.

¹¹²⁰ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, question 1, Annex 1.2.

¹¹²¹ See GE's reply to the Commission's Request for Information N° 52, 17.07.2015, paragraph 2.

cost savings for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran of [value of cost savings].¹¹²²

(i) Manufacturing

- (1248) The Notifying Party plans to [GE integration plans] enabling better and more rationalised utilisation of overhead across the supply chain. According to the Notifying Party, this will lead to annual variable cost savings of [value of cost savings] by [timing of efficiencies].¹¹²³
- (1249) The Notifying Party plans to [GE integration plans]. This is expected to result in [value of cost savings] in annual variable cost savings by [timing of efficiencies]. The Notifying Party has entirely classified these savings as utilisation efficiencies solely attributable to HDGTs.
- (1250) The [GE integration plans] is expected to translate into [value of cost savings] variable cost savings in the Medium segment of the worldwide market for 50 Hz HDGTs by [timing of efficiencies].
- (1251) The Notifying Party further plans to improve utilisation [GE integration plans] which will generate annual variable cost savings of [value and timing of cost savings] of which [value of cost savings] have been categorised as utilisation efficiencies ([name of facilities]).
- (1252) The Medium segment of the worldwide market for 50 Hz HDGTs accounts for [value of cost savings] of these variable cost savings which are split into [value of cost savings] utilisation efficiencies and [value of cost savings] other cost savings.
- (1253) Finally, the Notifying Party intends to use designed and built HRSGs by Alstom, [GE integration plans]. The less expensive HRSGs and the increase in the number built per year are estimated to result in approximately [value of cost savings] in savings per year by [timing of efficiencies]. In addition, by making frames and hoods internally, the Notifying Party expects to save approximately [value of cost savings] in variable costs per year by [timing of efficiencies].
- (1254) The Notifying Party expects that in-sourcing HRSGs and frames and hoods will generate [GE integration plans and value of cost savings] on annual variable cost savings in the Medium segment of the worldwide market for 50 Hz HDGTs by [timing of efficiencies].

¹¹²² The Commission notes that the [value of cost savings] consist of information provided by the Notifying Party and calculations carried out by the Commission. Precisely, the variable product cost savings of [value of cost savings] consist of those associated with HDGTs alone ([value of cost savings]), which the Notifying Party provided in its reply to the Commission's Request for Information N° 52, 17.07.2015, paragraph 1, and those associated with other CCPP equipment which were only available for worldwide Medium 50Hz including China and Iran so that the Commission applied the Notifying Party's practice of multiplying these with a factor of [50-60]% (see footnote 1122) to exclude China and Iran.

¹¹²³ The Commission notes that this is [value of cost savings] lower than the previous estimation reported by Notifying Party. The modification follows from excluding variable cost savings from the shutdown of [name of facility] as "*Alstom has mothballed [name of facility], so any savings would not be merger-specific*" (see the Reply to the Statement of Objections, paragraph 541).

(ii) Sourcing

- (1255) The Notifying Party expects to realise annual variable cost savings through efficiencies related to economies of scale in sourcing of [value of cost savings] by [timing of efficiencies].¹¹²⁴ Except [value of cost savings], which are related to organisational rationalisation and thus represent utilisation efficiencies, these savings represent other cost savings according to the Notifying Party.
- (1256) The Notifying Party further estimates that variable cost savings related to gas product sourcing in the Medium segment of the worldwide market for 50 Hz HDGTs account for [value of cost savings] per year by [timing of efficiencies] of which [value of cost savings] are categorised as utilisation efficiencies.
- (1257) By [GE integration plans] the Notifying Party estimates that the average savings per employee will be approximately [value of cost savings] per year, creating a total of [value of cost savings] in variable cost savings per year.¹¹²⁵
- (1258) Of the approximately [value of cost savings] in direct material purchases from common suppliers the Notifying Party expects to achieve [0-20]% of annual variable cost savings, namely approximately [value of cost savings] by [timing of efficiencies]. According to the Notifying Party these immediate savings stem from [source of efficiencies].¹¹²⁶
- (1259) The remaining [value of cost savings] of direct material purchases are with non-common suppliers, for which the Notifying Party is expecting approximately [0-20]% savings [timing of efficiencies] which will translate into [value of cost savings] of annual variable cost savings by [timing of efficiencies]. This is planned to be achieved [GE integration plans].
- (1260) Further, the Notifying Party is expecting additional incremental savings of [value of cost savings] by [timing of efficiencies] relating to indirect purchases (purchases of items or services that are not directly incorporated into the product sold) by [GE integration plans].¹¹²⁷
- (1261) Finally, the Notifying Party expects financing savings through [GE integration plans], which would result in annual variable cost savings of [value of cost savings] by [timing of efficiencies].

(iii) SG&A

- (1262) The Notifying Party expects to optimise its variable costs within its project management capability by combining the best of the Parties' capabilities. These actions would result in the elimination of unnecessary and overlapping roles and responsibilities in projects organisation ([GE integration plans value and timing of cost savings]) leading to annual variable cost savings of [GE integration plans value and timing of cost savings] by year 2019 all of which are classified as utilisation efficiencies by the Notifying Party.

¹¹²⁴ These efficiencies have been previously reported to amount to [value of cost savings]. The reduction of [value of cost savings] follows from decreased savings in "indirect buy" (from [value of cost savings] to [value of cost savings]) and in [source of cost savings (from [value of cost savings] to [value of cost savings])].

¹¹²⁵ See the Reply to the Statement of Objections, paragraph 550 and Annex 7.F.

¹¹²⁶ See the Reply to the Statement of Objections, paragraph 546.

¹¹²⁷ See the Reply to the Statement of Objections, paragraph 547.

- (1263) The Notifying Party reports that none of the SG&A savings brought about by the Transaction can be allocated to Medium segment of the worldwide market for 50 Hz HDGTs.

8.11.2.2. Overview of efficiencies related to thermal services

- (1264) The Notifying Party estimates that total cost savings in thermal services (including HDGTs and other equipment used in CCPPs as well as other thermal applications) amount to [value of cost savings] by [timing of efficiencies], of which [value of cost savings] in field services, parts & repairs, technology and sourcing are anticipated to represent variable cost savings.¹¹²⁸ The Notifying Party classified [value of cost savings] of the overall variable cost savings of [value of cost savings] as other cost savings, whilst it reported [value of cost savings] to represent utilisations efficiencies.
- (1265) The remaining claimed variable cost savings (in total, approximately [value of cost savings])¹¹²⁹ include savings expected with STs and generators both used in CCPPs and used in thermal applications other than CCPPs. However, the Notifying Party was not in the position to isolate the cost savings associated with STs and generators that can be attributed only to CCPP applications, as it *"has not analyzed how synergies would be split between generators associated with GTs and other applications and how they would be split between STs for combined cycle plants and other applications"*.¹¹³⁰ The Notifying Party further reports that it *"provided estimates for generator and ST efficiencies based on prior business experience, but does not have a good basis for making estimates by specific services efficiencies categories."* For that reason, the Notifying Party did not provide the Commission with the respective figures.
- (1266) The Notifying Party expects that HDGTs alone account for [value of cost savings] of the [value of cost savings] annual variable cost savings by [timing of efficiencies].
- (1267) As regards thermal services in the Medium segment of the worldwide market for 50 Hz HDGTs, the Notifying Party estimates that [value of cost savings] of annual variable cost savings will be realised by [timing of efficiencies] of which [value of cost savings] are classified as utilisation efficiencies. As in the case of gas products (see Recital (1244)), to estimate claimed variable cost savings related to thermal services in the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran, the Notifying Party multiplied *"the total 50Hz Medium GT variable costs by the proportion of 50Hz Medium GTs outside China and Iran to all 50Hz Medium GTs that Alstom and GE service"*,¹¹³¹ which yields a variable cost savings estimate that amounts to [value of cost savings].¹¹³²

¹¹²⁸ See the Reply to the Statement of Objections, paragraphs 529 and 530.

¹¹²⁹ Note that these savings of [value of cost savings] are obtained by subtracting other cost savings of [value of cost savings] as well as utilisation efficiencies of [value of cost savings] from the overall claimed variable cost savings in thermal services ([value of cost savings]).

¹¹³⁰ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, question 1, Annex 1.2, page 6, footnote i. See also the Reply to the Statement of Objections, paragraph 536.

¹¹³¹ See GE's reply to the Commission's Request for Information N° 52, 17.07.2015, paragraph 3.

¹¹³² See GE's reply to the Commission's Request for Information N° 52, 17.07.2015, paragraph 1.

(i) Sourcing

- (1268) The Notifying Party argues that annual cost savings in sourcing across the total thermal services business are expected to amount to [value of cost savings] by [timing of efficiencies] of which [value of cost savings] represent variable cost savings. Note that [value of cost savings] (out of [value of cost savings]) are attributable to HDGTs alone and are claimed to represent additional cost savings.
- (1269) The Notifying Party believes that it can achieve [0-20]% annual savings (approximately [value of cost savings] per year in [timing of efficiencies]) on common purchases of direct material which are estimated to amount to [value of cost savings]. This is argued to follow from (i) [GE integration plans] which will result in immediate savings and (ii) [GE integration plans] which will permit the combined company to achieve even greater volume discounts.
- (1270) The Notifying Party submits that it can achieve a [0-20]% annual savings on non-common spend on direct material, which is estimated to amount to [value of cost savings] by [timing of efficiencies]. This will lead to approximately [value of cost savings] in annual variable cost savings resulting from [GE integration plans].
- (1271) Finally, the Notifying Party claims that it can achieve annual variable cost savings of [value of cost savings] by [timing of efficiencies] from indirect purchases of which [value of cost savings] (approximately [60-80]%) are attributable to HDGTs alone.¹¹³³
- (1272) For the Medium segment of the worldwide market for 50 Hz HDGTs, the Notifying Party estimates that annual variable cost savings attributable to HDGTs alone will amount to [value of cost savings] by [timing of efficiencies], namely approximately [20-40]% of the [value of cost savings].

(ii) Spare parts manufacturing and repair

- (1273) Total annual savings from parts and repairs are expected to be approximately [value of cost savings] by [timing of efficiencies] of which [value of cost savings] represent variable cost savings. Further, [value of cost savings] are claimed to be realised with HDGTs alone of which [value of cost savings] are classified as utilisation efficiencies.
- (1274) The Notifying Party plans to achieve the annual variable cost savings of [value of cost savings] through [GE integration plans]. [value of cost savings] will be saved through [GE integration plans], whilst further savings of [value of cost savings] will not involve the closure of shops.
- (1275) The Notifying Party also expects to realise [value of cost savings] of variable cost savings on a spend of approximately [value of spend] on factory-related

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Note that the Notifying Party has previously assumed that all indirect buy savings were fixed cost savings (see GE's reply to the Commission's Request for Information N° 34, 12.05.2015, paragraph 57). In its Reply to the Statement of Objections, however, the Notifying Party *"revised this assumption because some of the indirect buy cost savings are variable. GE now projects that [40-60]% of the [value of cost savings] year 5 thermal indirect buy cost savings is variable"* (See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, question 3).

labour and overhead cost [integration plans] of spare parts that are, however, not managed by the Notifying Party's services business.

- (1276) The Notifying Party estimates that variable cost savings with HDGTs alone in worldwide 50Hz Medium segment accounts for approximately [20-40]% ([value of cost savings]) of the [value of cost savings].

(iii) Field services

- (1277) The Notifying Party expects to optimise its variable costs within the field services structure by combining the best of the Parties' capabilities and thereby eliminating the unnecessary and overlapping roles and responsibilities, as well as utilising the best available tools and technologies from both businesses. This is estimated to result in [value of cost savings] in annual variable cost reductions for the overall thermal services business [timing of efficiencies] (out of [value of cost savings] in total annual cost savings) of which [value of cost savings] are solely attributable to HDGTs. According to the Notifying Party, the latter consist of [value of cost savings] other cost savings and [value of cost savings] utilisation efficiencies.
- (1278) The annual variable cost savings in the thermal business constitute savings that are expected to be achieved on the combined services spending of approximately [value of cost savings] on compensation and benefits for employees and an additional [value of cost savings] on craft labour and field related sourcing, including cranes, scaffolding, etc.
- (1279) The Notifying Party expects that HDGTs in worldwide 50Hz Medium segment will account for approximately [20-40]% (namely, [value of cost savings]) of the overall HDGT related variable cost savings of [value of cost savings].

(iv) Technology

- (1280) The Notifying Party expects to achieve [value of cost savings] in total annual cost savings in technology related thermal services by [timing of efficiencies]. Annual variable cost savings in overall thermal services account for [value of cost savings] and result from reorganising engineering activities [GE integration plans]. According to the Notifying Party, [value of cost savings] of these savings are solely attributable to HDGTs and entirely constitute utilisation efficiencies.
- (1281) For the Medium segment of the worldwide market for 50 Hz HDGTs, the Notifying Party estimates [value of cost savings] of variable cost savings with HDGTs alone per year by [timing of efficiencies].

8.11.2.3. Summary of the Notifying Party's overall efficiencies claim

- (1282) The following table shows the annual variable cost savings in each category (as defined by the Notifying Party) for [timing of efficiencies], where the distinction between gas related thermal products and thermal services is maintained. In addition, figures are reported distinguishing (i) savings only related to HDGTs and (ii) savings related to HDGTs and other CCPP equipment and to all thermal services, respectively, based on the estimates provided by the Notifying Party.

Table 41: Annual variable cost savings in year five claimed by the Notifying Party for Worldwide (in USD million)

	Thermal products		Thermal services	
	HDGTs only	HDGTs + other CCPP equipment	HDGTs only	All Thermal services
Sourcing	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Manufacturing	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Field services	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Parts & Repairs	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
SG&A	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Technology	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Total	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]

Source: Reply to the Statement of Objections, Section XII, 26 June 2015.

(1283) Table 42 pools gas related thermal products and thermal services. It distinguishes instead variable cost savings classified as utilisation efficiencies from those classified as other cost savings by the Notifying Party.

Table 42: Annual variable cost savings in year five claimed by the Notifying Party split into utilisation efficiencies and other cost savings for Worldwide (in USD million)

	Thermal products and services Other Cost Savings		Thermal products and services Utilisation Efficiencies	
	HDGTs only	HDGTs + other CCPP equipment	HDGTs only	HDGTs + other CCPP equipment
Sourcing	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Manufacturing	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Field services	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Parts & Repairs	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
SG&A	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Technology	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Total	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]

Source: GE's reply to Commission's Request for Information N°49, 14.07.2015, Annex 1.2.

- (1284) The total sum of annual variable cost savings for HDGTs and other CCPP equipment and all thermal services, respectively, in Table 42 ([value of cost savings]) does not correspond to the total sum of annual variable cost savings in Table 41 ([value of cost savings]). The reason is that, as already discussed in Recital (1262), the Notifying Party was not in the position to isolate the thermal services cost savings associated with STs and generators that can be attributed only to CCPP applications.
- (1285) For completeness, the Commission notes that the Notifying Party has provided rough aggregate information on annual variable cost savings in thermal services for STs and generators used in CCPPs (without reporting them per service cost category or splitting them into utilisation efficiencies and other cost efficiencies).¹¹³⁴ More precisely, the Notifying Party claimed that annual variable cost savings in thermal services associated with CCPPs will approximately amount to [value of cost savings] for generators and [value of cost savings] for STs across all categories (that is to say, field services, parts and repairs, sourcing and technology) by [timing of efficiencies]. For the Medium segment of the worldwide market for 50 Hz HDGTs, the Notifying Party claims that across all cost categories [value of cost savings] and [value of cost savings] can be attributed to STs and generators, respectively, used in CCPPs.

¹¹³⁴ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, question 1, Annex 1.1, page 1.

- (1286) However, the Commission considers that, on top of being a rough estimate, this information cannot be presented in a detailed manner so that thermal service variable cost savings associated with STs and generators used in CCPPs are not available per cost category and therefore cannot be split into utilisation efficiencies and other cost savings. In any event, the savings associated with servicing of CCPP equipment other than HDGTs are not significant, and do not affect the overall efficiency claim made by the Notifying Party.
- (1287) As discussed in Recital (1240), the variable cost savings figures reported in Table 41 and Table 42 cover the Large segment and the Medium segment as well as all 50Hz frequency areas and all 60Hz frequency areas and thus include China and Iran. For the purpose of this assessment, to obtain figures only attributed to 50Hz excluding China and Iran, the Commission follows the Notifying Party's assumption and multiplies the overall variable cost savings by a factor [40-60]% (see Recital (1240)).
- (1288) The overall variable cost savings claimed by the Notifying Party for HDGTs in 50Hz areas excluding China and Iran therefore equal [value of cost savings] (that is to say, [40-60]% times the sum of [value of cost savings] and [value of cost savings] – as set out in the last row of Table 42). The variable cost savings claimed for HDGTs and related equipment sold in CCPP applications for 50Hz areas excluding China and Iran equal [value of cost savings] (namely, [40-60]% times the sum of [value of cost savings] and [value of cost savings] – as set out in the last row of Table 42).
- (1289) Table 43 and Table 44 replicate Table 41 and Table 42, respectively, except that they relate to the information provided by the Notifying Party on the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran.

Table 43: Annual variable cost savings in year five claimed by the Notifying Party for the worldwide 50Hz Medium segment excluding China and Iran (in USD million)

	Thermal products		Thermal services	
	GTs only	GTs + other CCPP equipment	GTs only	All Thermal services
Sourcing	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Manufacturing	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Field services	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Parts & Repairs	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
SG&A	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Technology	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Total	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]

Source: GE's reply to Commission's Request for Information N°49, 14.07.2015, Annex 1.1 and reply to Commission's Request for Information N°52, 17.07.2015, questions 1-3.

Table 44: Annual variable cost savings in year five claimed by the Notifying Party split into utilisation efficiencies and other cost savings for the worldwide 50Hz Medium segment excluding China and Iran (in USD million)

	Thermal products and services Other Cost Savings		Thermal products and services Utilisation Efficiencies	
	GTs only	GTs + other CCPP equipment	GTs only	All Thermal services
Sourcing	[value of cost savings]	² [value of cost savings]	[value of cost savings]	[value of cost savings]
Manufacturing	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Field services	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Parts & Repairs	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
SG&A	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Technology	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]
Total	[value of cost savings]	[value of cost savings]	[value of cost savings]	[value of cost savings]

Source: GE's reply to Commission's Request for Information N°49, 14.07.2015, Annexes 1.1 and 1.2 and reply to Commission's Request for Information N°52, 17.07.2015, questions 1-3.

8.11.2.4. The Notifying Party claims that the efficiencies are merger-specific, likely to be passed on to customers and verifiable

(i) Merger specificity

- (1290) As regards the criterion of merger specificity, which requires that the efficiencies have to be a direct consequence of the concentration and cannot be achieved to a similar extent by other means, the Notifying Party submits that Alstom cannot realistically achieve the targeted efficiencies independently or through other merger alternatives.
- (1291) According to the Notifying Party's claim, Alstom's initiatives to recover profitability requires significant cash funding which absent the Transaction would not be available to Alstom. Moreover, Alstom's planned reduction of direct cost by [Alstom restructuring plan] is only a fraction of the cost savings that the Transaction is expected to generate, and in addition, the majority of the savings can only be realised on newly built equipment.
- (1292) Finally, the Notifying Party submits that GE itself could not achieve these synergies without the Transaction. To support this assumption, the Notifying Party provides the following two examples: (i) cost reductions through increased insourcing depend upon using Alstom facilities and obtaining Alstom products that would not otherwise be available to GE, likewise (ii) efficiencies in the service organisation depend upon having the larger installed base of GE and Alstom that can be serviced using common personnel.

(ii) Cost savings are likely to be passed on to customers

- (1293) The Notifying Party argues that HDGT customers almost uniformly buy generators, STs and HRSGs, and that they uniformly buy services for such equipment as well.¹¹³⁵ Thus, according to the Notifying Party, cost synergies beyond those that can be solely attributed to HDGTs are relevant, as they benefit the very same customers that are buying gas turbines.
- (1294) The Notifying Party claims that a large fraction of the efficiencies relate to variable costs, since they affect the production of goods and of services (namely, manufacturing) or field services. This is claimed to be consistent with how the Notifying Party reports its financials. In particular, the Notifying Party claims that the projects-related portion of utilisation efficiencies (including SG&A cost savings, products manufacturing overhead costs savings and portions of field services savings and parts and repair synergies) constitute variable cost savings because they can be assigned to individual projects and increase the Notifying Party's margin and thereby its incentive and ability to pass through these savings to customers.¹¹³⁶ Moreover, it is argued that classifying savings from indirect purchases (related to both gas products and thermal services) as variable costs savings is reasonable, as only those savings are included that are directly related to the level of production.¹¹³⁷

¹¹³⁵ See Annex 5159, paragraph 45.

¹¹³⁶ See the Reply to the Statement of Objections, Section XII, D.

¹¹³⁷ See the Reply to the Statement of Objections, paragraph 594.

- (1295) Variable cost efficiencies related to the discontinuation of Alstom's GT36 and Alstom's overlapping R&D activities are not claimed by the Notifying Party, as it treats "*all such synergies as fixed costs*".¹¹³⁸ Although the Notifying Party claims that it intends to offer new GT26 machines after the Transaction, its "*initial cost savings calculations were based on discontinuing the GT26*".¹¹³⁹ According to the Notifying Party, accounting for the continuation of the GT26 will decrease product manufacturing variable cost savings by [value of cost savings] annually so that (with reference to Table 41) these would amount to [value of cost savings] and [value of cost savings], respectively (instead of [value of cost savings] and [value of cost savings], respectively).
- (1296) The Notifying Party argues that despite variable cost savings being more likely to be passed on to customers in the form of lower prices, these savings are also likely to have non-price output-enhancing effects, such as quality, performance, reliability and efficiency improvements, which are expected to directly benefit customers.¹¹⁴⁰
- (1297) In its economic submission of 16 April 2015, the Notifying Party argues that even a limited pass-through of the variable cost savings that the Notifying Party expects to generate for servicing would be sufficient to offset the possible consumer harm associated with a [5-10]% to [10-20]% price increase for the tenders where the Transaction could lead to a loss of competition.¹¹⁴¹ In the subsequent submission of 6 May 2015, relying on the total thermal business variable costs savings of [value of cost savings]¹¹⁴², the Notifying Party considers that even a pass-through rate of no more than [0-5]% would exceed the effects of a hypothetical price increase of [10-20]% on the affected tenders.
- (1298) For the worldwide 50Hz Medium segment excluding China and Iran, the Notifying Party argues in its economic submission of 13 July 2015 that a pass-through rate of [5-10]% would offset the harm of a hypothetical HDGT price increase of [10-20]% after the Transaction.¹¹⁴³
- (1299) The Notifying Party claims that the pass-through rate would be significantly higher than the threshold levels reported in Recitals (1294) and (1295) as it has strong commercial incentives to pass on efficiencies to its customers in the light of the competitive nature of the gas turbine equipment and the services businesses, as well as the threat that customers could refuse to buy gas turbines or even decommission existing ones in order to avoid service costs.¹¹⁴⁴ Apart from that, the Notifying Party argues that it has an incentive to pass on servicing cost savings, as under a LTSA its "*payments are a function of turbine utilisation*".¹¹⁴⁵

¹¹³⁸ See the Reply to the Statement of Objections, paragraph 582.

¹¹³⁹ See the Reply to the Statement of Objections, paragraph 583.

¹¹⁴⁰ See Annex 5159, paragraph 46.

¹¹⁴¹ See Annex 4713.

¹¹⁴² Note that following certain modifications by the Notifying Party this figure [value of efficiencies] (see also Recital (1241)).

¹¹⁴³ See presentation submitted by GE on 13 July 2015 "GE/Alstom: E-Class Bidding Analysis", page 4.

¹¹⁴⁴ See the Reply to the Statement of Objections, Section XII, E, and Annex 5159, Section III, D.

¹¹⁴⁵ See the Reply to the Statement of Objections, paragraph 608.

- (1300) As regards services variable cost savings in the Medium segment, the Notifying Party claims that in the Medium segment the likelihood of cost savings *"being passed through is enhanced by the presence of significant service competition in that segment"*.¹¹⁴⁶
- (1301) As far as LTSAs are concerned, the Notifying Party claims that, on the one hand, services variable cost savings will be passed through to customers at the time of the initial bid, as a LTSA is typically bid as part of the new equipment bid.¹¹⁴⁷ On the other hand, these cost reductions will benefit those customers not only when they buy new units but also by reducing their costs of servicing their existing fleet, as (i) customers may wish to enter into a new LTSA and threaten the Notifying Party to switch to its competitors when the existing LTSA expires and (ii) LTSAs frequently have termination provisions which will induce the Notifying Party to renegotiate these LTSAs before termination and thereby pass through cost savings.¹¹⁴⁸ As for the latter, the Notifying Party claims that the rate of renegotiation is significant and that, when renegotiation occurs, it typically leads service providers to agree to reduce services prices.¹¹⁴⁹
- (1302) For transactional services and upgrades, synergies are claimed to be passed through to customers in the form of lower prices because multiple services providers are directly competing for each new project.¹¹⁵⁰ Competitive pressure is thereby claimed to be exerted either via competitive tenders or via renegotiation of LTSAs where the latter is alleged to often cover upgrades as well.
- (1303) Given that quality is a cost to the service provider, and since lower quality increases the probability of more service performances under a LTSA, the Notifying Party believes that the combined company will have an incentive to improve quality in order to lower its costs and maintain its quality reputation.¹¹⁵¹
- (1304) In addition, cost savings will also free up cash for use in new investments to develop new service technologies that will improve the performance and the efficiency of installed gas turbines.¹¹⁵² The Notifying Party submits that these upgrades can be the difference between a customer's ability to operate the plant profitably and mothballing the facility. In that respect, the Notifying Party recognises that O&M represents a small fraction of a plant operator's and customer's variable costs respectively, in contrast to, in particular, fuel costs. It also claims that *"it is the component of variable cost over which the operator has the most control"*.¹¹⁵³

¹¹⁴⁶ See presentation submitted by GE on 13 July 2015 "GE/Alstom: E-Class Bidding Analysis", page 4.

¹¹⁴⁷ See the Reply to the Statement of Objections, paragraph 604.

¹¹⁴⁸ See the Reply to the Statement of Objections, paragraph 606.

¹¹⁴⁹ See the Reply to the Statement of Objections, paragraph 607.

¹¹⁵⁰ See the Reply to the Statement of Objections, paragraph 605.

¹¹⁵¹ See Annex 5159, paragraph 57.

¹¹⁵² See Annex 5159, paragraph 58.

¹¹⁵³ See the Reply to the Statement of Objections, paragraph 609.

- (1305) Finally, the Notifying Party argues that the merged entity will be able to develop total plants solutions that Alstom would not have the incentive to develop on its own because of the small size of its fleet.¹¹⁵⁴

(iii) Verifiability

- (1306) The Notifying Party argues that the Transaction is likely to lead to the synergies described above due to its ability and experience to execute synergies plans according to methodologies and best practices it has developed over multiple deals.¹¹⁵⁵ To support this claim, the Notifying Party submits a number of examples of previous deals, showing a track record where not only it realised but also exceeded its synergies targets.
- (1307) In response to a Request for Information N° 34, the Notifying Party has provided the Commission with reports by external experts (Boston Consulting Group (BCG)), who were hired as part of the integration process, underpinning its claims on sourcing synergies, in particular those related to direct purchases of investment castings and forgings, and IT-related synergy opportunities.¹¹⁵⁶
- (1308) The Notifying Party also submitted in its Reply to the Statement of Objections and subsequent Requests for Information¹¹⁵⁷ internal quantitative analyses complementing its efficiency claims, formulated in its Reply to the Statement of Objections, in type and size. These were accompanied by a presentation of the Notifying Party's CEO during a conference where the overall cost savings brought about by the Transaction were publically announced confirming the high-level figures discussed in Recital (1236).¹¹⁵⁸

8.11.3. Commission's assessment

8.11.3.1. Merger specificity

- (1309) As explained in paragraph 85 of the Horizontal Mergers Guidelines, *"efficiencies are relevant to the competitive assessment when they are a direct consequence of the notified merger and cannot be achieved to a similar extent by less anticompetitive alternatives"*.
- (1310) The Commission notes that a significant share of the [GE integration plans] measures forming the planned synergies were already ongoing or envisaged by Alstom pre-merger.
- (1311) As explained in Section 8.10.3, Alstom had launched various restructuring and cost competitiveness measures [ALSTOM restructuring plans],¹¹⁵⁹ [ALSTOM restructuring plans]¹¹⁶⁰ [ALSTOM restructuring plans]¹¹⁶¹ [ALSTOM restructuring plans].

¹¹⁵⁴ See Annex 5159, paragraph 59.

¹¹⁵⁵ See Annex 5159, Section III, A.

¹¹⁵⁶ See GE's reply to the Commission's Request for Information N° 34, 12.05.2015, Annex 13.1 and Annex 13.4.

¹¹⁵⁷ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, and GE's reply to the Commission's Request for Information N° 52, 17.07.2015.

¹¹⁵⁸ See the Reply to the Statement of Objections, Annex 7.A.

¹¹⁵⁹ See Annex 1550, slide 5.

¹¹⁶⁰ See Annex 1550, slides 9 to 11.

¹¹⁶¹ See Annex 1550, slide 13 to 17.

- (1312) Main measures included the [ALSTOM restructuring plans]. The overall objective of the various measures was to reduce the cost base of Alstom's Thermal business "by [value of cost savings] in 3 years" by "reducing the financial impact of overcapacity".¹¹⁶²
- (1313) As regards footprint rationalisation, the [ALSTOM restructuring plans] plans already included [ALSTOM restructuring plans] [ALSTOM restructuring plans], from which the Notifying Party expects significant synergies. The [ALSTOM restructuring plans] plans also included [ALSTOM facilities], as well as [ALSTOM restructuring plans].¹¹⁶³ Synergies expected from [GE integration plans] should therefore be excluded accordingly from the relevant efficiencies.
- (1314) Overall, Alstom was already at the pre-merger stage envisaging a footprint consolidation and business streamlining measures [information on ALSTOM restructuring plans].¹¹⁶⁴
- (1315) The very significant scope of these footprint consolidation and business streamlining measures casts significant doubt on the merger-specificity of the following claimed savings:
- (a) Products – the HDGTs and other CCPP equipment related manufacturing efficiencies based on [GE integration plans and value of efficiencies];
 - (b) Products – the SG&A efficiencies resulting from the restructuring of the project organisation [GE integration plans and value of efficiencies] supporting documents provided by the Notifying Party in its Reply to the Statement of Objections indicate that the assumed savings are [GE integration plans and value of efficiencies], and as such do not appear to be merger-specific;
 - (c) Servicing – the HDGTs related field services efficiencies [GE integration plans and value of efficiencies];
 - (d) Servicing – the HDGTs related parts and repairs efficiencies stemming from [GE integration plans and value of efficiencies].
- (1316) Similarly, the Commission also considers that [GE integration plans] that could have been achieved by Alstom without the Transaction should not be regarded as relevant efficiencies. [information on ALSTOM restructuring plans].¹¹⁶⁵ Such reduction does not seem to be driven by the merger with the Notifying Party, and at least part of it could have been achieved by Alstom irrespective of the merger, as part of the ongoing restructuring plan. This casts additional doubt on the merger specificity of the following efficiencies:
- (a) Products – the SG&A efficiencies related from the restructuring of the project organisation [value and source of cost savings];
 - (b) Servicing – the HDGTs related field services efficiencies [value and source of cost savings].

¹¹⁶² See Annex 1509.

¹¹⁶³ See Annex 1550, slide 16.

¹¹⁶⁴ See Annex 1550, slide 20.

¹¹⁶⁵ See GE's reply to the Commission's Request for Information N° 34, 12.05.2015, paragraph 37.

- (1317) As [value and source of cost savings],¹¹⁶⁶ the Commission considers that the Notifying Party has not demonstrated to a sufficient degree the merger specificity of the claimed savings, [information concerning merger specificity efficiencies].
- (1318) Similarly, [value and source of cost savings] are based on utilising Alstom's local capabilities in low cost countries. [information on cost savings].
- (1319) The Commission therefore concludes that the Notifying Party has not demonstrated to the required standard why several of its efficiencies claims should be considered merger-specific. This conclusion affects in particular a significant part of the worldwide utilisation efficiencies ([value of cost savings]), and a smaller part of the worldwide other cost savings ([value of cost savings]).
- (1320) On the other hand, the Commission accepts that some of the efficiencies claimed by the Notifying Party are likely to be merger specific. This conclusion applies in particular to sourcing efficiencies resulting from applying GE's more advantageous terms to Alstom's purchases of materials (such as investment castings and forgings) and to efficiencies resulting from combining some of Alstom's manufacturing assets (for instance, HRSG production, steel castings and frame and hoods) with the Notifying Party's business.
- (1321) For all other claimed efficiencies not specifically mentioned in this section, the Commission leaves the assessment of merger-specificity open, as it does not affect the overall conclusion of its evaluation of the competitive effects of the transaction.

8.11.3.2. Benefit to consumers

- (1322) In this section, the Commission assesses whether and to which extent the claimed efficiencies by the Notifying Party are likely to benefit customers.

(i) Efficiencies need to be sufficiently timely to be considered

- (1323) The Commission notes that many of the synergy claims made by the Notifying Party apply in terms of size [timing of efficiencies].
- (1324) The timeliness of the efficiency claims needs to be evaluated in the context of the timing of harm to consumers in a consistent manner. Therefore, the Commission considers that in the light of the specific characteristics of the HDGT business, and in particular, the long duration of tenders and subsequent construction of HDGTs, as well as the long-term servicing of CCPPs (which typically lasts over 10 years), the efficiency claims by the Notifying Party can be classified as sufficiently timely.

(ii) Efficiencies not related to the relevant market should not be considered

- (1325) As explained in paragraph 79 of the Horizontal Mergers Guidelines, efficiencies should "*in principle, benefit consumers in those relevant markets where it is otherwise likely that competition concerns will occur*". As such, cost synergies generated substantially outside of the relevant markets should not be taken into consideration.

¹¹⁶⁶ See GE's reply to the Commission's Request for Information N°34, 12.05.2015, paragraph 37.

- (1326) Given that the relevant market is defined to include the first LTSA signed for newly built HDGTs (see Section 7.2.3), the Commission accepts that efficiencies on the servicing side would benefit consumers who procure an HDGT. The Commission also recognises that HDGT customers often buy generators, STs and HRSGs and that HDGT customers uniformly buy services for such equipment as well.¹¹⁶⁷ Moreover, the estimated economic harm (as discussed in Section 8.9.1.2) is measured in relation to overall equipment prices covering HDGTs and, depending on the respective scope, other CCPP equipment (such as STs, generators or HRSGs).
- (1327) On these grounds, the Commission considers that, insofar as they cumulatively meet the criteria formulated in the Horizontal Merger Guidelines, claimed efficiencies associated with other CCPP equipment and servicing of HDGTs and other CCPP equipment would qualify as efficiencies under the Horizontal Merger Guidelines. This conclusion does not apply to thermal equipment not sold together with an HDGT, and therefore to some of the servicing efficiencies claimed by the Notifying Party (see Recital (1262)).
- (1328) Moreover, this conclusion also does not apply to HDGTs and other CCPP equipment offered in markets other than worldwide 50Hz excluding China and Iran. The Commission notes that the Notifying Party has provided detailed efficiencies estimates related to HDGTs alone for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran.¹¹⁶⁸ In terms of the overall efficiency claims made by the Notifying Party (including all platforms, and not just the Medium platform), the Commission considers it appropriate to rely on the estimates provided by the Notifying Party, as discussed in Recitals (1240) and (1284), that [40-60]% of the claimed efficiencies would apply to 50Hz frequency regions excluding China and Iran.
- (iii) Cost reductions which result from anti-competitive reductions in output should not be considered as efficiencies benefiting customers**
- (1329) As explained in the Horizontal Mergers Guidelines, "*cost reductions which merely result from anti-competitive reductions in output, cannot be considered as efficiencies benefitting consumers*".¹¹⁶⁹
- (1330) As such, the Commission considers that cost synergies which to a significant extent derive from the planned discontinuation of Alstom's HDGTs R&D activities and of the GT36 cannot be taken into account as relevant efficiencies. As the Notifying Party has submitted that cost savings stemming from the discontinuation of the GT36 and Alstom's overlapping R&D activities were not included in its claimed efficiencies (see Recital (1292)), they do not affect the claimed variable cost savings in any event.
- (iv) The Notifying Party overstates the share of variable costs in the total synergies expected from the merger**
- (1331) As explained in the Horizontal Merger Guidelines, in order to assess "*whether efficiencies will lead to a net benefit to consumers, cost efficiencies that lead to*

¹¹⁶⁷ See Annex 5159, paragraph 45.

¹¹⁶⁸ See Recital (1244), as well as Table 43 and Table 44.

¹¹⁶⁹ Horizontal Merger Guidelines, paragraph 80.

reductions in variable or marginal costs are more likely to be relevant to the assessment of efficiencies than reductions in fixed costs; the former are, in principle, more likely to result in lower prices for consumers".¹¹⁷⁰ As such, the Commission assesses which of the Notifying Party's claimed efficiencies qualify as variable cost savings (as claimed by the Notifying Party), as opposed to fixed cost savings.

- (1332) The Commission considers that the methodology employed by the Notifying Party to identify the variable cost elements of the expected synergies significantly overestimates the proportion of savings that are variable. The Notifying Party considers all of the gas product manufacturing and gas product sourcing savings, large parts of the service sourcing savings, field services savings and parts and repairs savings, as well as parts of SG&A savings and service technology savings as variable, because they can be related to the production of goods (or services).¹¹⁷¹ However, the Commission considers that these savings largely include fixed cost elements (overheads) and, therefore, fail to constitute variable cost savings.
- (1333) In particular, the Commission considers that savings due to [source of efficiencies] represent fixed cost savings. These savings decrease the average cost of production (by spreading a given level of fixed costs over a greater volume of units after the Transaction) but do not affect the variable cost of production.
- (1334) Similarly, savings in staff costs achieved by [source of efficiencies] are considered to affect fixed costs rather than variable costs. This is consistent with the claim made by the Notifying Party that there is duplication of functions pre-merger. A lower level of resources can therefore be used by the combined entity after the Transaction without having to reduce the overall output of the merged entity and demonstrates that these resources do not vary with the level of output, and thus do not represent variable costs.
- (1335) The Commission therefore considers that the utilisation efficiencies claimed by the Notifying Party would not result in a reduction of variable costs, but instead lead to a better utilisation of the assets of the merged entity and a more efficient use of fixed costs. With reference to Table 42 this implies that the claimed utilisation efficiencies [evaluation of efficiencies] would not lead to a reduction of variable costs, and as such are unlikely to benefit consumers. Precisely, the following claimed efficiencies are concerned:
- (a) Manufacturing – [value and source (integration plans) of cost savings];
 - (b) SG&A - restructuring of the project organisation [value and source (integration plans) of cost savings];
 - (c) Sourcing – utilisation efficiencies from organisation restructuring [value and source (integration plans) of cost savings];
 - (d) Field Services – [value and source (integration plans) of cost savings];

¹¹⁷⁰ Horizontal Merger Guidelines, paragraph 80.

¹¹⁷¹ See Annex 5159, Section D, and the Reply to the Statement of Objections, Section XII, B and D.

- (e) Part and Repairs – restructuring [value and source (integration plans) of cost savings];
 - (f) Service Technology – restructuring engineering activities[value and source (integration plans) of cost savings]
- (1336) The fact that utilisation efficiencies should not be considered as variable cost savings is further confirmed by an analysis of the financial information that GE uses when preparing its bids for new tenders for HDGTs and related equipment and LTSAs. Based on the internal [title of internal GE report] that the Commission has reviewed, labour and overhead costs appear to be generally a small fraction of the total variable costs of a Gas Turbine. For example, based on the [title of internal GE report] tables included in the [title internal GE document] reports for [number of tenders] EEA tenders,¹¹⁷² the Commission finds that material costs account for [80-100]% of the variable costs associated with the Gas Turbine, with labour and overhead only accounting for [0-20]% of variable cost.¹¹⁷³
- (1337) The gross margins reported in the [title of internal GE report] have been used by the Commission in its economic analysis of tenders (to measure the profitability of each tender, and the impact of competition on tender profitability). The Notifying Party has not contested the fact the gross margins reported in the [title of internal GE report] provide an adequate measure of the profitability of each tender and of GE's pricing decisions. Cost reductions affecting costs not considered in [reference of efficiencies] would therefore not lead to more aggressive pricing by GE.
- (1338) Moreover, the Notifying Party has explained to the Commission, in connection to project management costs, that as a standard accounting practice, the [title and methodology used in internal GE report].¹¹⁷⁴ [evaluation of efficiencies].
- (1339) Based on this evidence, the Commission also rejects the Notifying Party's argument that all manufacturing costs [value and source of efficiencies] should be treated as variable cost for the purposes of the assessment of efficiencies. For the purposes of evaluating the Notifying Party's efficiency claims, the Commission assigns significantly more weight to how GE prices its product and services in practice, as reflected in the [title of internal GE report] reports, than on its accounting practices.
- (1340) In terms of the non-utilisation efficiencies (that is to say, other cost savings) claimed by the Notifying Party, not enough evidence has been provided on whether service efficiencies in parts and repairs, where the Notifying Party expects to achieve cost savings of [value of efficiencies] through [GE integration plans], should be classified as variable costs. The Notifying Party

¹¹⁷² These are the following tenders: [name of projects].

¹¹⁷³ The variable cost for HDGTs are defined here as the sum of material, overhead ("OH") and labour costs. Adding other variable costs (for example warranty cost) would further reduce the weight of overhead and labour in the total variable cost.

¹¹⁷⁴ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, paragraph 20.

has not provided any detailed evidence that the related costs affected by the planned restructuring measures are of a variable nature.¹¹⁷⁵

- (1341) The Commission therefore concludes that insufficient evidence has been provided by the Notifying Party to show that the claimed utilisation efficiencies ([value of efficiencies], worldwide) and part of the other cost savings ([value of efficiencies] out of [value of efficiencies], worldwide) would affect costs that are variable in nature. The Commission also concludes that the Notifying Party failed to prove that these claimed efficiencies [information on efficiencies] are likely to benefit consumers.
- (1342) Moreover, the Notifying Party has also not provided detailed evidence on whether cost savings derived from [value and source of efficiencies] should be classified as variable costs. The Commission does not conclude on whether this item of the claimed efficiencies is likely to benefit consumers, as in any event this efficiency item has not been adequately shown to be merger specific (see Recital (1315)).
- (1343) On the other hand, the Commission accepts that the bulk of other cost savings ([value of cost savings], worldwide, corresponding to [value of cost savings] for 50Hz regions excluding China and Iran) affect variable costs and may therefore benefit consumers (subject to the following considerations on pass-through).

(v) Assessment of incentives to pass on variable cost efficiencies to customers

- (1344) The Commission recognises that the merged entity has an incentive to pass on certain variable cost efficiencies to customers in relation to newly-built products, in order to improve its competitiveness and increase its likelihood of winning future tenders.
- (1345) The Commission also recognises that the merged entity has an incentive to pass on certain efficiencies to customers in relation to new LTSAs, the cost of which is typically taken into account by customers during tenders together with the price of new equipment.
- (1346) The Commission further notes that a large share of the servicing efficiencies claimed by the Notifying Party applies to existing LTSAs rather than to new LTSAs. The pass-through of cost reductions for existing LTSAs is considered to be less direct than for new LTSAs and might result in a lower degree of overall pass-through. This follows from the fact that the scope and pricing of existing LTSAs has already been determined for a long duration. This limits the incentives by the OEM to further reduce the price of the LTSA if its variable costs are reduced, given that such a price reduction may not lead to greater servicing revenues.
- (1347) On the other hand, the Commission also recognises the arguments put forward by the Notifying Party that LTSAs are frequently renegotiated, and that OEMs face incentives to increase the utilisation rates of their HDGTs to increase their

¹¹⁷⁵

The Notifying Party also explained that, [GE service business organisation], the claimed efficiencies present the service business's "*best estimate*" [GE service business organisation] (See the Reply to the Statement of Objections, paragraph 562). Therefore, in addition to having failed to prove the variable cost nature of the claimed cost savings, [information on efficiencies].

servicing revenues. The latter follows from the fact that "*payments are a function of turbine utilisation*".¹¹⁷⁶ In relation to the former, as discussed in Recital (1298), renegotiations may stem either from customers inducing the Notifying Party to offer more favourable terms by threatening it to switch to its competitors when the existing LTSA expires or from LTSAs having termination provisions which may induce the Notifying Party to renegotiate these LTSAs before termination. These mechanisms are likely to induce the OEM to at least partially pass on any variable costs savings in the form of lower servicing prices.

- (1348) The degree of pass-through of servicing efficiencies for existing LTSAs is likely to be higher for mature platforms (such as the Medium segment) than for less mature platforms (such as the Large and Very Large segment). This follows from, as discussed in Recital (1297), the existence of more effective competition from ISPs for more mature technologies which makes it more likely that existing LTSAs will be renegotiated over time.
- (1349) In conclusion, the Commission considers that standard considerations on the pass-through rate of variable cost savings apply to variable cost efficiencies linked to new product sales and associated LTSAs. For existing LTSAs, the pass-through rate of variable cost savings is likely to be lower than for new product sales and associated LTSAs, in particular for less mature platforms where competitive pressure from ISPs is more limited. On the other hand, the pass-through rate for existing LTSAs on more mature platforms (like the Medium segment) is likely to be higher.

8.11.3.3. Verifiability

- (1350) The Commission has focused its assessment of verifiability of the Notifying Party's efficiency claims on those items that are deemed to be merger-specific and that may relate to variable costs, based on the evaluation contained in the previous two sections. These include the following cost categories (exclusively):
 - (a) sourcing efficiencies for products ([value of cost savings] overall, corresponding to [value of cost savings] for 50Hz excluding China and Iran, and to [value of cost savings] for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran);
 - (b) sourcing efficiencies for servicing ([value of cost savings] overall, corresponding to [value of cost savings] for 50Hz without China and Iran, and to [value of cost savings] for Medium 50Hz excluding China and Iran); and
 - (c) manufacturing efficiencies related to lower costs of steel castings, HRSGs and frames and hoods ([value of cost savings] overall, corresponding to [value of cost savings] for 50Hz excluding China and Iran, and to [value of cost savings] for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran).

¹¹⁷⁶

See the Reply to the Statement of Objections, paragraph 608.

- (1351) Within the cost categories listed above, the Commission considers that the following items have *not* been sufficiently verified by the Notifying Party:¹¹⁷⁷
- (a) The product sourcing efficiencies include [value of cost savings] for HRSG related savings. This savings assumption is hard-coded in the underlying file provided by the Notifying Party, without any further explanation or calculation,[evaluation of efficiencies].¹¹⁷⁸ The [evaluation of efficiencies] is also the same exact savings figure assumed for HRSG related manufacturing savings, suggesting that it might have been double counted;
 - (b) The service sourcing efficiencies include [value of cost savings], which do not correspond to any common spend by GE and Alstom. In response to a question by the Commission on this item, the Notifying Party explained that the assumed efficiencies reflect miscellaneous savings, including Trade Payable Services ("TPS") and productivity increases.¹¹⁷⁹ The Commission notes however that TPS savings are already included via an own category within the product sourcing savings ([value of cost savings]), and that no details have been provided on the alleged productivity increases.
- (1352) The Commission considers that the following cost item have been sufficiently verified by the Notifying Party:
- (a) Direct sourcing savings [source of cost savings], amounting to [value of cost savings] overall (corresponding to [value of cost savings] for the worldwide market for 50Hz HDGTs excluding China and Iran, and to [value of cost savings] for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran).¹¹⁸⁰ The Notifying Party has provided a detailed study by a management consultancy dated 17 December 2014 to show that [ALSTOM pricing data].¹¹⁸¹ In its assumptions on sourcing efficiencies, the Notifying Party has assumed that it can achieve savings of [40-60]% on Alstom's total spend [source of cost savings].¹¹⁸² This savings figure falls within the range of price differentials computed in the consultancy study and is towards the lower bound of the largest component of the assumed savings (that is to say, investment castings). On this basis, the Commission concludes that the savings estimated on [source of cost savings] have been appropriately verified. However, the Commission also notes that [value of cost savings] out of the [value of cost savings] overall direct sourcing savings (corresponding to [value of cost savings] out of the [value of cost savings] associated with the worldwide market for 50Hz HDGTs excluding China and Iran) concern product sourcing efficiencies not relevant to the Medium segment and thus largely associated with the Large segment. Given that the Notifying Party is

¹¹⁷⁷ In addition, the Commission notes that servicing efficiencies on parts and repair stemming from restructuring of spare parts manufacturing facilities are not sufficiently verified (see Recital (1340) and related footnote).

¹¹⁷⁸ See the Reply to the Statement of Objections, Annex 7.D.

¹¹⁷⁹ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, paragraph 59.

¹¹⁸⁰ The Commission considers sourcing efficiencies, as, on balance, it could not find sufficient evidence to establish that the Transaction would lead to a deterioration of competitors' sourcing conditions (see Recital (485)).

¹¹⁸¹ See GE's reply to the Commission's Request for Information N° 34, 12.05.2015, Annex 13.1.

¹¹⁸² See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, paragraph 53.

likely to discontinue Alstom's Large and Very Large offerings after the Transaction, the Commission considers that these savings are unlikely to materialise (and in any event would not benefit consumers due to product discontinuation).

- (b) Double-marginalisation efficiencies on HRSGs, [value of efficiencies] overall (corresponding to [value of efficiencies] for 50Hz excluding China and Iran, and to [value of efficiencies] for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran). The Notifying Party has provided a detailed quantitative analysis showing the effects of using Alstom designed and built HRSGs [GE integration plans].¹¹⁸³ The efficiencies resulting from in-sourcing HRSGs after the Transaction are based on the assumption that [GE integration plans].¹¹⁸⁴
- (c) Double-marginalisation efficiencies on frames and hoods, [value of efficiencies] overall (corresponding to [value of efficiencies] for 50Hz excluding China and Iran, and to [value of efficiencies] for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran). The Notifying Party has provided a detailed quantitative analysis on the savings related to [source of efficiencies].¹¹⁸⁵ This analysis is based on the assumption that [underlying assumptions used by GE to calculate value of cost savings, including assumptions on number of units, value of saving per unit and average price per unit].¹¹⁸⁶ [underlying assumptions used by GE to calculate value of cost savings].¹¹⁸⁷
- (d) Lower material cost through [GE integration plans], amounting to [value of cost savings] overall (corresponding to [value of cost savings] for 50Hz excluding China and Iran, and to [value of cost savings] for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran). On the basis of a detailed quantitative analysis,¹¹⁸⁸ the Notifying Party is projecting [underlying assumptions used by GE to calculate value of cost savings, including assumptions on volume and average price].¹¹⁸⁹
- (1353) In relation to the remaining sourcing and manufacturing efficiencies not discussed in paragraphs (1348) and (1349), the Commission has a number of reservations on whether the Notifying Party has provided sufficient evidence to demonstrate their verifiability.
- (1354) In particular, no detailed analysis or documentary evidence has been submitted by the Notifying Party to support the assumptions made on the percentage reduction in costs following the Transaction ([evaluation of efficiencies]). The Notifying Party has supported its savings assumptions only in general terms, by reference to “historical experience”, extrapolation from [evaluation of

¹¹⁸³ See the Reply to the Statement of Objections, Annex 7.B.

¹¹⁸⁴ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, paragraph 39.

¹¹⁸⁵ See the Reply to the Statement of Objections, Annex 7.B.

¹¹⁸⁶ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, paragraph 43.

¹¹⁸⁷ See the Reply to the Statement of Objections, Annex 7.B.

¹¹⁸⁸ See the Reply to the Statement of Objections, Annex 7.B.

¹¹⁸⁹ See GE's reply to the Commission's Request for Information N° 49, 08.07.2015, paragraph 46.

efficiencies], and cost savings resulting from past mergers (with no analysis of their comparability with the current merger).

- (1355) In relation to savings on non-common spend, the Commission notes that the original detailed file submitted by the Notifying Party included a large synergy of [value of cost savings] denoted as “All-other”, with no indication of common spend between the merging parties (and therefore no apparent support for the assumption of sourcing efficiencies).¹¹⁹⁰ Following a question from the Commission, the Notifying Party has re-allocated the assumed synergy across a number of “flange-to-flange” cost items (assuming a [0-20]% cost reduction on these items), and submitted an internal document supporting this assumption.¹¹⁹¹ The Commission accepts that the savings originally indicated under the catch-all category “All-other” may instead refer to assumed savings on flange-to-flange items. However, the revised new computations submitted by the Notifying Party also lead to some unrealistic results, [evaluation of efficiencies]. This inconsistency casts significant doubt on the verifiability of the assumed cost savings.
- (1356) In addition, in relation to the total assumed savings on indirect purchases ([value of cost savings] for gas products, including HDGT and CCPP equipment, and [value of cost savings] for HDGT services), the Commission notes that the methodology used by the Notifying Party to estimate the share of cost savings that is allegedly variable overestimates the assumed variable cost savings [evaluation of efficiencies].¹¹⁹² Moreover, the assumed savings on indirect purchases for servicing are also in the range of [0-20]-[0-20]%, which is well in excess of the [0-20]% saving that the Notifying Party claims that can be assumed based on historical experience. The Notifying Party has not provided sufficient evidence substantiating this assumption, which casts doubts on the verifiability of the overall savings on indirect purchases. The Commission therefore considers the overestimate in the claimed savings on indirect purchases of [value of efficiencies] should not be included in the efficiencies computations.
- (1357) In relation to TPS savings, the Commission notes that whilst the Notifying Party has submitted detailed computations on the source of the assumed savings, limited evidence has been submitted on the assumed incremental savings relative to Alstom’s stand-alone plans.

¹¹⁹⁰ See the Reply to the Statement of Objections, Annex 7.D.

¹¹⁹¹ See GE’s reply to the Commission’s Request for Information N° 49, 08.07.2015, Annex 20.1.

¹¹⁹² This overestimate follows from the fact that the computations of variable cost savings provided by the Notifying Party do not simply sum up the savings associated with the variable cost items (that is to say, Facilities Management, Utilities, Consumables, Logistics and Engineering), and are instead based on more indirect computations (see GE’s reply to the Commission’s Request for Information N° 49, 08.07.2015, Annex 31.1). When the savings associated with each variable cost items are summed up instead, total variable cost savings on indirect purchases amount to [value of cost savings] for gas products (including CCPP equipment), and [value of cost savings] for HDGT gas services, yielding a total saving of [value of cost savings].

- (1358) In relation to HRSG savings resulting from [GE integration plans] ([value of cost savings])¹¹⁹³, the Commission notes that only high-level evidence has been supplied on the nature and alleged greater productivity of the new equipment.
- (1359) Notwithstanding the reservations listed above, the Commission leaves the assessment of the verifiability of cost items other than those listed in paragraphs (1348) and (1349) open, as it does not change the final conclusion of the assessment of competitive effects.
- (1360) In conclusion, the Commission accepts that [value of efficiencies] of other cost savings are sufficiently verified (in addition to being merger-specific and likely to benefit consumers). These costs savings therefore qualify as efficiencies under the meaning of the Horizontal Merger Guidelines. The corresponding amount for 50Hz regions excluding China and Iran is given by [value of efficiencies]. The corresponding amount for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran is of [value of efficiencies].
- (1361) In relation to an additional [value of cost savings] of other cost savings the Commission leaves the assessment of verifiability open, as it does not affect the outcome of the overall analysis of competitive effects.¹¹⁹⁴ The corresponding amount for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran is of [value of efficiencies].

8.11.4. Conclusion

- (1362) Overall, the Commission concludes that [value of efficiencies] of claimed gas product and gas services savings qualify as relevant efficiencies under the three-pronged test set out in the Horizontal Merger Guidelines, for the relevant geographic market for 50 Hz HDGTs affected by the transaction (namely, 50Hz regions excluding China and Iran). An additional [value of efficiencies] of cost savings may also qualify as efficiencies, notwithstanding the reservations described in the previous section on their verifiability. The Commission therefore considers that the efficiencies associated with the Transaction can be estimated to be in the range of [value of efficiencies] to [value of efficiencies].
- (1363) The Commission further notes that the estimated efficiencies are not sufficient to offset the harm to consumers associated with the Transaction. This is the case even if one considers only the quantifiable harm in the Large segment which is discussed in Section 4.4.10.4 of Annex 1. This quantifiable harm relies on illustrative computations of consumer harm from price effects in the Large segment and excludes therefore the additional harm in the Very Large

¹¹⁹³ The Commission notes that the claimed efficiencies amount to [value of cost savings] rather than [value of cost savings], as the Notifying Party was using the figure associated with annual savings by [timing of efficiencies] instead of, which would have been correct and consistent, [timing of efficiencies] (see the Reply to the Statement of Objections, Annex 7.B).

¹¹⁹⁴ The figure of [value of cost savings] excludes from the total other cost savings subject to the verifiability assessment ([value of cost savings]), the cost items for which verifiability has been established ([value of cost savings]), the cost items for which the lack of verifiability has been established ([value of cost savings]), and the overestimate of variable cost savings from indirect purchases ([value of cost savings]).

segment, and the additional harm from the loss of product choice and innovation due to the likely discontinuation of Alstom's Large and Very Large technologies. The Commission's economic analysis of bidding data in the Large segment indicates that the quantifiable adverse impact of the merger on consumers would be in the range of USD 82 million to USD 160 million (as discussed in Recital (1109)).

- (1364) Even if a pass-through rate of [50-60]% for the efficiencies associated with the Transaction is assumed, so that the offsetting benefits to consumers due to efficiencies would be in the range of [value of efficiencies],¹¹⁹⁵ it would still be below the range of the estimated and quantifiable harm for the Large segment.¹¹⁹⁶
- (1365) The Commission further notes that an assumption of [50-60]% pass-through is likely to overestimate the benefits to consumers resulting from cost efficiencies on servicing of existing LTSA, given the long-term nature of servicing agreements and the limited competitive pressure present for less mature technologies like the Large and Very Large platforms.¹¹⁹⁷ The upper bound of consumer benefits noted in paragraph (1361) ([value of efficiencies]) is therefore likely to over-estimate the potential benefits to consumers, potentially by a significant magnitude. The Transaction is therefore likely to lead to net harm to consumers. Moreover, the estimated economic harm is likely to significantly underestimate the total likely harm by disregarding the adverse impact of the Transaction on competition in the Very Large segment, and on product choice and innovation both in the Large and Very Large segments.
- (1366) In relation to specifically the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran, the Commission concludes that the efficiencies associated with the Transaction would be in the range of [value of efficiencies]. The lower bound of this range is given by those efficiencies that in the Commission's analysis meet the three-pronged test contained in the Horizontal Merger Guidelines. The upper bound is derived by adding also efficiencies for which verifiability is doubtful based on the analysis set out in the previous section.
- (1367) The Commission concluded that the Transaction would not lead to the elimination of a close and significant competitor to the Notifying Party in the

¹¹⁹⁵ This amount corresponds to the nominal figure for [timing of efficiencies]. Deflating this amount to today's money (to make it comparable to the estimated economic harm) would further reduce the estimated benefits to consumers.

¹¹⁹⁶ Based on demand projections (see Section 8.2.2), demand for Large HDGTs 50 Hz excluding China in 2019 is not going to be significantly lower than the observed annual demand based on bidding data for the period 2009-2014. Therefore, the balancing exercise on Large HDGTs, where the estimated harm for Large HDGTs 50 Hz excluding China and Iran is compared with the accepted overall efficiencies, is robust to an assumption of a lower demand for Large HDGTs in the future. In any event, a lower demand for Large HDGTs in the future would likely result in a higher future demand for Very Large HDGTs, and therefore greater harm for Very Large HDGTs, which is also relevant for the balancing exercise.

¹¹⁹⁷ The [pass-through rate]% pass-through assumption corresponds to the pass-through applicable to a (residual) monopolist facing a price-elastic linear demand. In the case of existing LTSA subject to limited competitive pressure the Commission considers that a significant share of the services included within the scope of the LTSA may not be price-elastic.

Medium segment. Moreover, the Commission notes that the efficiencies associated with the Transaction are in any case likely to outweigh any hypothetical competitive harm in this segment. The Commission estimates that hypothetical competitive harm in the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran would be USD 7 million per year.¹¹⁹⁸ Comparing the hypothetical harm with the lower bound for efficiencies of [value of efficiencies] implies a pass-through rate that is significantly below [50-60]% to outweigh the hypothetical harm. If instead of overall efficiencies in 50 Hz excluding China and Iran only efficiencies applicable to the Medium segment are considered ([value of efficiencies]), the respective pass-through rate sufficient to outweigh the hypothetical harm of USD 7 million increases but remains significantly below [50-60]%.

- (1368) The Commission considers that in the Medium segment the actual pass-through rate is likely to be higher than the necessary pass-through rate implied by the balancing exercise in Recital (1364) even when the hypothetical harm is contrasted with relevant efficiencies applicable only to the Medium segment. This follows from significant competition for the servicing of Medium HDGTs, both at the time when the initial servicing contracts are signed and subsequently. An OEM is therefore more likely to partially pass on a variable cost reduction to its customers (even for an existing LTSA) in order to reduce the probability of losing the contract to an independent service provider.

8.12. Summary of the findings of the competitive assessment of the overall market for 50 Hz HDGTs as well as of its three sub-segments

8.12.1. Summary of findings in the overall market for 50 Hz HDGTs

8.12.1.1. The market for 50 Hz HDGTs is an oligopolistic market with very high barriers to entry and expansion and high profit margins

- (1369) The Commission's investigation has shown that the market for 50 Hz HDGTs is an oligopolistic market with only four full technology competitors active, Alstom, GE, MHPS and Siemens. In addition some suppliers are also active in the market, although not in the EEA, as licensees of the main OEMs. These cannot however be considered as independent competitors. There is also a fifth OEM, Ansaldo, whose competitiveness and technological strength is

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The average equipment price of GE for the tenders where it competes with Alstom is around [average price of GE equipment] (the Commission has applied an illustrative price increase of [0-5]%, which corresponds to the lower bound of the price effects for the large segment for equipment). The average discounted GE price for the LTSA in competitive tenders is around [average price of GE LTSA] (the observed LTSA price in competitive tenders is around [average price of GE LTSA], discounting this price yields a discounted value of the LTSA of [discount value of GE LTSA]; the Commission has applied an average price increase in the range of [5-10]%, which corresponds to the lower bound of the price effects for the large segment for HDGTs). These price increases imply an average harm per bid around USD [0-5] million (this is based on the sum of the two price effects on HDGT/equipment and on LTSAs). The Commission has applied the lower bounds of price increase derived from tenders for Large HDGTs since there is a lack of competitive closeness between GE and Alstom in the Medium segment. Based on bidding data, the average number of projects per year in the Large segment where GE and Alstom have met during the 2009-2014 period is around [number of tenders]. This implies a total illustrative estimate of consumer harm around USD 7 million per year, at a worldwide level 50Hz excluding China.

significantly weaker than those of the other four OEMs also as a result of its previous role as a licensee of Siemens.

- (1370) The market for 50 Hz HDGTs is characterized by very high barriers to entry, resulting from (i) the high investment and significant research capabilities required, (ii) the high importance of IP rights and know-how, (iii) the need to have service capabilities, (iv) the need to have a sufficiently large installed fleet, and (v) the need for a good reputation.
- (1371) These factors as well as the high differentiation that characterizes the market for 50 Hz HDGTs contribute to very high margins for the OEMs, when considering the sale of new equipment for combined cycle power plants and the associated servicing taken together, even before the Transaction.

8.12.1.2. The Transaction leads to market-leading and often very large market shares in the market for 50 Hz HDGTs

- (1372) The Commission's investigation has shown that pre-merger GE is already the market leader in terms of market shares in the worldwide (excluding China and Iran) market for 50 Hz HDGTs (with market shares above [40-50]%). In the EEA, GE and Siemens have similar positions with Alstom being a close third competitor. Both the worldwide (excluding China and Iran) and the EEA markets for 50 Hz HDGTs are currently very concentrated.
- (1373) The Transaction would add the significant market share from Alstom: more than [20-30] percentage points in the EEA and around [10-20] percentage points at the worldwide level. Post-Transaction GE would thus have very large shares (above 50%) both in the EEA and at a worldwide level, with a large gap over the second competitor, Siemens.
- (1374) MHPS and Ansaldo are much smaller competitors both at the EEA and worldwide level.
- (1375) As regards the production capacity and the installed base, the Transaction would lead to even higher combined shares of the merged entity and a significant increase in size over the second competitor in the market.

8.12.1.3. The Transaction eliminates a significant and close competitor of GE in the overall market for 50 Hz HDGTs

- (1376) GE and Siemens are market leaders in the overall market for 50Hz HDGTs, competing globally and offering a wide range of products delivering strong performance across most technical criteria.
- (1377) Alstom:
 - (a) is competing on par with GE and Siemens in the EEA;
 - (b) is also a global competitor and is a significant challenger to GE and Siemens also in the 50 Hz market outside the EEA;
 - (c) offers best in class flexibility and pollutant emissions performances, only matched to a certain extent by GE and Siemens, and well suited to meet the requirements of European customers;
 - (d) offers cutting edge complementary equipment for CCPPs (in particular generators, STs, HRSGs), as well as strong EPC capabilities;

- (e) benefits from a large installed base of HDGTs worldwide, smaller than that of GE and Siemens, but well ahead of that of MHPS and Ansaldo;
 - (f) benefits from a wide product portfolio and installed base across all power generation equipment, globally.
- (1378) Alstom and GE are close competitors, *inter alia*, because both (i) have a large portfolio of HDGTs addressing the same segments (ii) have a worldwide market presence covering the same regions (iii) offer in 50 Hz regions HDGTs which are typically regarded as comparably reliable by customers and based on proven technology (iv) are largely targeting the same profile of customers. In addition, as regards operational flexibility performances, GE developed machines which have become relatively close to Alstom's in terms of part-load efficiency and emissions. Moreover, internal documents of Alstom show that Alstom typically benchmarks its own models (in terms of technical performance and cost) against those of GE.
- (1379) In view of the above, the Commission considers that Alstom is a significant and close competitor of GE in the overall market for 50 Hz HDGTs.
- (1380) MHPS is primarily focused on the market for 60 Hz HDGTs. Within the market for 50 Hz HDGTs, MHPS focuses mainly on Asian regions. MHPS machines are best suited for base load operations and typically less well suited for the requirements of European customers. Due to both MHPS' strategic focus on other markets and the relative lack of operational flexibility of its machines, MHPS is not a significant competitor in the EEA.
- (1381) Ansaldo has a lower cost strategy, a more limited product portfolio, significantly more limited R&D capabilities compared to its competitors, and focusses on a limited number of geographic markets.
- (1382) Overall, the Commission concludes that, on the overall market for 50Hz HDGTs:
- (a) Alstom is a significant and close competitor of GE (and Siemens);
 - (b) MHPS is a more distant competitor;
 - (c) Ansaldo is an even more distant competitor.

8.12.1.4. The Transaction would further reduce the limited number of alternatives available to customers in the market for 50 Hz HDGTs

- (1383) The Commission's investigation has shown that for customers it is always better to have the maximum number of bidders participating in tenders and thus they generally try to invite the five OEMs to participate in tenders.
- (1384) However, when looking at the segments where both Alstom and GE are present the Commission's investigation has shown that in most of the cases, for the European customers, only Siemens could be considered as a strong commercial alternative to Alstom and GE. In terms of technological positioning, many customers would have only one or no technological alternative to the merged entity post-Transaction. The bidding data analysis supports this evidence.
- (1385) Market participants confirmed that the presence of the remaining OEMs is not likely, post-Transaction, to counteract the reduction of alternatives resulting from the disappearance of Alstom as an independent competitor.

- (1386) By eliminating one independent alternative in the market, the Transaction would thus significantly reduce the choice available to customers in the market for 50 Hz HDGTs.

8.12.1.5. The Transaction eliminates an important competitive force from an innovation and technology point of view in the market for 50 Hz HDGTs

- (1387) The Commission's investigation has shown that Alstom's HDGT portfolio offerings are often best in class in terms of operational flexibility, and that Alstom's HDGT portfolio offerings are highly regarded by customers looking for HDGTs characterized by high operational flexibility.
- (1388) The Commission's investigation has also shown that Alstom has R&D and technological capabilities on par or almost on par with the two market leaders GE and Siemens. In fact, Alstom is a strong competitor in terms of R&D spend (accounting for more than 30% of total industry R&D spend), R&D headcount (accounting for more than 20% of total R&D headcount), R&D and product pipeline, testing facilities and technological abilities.
- (1389) The Commission considers therefore that Alstom, in the overall market for 50 Hz HDGTs, from a technological point of view, is stronger than its market shares suggest.
- (1390) The Transaction would thus remove an important competitive force from an innovation and technology point of view in the market for 50 Hz HDGTs, therefore reducing the overall competitive pressures on the remaining competitors and reducing the overall incentives to invest significantly in innovation.

8.12.1.6. The Transaction will lead to the discontinuation of Alstom's HDGTs for the Large and Very Large segments and forward looking R&D capabilities

- (1391) GE will after the Transaction eliminate most of Alstom's R&D capabilities related to HDGTs. The ability of the merged entity to pursue the development of Alstom's HDGT technologies and to build on Alstom's past technology path will disappear. GE will also discontinue the sale and development of the GT36 as well as the GT26 HDGT.
- (1392) The Transaction would therefore further affect negatively prices and the choices available to customers. It will also reduce the overall incentives to invest significantly in innovation, as compared to the standard effects of a merger. Finally, given the very high barriers to entry and the nature of innovation competition in this industry these significant negative effects on innovation will be long term.

8.12.1.7. The Transaction would significantly impede effective competition because it would have overall significant adverse effects on prices, product choice and innovation

- (1393) In line with its investigation, the Commission considers that the Transaction is likely to have a significant negative effect on commercial conditions and prices, product choice and innovation. These effects are even stronger if GE discontinues some of Alstom's HDGTs. The Commission's economic analysis of the bidding data suggests that the Transaction is likely to lead to significant harmful price effects on customers as a result of potential price increases.

- (1394) The Commission's investigation has shown that market participants expect that the Transaction is likely to have a negative impact on competition and in particular on the commercial conditions and prices of HDGTs as well as product choice and innovation.

8.12.1.8. Defences raised by the Parties

- (1395) First, Alstom claims that its financial situation had in the past and will in future have an appreciable impact on its ability and incentives to compete in market for 50 Hz HDGTs.
- (1396) The Commission concludes that Alstom's financial situation did not before the Transaction have an appreciable impact and, absent the merger, cannot be reasonably expected to have an appreciable impact on future Alstom's ability to effectively compete in the market for 50 Hz HDGTs.
- (1397) As such, the Commission considers that past market shares and past bidding data are representative of Alstom's expected competitive strength in the market for 50 Hz HDGTs absent the merger.
- (1398) Secondly, GE claims that the efficiencies created by the Transaction in particular in gas turbine servicing outweigh the limited harm brought about by the Transaction.
- (1399) The Commission considers that the Notifying Party has not demonstrated that the Transaction would give rise to countervailing verifiable, merger-specific efficiencies which benefit customers and outweigh the harm to competition caused by the Transaction

8.12.2. *Summary of findings in the Large segment of the market for 50 Hz HDGTs*

8.12.2.1. The Transaction leads to market-leading and often very large shares in the Large segment of the market for 50 Hz HDGTs

- (1400) The Commission's investigation has shown that pre-merger GE is already the leader in Large segment of the worldwide (excluding China and Iran) market for 50 Hz HDGTs (with market shares above [40-50]%). In the EEA, GE, Alstom and Siemens have similar market shares. Both the worldwide (excluding China and Iran) and the EEA Large segment of the market for 50 Hz HDGTs are currently very concentrated.
- (1401) Post-Transaction GE would have very large shares in the Large segment given also the large delta associated to the Transaction. In the EEA, the combined share of the Parties is equal to [50-60]%, with an increment of [20-30]%. Siemens is the second player with a share of [20-30]%. At a worldwide (excluding China and Iran) level, the combined share of the Parties is equal to [50-60]% with an overlap of [10-20]%. Siemens would be the second largest competitor [20-30] percentage points behind. MHPS and Ansaldo are much smaller competitors in the Large segment both at the EEA and worldwide level.

8.12.2.2. The Transaction eliminates a significant and close competitor of GE in the Large segment of the market for 50 Hz HDGTs

- (1402) Both from a technological and a commercial point of view Alstom is a significant and close competitor of GE and Siemens.

- (1403) Alstom has best in class operational flexibility, ahead of GE and Siemens. GE and Siemens both globally offer Large HDGTs with strong technical performance, including with regard to operational flexibility (for instance, FlexEfficiency50 package of GE), and as such typically target the same customers as Alstom
- (1404) MHPS, in particular in bids where operational flexibility matters, is a less significant and more distant competitor. MHPS's Large 50 Hz HDGT is typically best suited for base load operations. Due to both MHPS' strategic focus on Asian markets and the lower performance in operational flexibility of its Large machine, MHPS is currently not a significant competitor in the EEA markets.
- (1405) Ansaldo is perceived as technologically weaker (it has lower performances in operational flexibility and efficiency) and from a commercial point of view is even less significant (it focuses only on specific geographic regions).

8.12.2.3. The Transaction would further reduce the limited number of alternatives available to customers in the Large segment of the market for 50 Hz HDGTs

- (1406) In the Large segment, at least for European customers the main credible alternative in the space where Alstom's GT26 and GE's 9F.05 compete is the Siemens' 4000F HDGT.
- (1407) The bidding data analysis in the Large segment also shows that in a significant number of tenders where Alstom competes against GE or Siemens (around [50-60]% in the data provided by the Notifying Party, slightly below [60-70]% using data from competing OEMs), there is only one other firm participating.
- (1408) By eliminating one independent alternative in the market, the Transaction would significantly reduce the choice available to customers in the Large 50 Hz HDGT segment.

8.12.2.4. Post-Transaction GE will not have the incentives to continue actively marketing the GT26 in the way Alstom did pre-merger

- (1409) The Commission notes that: (i) GE has consistently until at least the end of March 2015 worked under the assumption that the GT26 should be discontinued, in particular because of its competitive closeness with other GE machines; (ii) competitors and a number of customers share the view that it will likely make no economic sense to continue marketing both products; and (iii) customers explain that they are unlikely to show interest in a machine that is merely maintained for customers that may require it.
- (1410) Against that background the Commission considers that GE will likely not have the medium and long term ability and incentives, post-Transaction, to continue actively developing the GT26 in the same way as Alstom did pre-merger. Even if the merged entity were to try to "*sell [the GT26] to customers who may want it*", customers would not accept to buy a machine not fully supported by the OEM. The medium and long term effect will thus in any event be tantamount to a discontinuation of the GT26. The GT26 will therefore stop exercising a meaningful competitive pressure on the other competitors in the market for 50Hz HDGTs.

8.12.2.5. Post-Transaction GE will have less incentives and ability to develop upgrades for Alstom's installed fleet of GT26

- (1411) The Commission considers that GE will after the Transaction likely have only limited incentives and ability to develop significant new upgrades for the GT26, compared to the incentives and ability that Alstom would have in the absence of the merger. In particular, upgrades that would have been cross-financed by sales from new HDGTs are likely not to be developed. The Transaction would therefore have stronger harmful effects on innovation in the Large segment.

8.12.2.6. The Transaction would have overall significant adverse effects on prices in the Large segment

- (1412) The Commission's economic analysis of bidding data suggests that the Transaction is likely to lead to significant price related harmful effects on customers. In particular, in the Large segment the harm for customers stemming from the negative effects on price competition in bidding (and thus not including the significant harmful effects on innovation and choice) is estimated in the range of USD 82-160 million per year if a sealed bid auction analytical framework is assumed, and around USD 153 million in case of a second-price auction (see Annex I). The estimated harm is not outweighed by the relevant efficiencies the Transaction could bring about.

8.12.2.7. Conclusion

- (1413) In view of the above, the Commission considers that the Transaction leads to a significant impediment to effective competition in the Large segment of the market for 50 Hz HDGTs

8.12.3. *Summary of findings and effects in the Very Large segment of the market for 50 Hz HDGTs*

- (1414) Firstly, the Commission's investigation has shown that GE, despite having entered recently in the Very Large segment, has already significant shares (above [30-40]% in the EEA and around [20-30]% worldwide), which may constitute an evidence of its market power. This is even more evident taking into account the year 2014 in full. In this case GE's share is equal to [30-40]% while MHPS drops to [10-20]%.
- (1415) Secondly, the Commission's investigation has shown that, in the Very Large segment for 50Hz HDGTs, Alstom is a significant and close competitor of GE.
- (1416) The Commission considers that Alstom's GT36 is the closest competitor, in the Very Large segment for 50 Hz HDGTs, of GE's 9HA.02. Siemens' 8000H is not as close to either Alstom or GE, from a technological point of view.
- (1417) The Commission also concludes that MHPS is not a close competitor of Alstom in the Very Large segment. MHPS's Very Large HDGTs are typically best suited for base load operations and have lower performance in operational flexibility. MHPS have also put limited competitive pressure in the past on GE and Siemens in 50 Hz regions.
- (1418) Thirdly, the Commission considers that GE will post-Transaction probably discontinue the development and marketing of Alstom's GT36. This will have an additional harmful effect on customers and innovation competition.

- (1419) Fourthly, economic estimates based on bidding data would predict a significant harm for customers stemming from the effects of the Transaction on price competition and without even taking into account the harmful effects on innovation competition and product choice. The Notifying Party did not claim efficiencies relating to the Very Large segment and that could compensate for the estimated significant harm (see Recital (1292)).
- (1420) In view of the above, the Commission considers that the Transaction leads to a significant impediment to effective competition in the Very Large segment of the market for 50 Hz HDGTs

8.12.4. Summary of findings and effects in the Medium segment of the market for 50 Hz HDGTs

- (1421) The Commission's investigation has shown that pre-merger GE is already the leader in the Medium segment of the worldwide (excluding China and Iran) market for 50 Hz HDGTs (with market shares around [50-60]%). Post-Transaction, the combined shares of the Parties would be equal to [60-70]% with an overlap of [10-20]% at a Worldwide (excluding China and Iran) market. Siemens and Ansaldo would be the second and third largest competitor with [20-30]% and [10-20]% market shares respectively.
- (1422) Despite the high post-Transaction market shares, the Commission's investigation revealed that from a technological point of view, Alstom's GT13E2 closest competitors in the Medium 50 Hz HDGT segment are Siemens' 2000E and Ansaldo's AE94.2. GE's 9E.03 and MHPS' M701DA appear to be more distant from a technological point of view. Even with the launch of the new 9E.04, GE has become closer to the GT13E2 but only on SC efficiency, while it remains more distant in terms of the other parameters.
- (1423) The qualitative evidence also supports lack of competitive closeness between GT13E2 and 9E.03. As regards the forward looking potential competition between the recently launched GE's 9E.04 and the GT13E2, the Commission has not found evidence that the two machines will closely compete against each other given that SC efficiency is a less relevant factor for Medium SC projects and the two machines will still be significantly distant in term of CC efficiency. Moreover, the requirements of each project in the Medium segment are more differentiated than in other segments.
- (1424) The analysis of past bidding data in the Medium segment also suggests a lack of competitive closeness between the Parties and a limited competitive harm, both for combined cycle applications and simple cycle applications. The Commission also notes that GE will probably not discontinue the GT13 HDGT after the Transaction, which is another factor suggesting that potential harm is likely to be more limited than in the Large and Very Large segments. GE's intention to maintain the GT13E2 in its portfolio also shows that the Parties' offering are complementary rather than close.
- (1425) Therefore, the Commission considers that the Transaction is not likely to significantly impede effective competition in the Medium HDGT segment.
- (1426) Moreover, at a worldwide level 50 Hz excluding China and Iran, potential efficiencies for the Medium segments are likely to outweigh any hypothetical competitive harm. A hypothetical competitive harm in the Medium segment would be in the range of USD 7 million per year, at a worldwide level of the

market for 50 Hz HDGTs excluding China and Iran. On the other hand, potential efficiencies (that is to say, those deemed acceptable by the Commission according to the Horizontal Merger Guidelines) amount to [value of efficiencies] across all segments of the worldwide market for 50 Hz HDGTs excluding China and Iran and to [value of efficiencies] for the Medium segment of the worldwide market for 50 Hz HDGTs excluding China and Iran. Comparing the hypothetical harm with the overall efficiencies of [value of efficiencies] implies a pass-through rate that is significantly below [50-60]% to outweigh the hypothetical harm. If instead only efficiencies applicable to the Medium segment are considered ([value of efficiencies]), the respective pass-through rate sufficient to outweigh the hypothetical harm of USD 7 million increases but remains significantly below [50-60]%. It follows that in either case the necessary pass-through rate sufficient to outweigh the hypothetical competitive harm is significantly below [50-60]%.

- (1427) As discussed in Recital (1365), the actual pass-through rate is likely to be higher than this necessary pass-through rate given that there is significant competition for the servicing of Medium HDGTs. This follows from the fact that servicing Medium HDGTs is relatively easier to perform for other suppliers, as the technology involved is more mature than the technology of Large HDGTs or Very Large HDGTs.
- (1428) In view of the above, the Commission considers that the Transaction does not lead to a significant impediment to effective competition. The Transaction will also bring about efficiencies which are likely to largely outweigh the potential harm.

8.12.5. Conclusion

- (1429) The Commission therefore considers that the Transaction leads to a significant impediment to effective competition on the market for 50 Hz HDGTs, and in particular in the Large and Very Large 50 Hz HDGT segments.

9. OTHER COMPONENTS FOR THERMAL POWER PLANTS

9.1. Generators

9.1.1. The relevant product markets

9.1.1.1. The Notifying Party's views

- (1430) The Notifying Party submits that there is a single product market for the supply of generators for gas, coal-fired and nuclear power plants. Therefore, the Notifying Party contests the delineation of a separate product market for gas-fired plants generators.
- (1431) The Notifying Party explains that generators are designed as platforms that are neutral to the type of turbine they are paired with. The same model generator could be used for GT or ST as long as the output and other technical performance conditions are similar, even though in practice, there are plant design variables that may not allow the same GT generator to be used for the ST. Furthermore, cooling technology (water/air/hydrogen) and output features do not give rise to defining separate markets for generators.

- (1432) From a supply-side perspective, the Notifying Party argues that most major generator OEMs have the technical capabilities to produce generators for gas, coal-fired and nuclear power plants.

9.1.1.2. Previous Commission Decisions

- (1433) The Commission has previously considered, but left open, segmentation between generators for gas and steam power plants and other generators, as well as a possible segmentation by size.¹¹⁹⁹ In another Decision, the Commission considered a segmentation between small (<20 MW), medium and large (>35 MW) generators, but ultimately left the market definition open.¹²⁰⁰

9.1.1.3. Commission's assessment

- (1434) The Commission's investigation showed that the market for generators is highly differentiated, according to (i) cooling method, (ii) power output and (iii) grid frequency. The combination of those technical parameters determines the generators' performance and their suitability to different customer needs. The Commission's investigation analysed also the segment of the market for generators bundled with 50 Hz HDGTs.

(i) Differentiation by cooling method

- (1435) Market participants seem to differentiate generators according to the cooling methods that are used, namely air-cooling generators, hydrogen-cooling generators and water cooling generators.¹²⁰¹ Competitors state that "*cooling methods create difference in operation and maintenance requirements as well as efficiency*"¹²⁰² and that it is therefore "*appropriate to segment the generator market by cooling methods*".¹²⁰³ Also from a demand perspective, customers clearly evidenced that generators could be differentiated depending on their cooling technology, some of them being more suitable to fulfil certain needs.¹²⁰⁴

Water-cooled generators

- (1436) Water-cooled generators are conceived for higher efficiency and higher output needs, with particular use for nuclear power plants. This type of generator is neither used for gas fired plants nor for coal fired plants. The Parties' internal documents also showed that none of GE's installed HDGT was equipped with a water-cooled generator.¹²⁰⁵

¹¹⁹⁹ Case M.3653 – Siemens/VA Tech, paragraph 69.

¹²⁰⁰ Case M.6222 – GE/Converteam, paragraphs 32-33.

¹²⁰¹ See replies to question 13 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²⁰² See reply to question 13.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²⁰³ See reply to question 13.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²⁰⁴ See replies to question 19 of Q7 to customers of Gas fired power plant.

¹²⁰⁵ See Annex 6414, slide 5.

Figure 66: GE's HDGTs according to their generators cooling method

[extract from internal GE document showing GE's installed base by fuel and cooling method]

Source: Annex 6414, slide 5.

Air-cooled generators

- (1437) From a demand perspective, market participants explained that air-cooled generators are easier to use and less costly to acquire than hydrogen or water cooled generators.¹²⁰⁶ Regarding their technological features, a customer indicated that these generators have "*the benefit of being better cooled at low air temperatures*",¹²⁰⁷ therefore allowing a better efficiency for the use of the relevant HDGT. However, customers further evidenced that these generators encounter electrical discharging issues and are "*suitable [for HDGTs] up to about 400 MW*" only.¹²⁰⁸ In line with these statements, a competitor explained that air-cooling technologies were preferred by customers when maintenance costs prevail over efficiency.¹²⁰⁹

Hydrogen-cooled generators

- (1438) The Commission's investigation showed that hydrogen-cooled generators offer better efficiency and power output than air-cooled generators, but at a higher cost. Market participants explained that these generators allow higher ratings up to around 500MW, since "*hydrogen is more efficient at removing heat from the windings*".¹²¹⁰ As a consequence, these generators are more efficient, can be used for higher outputs, and are able to work with "*the higher [HDGT] size*".¹²¹¹ Both competitors and customers also indicated that the drawback of such features were the very high cost of these generators, their high complexity of use and the need of an auxiliary equipment for hydrogen containment.¹²¹²

Air-cooled vs Hydrogen-cooled generators

- (1439) Although competitors unanimously expressed the view that a supplier active in the manufacture of air-cooled generators would not be able to start, swiftly and without significant costs, producing and selling hydrogen-cooled generators,¹²¹³ the majority of customers stated that air-cooled and hydrogen-cooled generators were substitutable, subject to the power output of the plant.¹²¹⁴

Conclusions

- (1440) The Commission considers that the markets for air-cooled and hydrogen cooled generators do not constitute distinguishable markets for the purposes of the

¹²⁰⁶ See replies to question 19.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁰⁷ See reply to question 19.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁰⁸ See replies to question 19.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁰⁹ See reply to question 13.1 of Phase II Questionnaire Q9 to competitors on generators and ST.
¹²¹⁰ See reply to question 19.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²¹¹ See reply to question 15.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²¹² See replies to question 19.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant and reply to question 13.1 of Q9 to competitors on generators and ST.
¹²¹³ See replies to question 14 of Phase II Questionnaire Q9 to competitors on generators and ST.
¹²¹⁴ See replies to question 21 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

competitive assessment of the Transaction, but rather are part of the same relevant product market, constituting only a feature of differentiation. The Commission further considers that the market for water-cooled generators constitutes a separate market.¹²¹⁵

(ii) Differentiation by power output

- (1441) The Commission also examined the relevance of segmenting generators according to their power output.
- (1442) First, the market investigation has shown that OEMs tend to analyse the market for generators by looking at different output classes. However, the segmentations used by each OEM are very different. GE delineates four ranges, namely "35-170 MW (*medium air-cooled*), 170-300 MW (*large air cooled*), 170-500 MW (*hydrogen-cooled*) and 500-1500 MW (*liquid cooled*)".¹²¹⁶ Another competitor submits the following division: "50-140 MW (*air-cooled*), 140-280 MW (*air or hydrogen-cooled*) and 240-500 MW (*hydrogen-cooled*)".¹²¹⁷
- (1443) The Commission thus considers that there is a continuum of different output range generators that are part of the overall market for generators and that there is a threshold that distinguishes small generators from the remaining generators. Since the Parties manufacture generators with a minimum output of 35 MW, the Commission will assess the generators market as from the Parties' minimum output of 35 MW. In fact, generators with power output below 35 MW are used for different purposes, and thus clearly constitute a separate market on which various other manufacturers are active.

Conclusion

- (1444) The Commission considers that the market for air-cooled and hydrogen-cooled generators as from 35 MW is a relevant market for the purpose of assessing the Transaction.

(iii) Differentiation by grid frequency

- (1445) The Commission investigated the potential differentiation among generators according to the grid frequency they are operating on, namely 50 Hz or 60 Hz. The Commission's investigation showed that generators can actually be differentiated according to 50 Hz and 60 Hz grid frequencies.
- (1446) A majority of OEMs explained that technologies and design do not really differ between 50 Hz and 60 Hz generators, and that generator manufacturers are generally active on both frequencies.¹²¹⁸ A majority of OEMs explained that it is possible to swiftly and without significant capital expenditure start producing 50 Hz for 60 Hz generators manufacturers, and conversely.¹²¹⁹ However, a

¹²¹⁵ As regards water-cooled generators, there is no overlap between the Parties when looking to the sales in the period 2009-2014. Therefore, this segment will not be discussed in this Decision.

¹²¹⁶ See Annex 6415, slide 7.

¹²¹⁷ See reply to question 15 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²¹⁸ See replies to question 17.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²¹⁹ See replies to question 18 of Phase II Questionnaire Q9 to competitors on generators and ST.

majority of OEMs indicated that 50 Hz and 60 Hz remain different technologies.¹²²⁰

Conclusion

- (1447) The Commission considers that although there may be some differentiation between 50 Hz and 60 Hz generators, the overall market should include generators for both types of grid frequency.

(iv) Stand-alone market for generators bundled with a HDGT

- (1448) Pursuant to the Commission Notice on the definition of relevant market for the purposes of Community competition law,¹²²¹ *"the extent of the product market might be narrowed in the presence of distinct groups of customers"*. The Commission's investigation has shown that customers buying generators together with an HDGT constitute a distinct group of customers. A separate relevant market therefore exists of generators bundled with a HDGT.
- (1449) As set out in Recitals (136) to (144), there are different ways of selling HDGTs for gas-fired power plants. This implies that there are also several ways of selling generators for gas fired-power plants: (i) only the generator on a stand-alone basis, (ii) generator plus HDGT, (iii) the so-called power island, including the HDGT, the generator and the ST, (iv) engineered packages (EEP), including HDGT, the generator, the ST and the HRSG, (v) engineered packages plus EPC (engineering, procurement and construction) scope (civil works), and (vi) full turnkey solutions (including commissioning and financing).
- (1450) In the Reply to the Statement of Objections, the Notifying Party argues that the benefits customers may derive from sourcing a "bundle" of HDGT and generator are not significant enough to outweigh unpicking the bundle to resist a "Small but Significant Non-transitory Increase In Price" ("SSNIP"). In addition, according to the Notifying Party, the choice of generators in a CCPP is customer and project-driven.
- (1451) The Commission's investigation indicated that customers have a preference for sourcing generators coupled with the respective HDGTs, or for sourcing turnkey solutions. In fact, a vast majority of customers indicated that they always or in most cases purchase the generator and the HDGT from the same OEM.¹²²² Competitors confirmed this trend in customers' preferences.¹²²³
- (1452) The vast majority of customers considered that there are advantages in buying a generator manufactured by the OEM that also manufactured the HDGT.¹²²⁴ Customers indicated that purchasing both generators and HDGTs bundled clearly brings *"better overall efficiency"*¹²²⁵ and the *"additional advantage [of]*

¹²²⁰ See replies to question 17 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²²¹ OJ C 372, 9.12.1997, article 43, page 11.

¹²²² See replies to question 137 of Phase II Questionnaire Q7 to customers of Gas fired power plant and replies to question 35 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²²³ See replies to questions 152, 153, 155 and 157 of Phase I Questionnaire Q2 to competitors on the gas business.

¹²²⁴ See replies to question 138 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹²²⁵ See reply to question 138.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

easier management of outages reduce maintenance costs".¹²²⁶ Furthermore, "for new sales projects the generator is typically part of the power train - and shall not be separated from the turbine (avoiding risk / split responsibilities)".¹²²⁷

- (1453) Therefore, purchasing bundled generators and HDGT is a very common practice since *"normally the generator is part of the contract for purchasing a GT-GEN-ST-train. So it is one deal."*¹²²⁸
- (1454) The data submitted by the Notifying Party on generators sales shows that the vast majority of generators used with HDGTs are sold in a bundle with the HDGT. Over the period 2009-2014, Alstom sold its HDGT together with a generator in [90-100]% of the overall projects won. For GE this value corresponds to [80-90]%.¹²²⁹
- (1455) In addition, the Commission's investigation clearly revealed that it is the choice of the HDGT supplier that typically drives the choice of the generators. Competitors almost unanimously acknowledge this causal link.¹²³⁰ Competitors indicated that *"most customers buy generators for HDGTs from the same manufacturer"*¹²³¹ and that in any other event, *"HDGT supplier selects the supplier of the generator that is coupled with the HDGT and supplies the power train of HDGT and generator to the customer"*.¹²³²
- (1456) The Commission's investigation also showed that customers often cannot choose to couple their HDGT with a generator sourced from a distinct supplier. Customers argued that *"there [is] no option to buy them separately"*¹²³³. Market participants further indicated that *"it simplifies the project development and sometimes it is the only alternative"*¹²³⁴, and that *"the units are single-shaft, meaning the GT/ST and generator are mechanically connected and offered as an integrated package. Each bidder offered its own generator with its own GT - so there was no option."*¹²³⁵
- (1457) Furthermore, the Notifying Party's internal documents also suggested that the market for 50 Hz HDGTs actually drives the market for generators.

Figure 67: HDGT and ST's growth as driver for generators

[extract from internal GE document containing GE strategic ploans]

Source: Annex 6415, slide 85.

- (1458) As a consequence, it is crucial for a supplier to offer both generators and HDGTs. In fact, customers stated that *"both OEMs offer full range of*

¹²²⁶ See reply to question 138.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²²⁷ See reply to question 135.1.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²²⁸ See reply to question 135.1.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²²⁹ See GE's reply to the Commission's Request for Information N°18, 06.03.2015, question 25.
¹²³⁰ See replies to question 35 of Phase II Questionnaire Q9 to competitors on generators and ST.
¹²³¹ See reply to question 35.1 of Phase II questionnaire Q9 to competitors on generators and ST.
¹²³² See replies to question 35.1 of Phase II Questionnaire Phase II Questionnaire Q9 to competitors on generators and ST.
¹²³³ See reply to question 139.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²³⁴ See reply to question 139.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²³⁵ See reply to question 139.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

*generators; typically turbines and matching generators are offered/purchased as a bundled package*¹²³⁶ and that *"in most of CCPPs, generator OEM is the same as GT OEM, so both OEMs are important."*¹²³⁷ This excludes from the relevant market all the suppliers that do not offer a HDGT.

- (1459) In view of the findings of its investigation, the Commission considers that there is a separate relevant market for generators integrated in a bundled offer with a HDGT. The Commission also found that this market is strongly driven by the markets of HDGTs.

9.1.1.4. Conclusion

- (1460) In summary, the Commission considers that there are two relevant product markets for generators.
- (1461) First, the Commission has defined an overall and highly differentiated market for generators (air-cooled and hydrogen-cooled) above 35 MW.
- (1462) Second, the Commission has defined a narrower market specific to generators above 35 MW bundled with a HDGT.¹²³⁸ In particular, the Commission will consider the market for generators bundled with 50 Hz HDGTs since there is a separate market for 50 Hz and 60 Hz HDGTs and the EEA is a 50 Hz frequency area. Hence, any impact on the market for generators bundled with a 60 Hz HDGTs would not affect EEA customers.

9.1.2. The relevant geographic markets

9.1.2.1. The Notifying Party's views

- (1463) The Notifying Party submits that the geographic market definition for generators is worldwide in scope and the competitive market presence does not require the operation of a manufacturing facility in a certain geographic area for serving worldwide demand.
- (1464) Transportation costs, import tariffs, local regulations and other standards do not constitute a significant barrier to supply across regions and into the EEA. Customers source products on a global level and invite suppliers worldwide to tender, irrespective of the location of the OEM's manufacturing facilities. Likewise, from a supply-side perspective, the major competitors in the power generation equipment industry participate in and win bids for all major contracts worldwide, regardless of the location of the customers.
- (1465) There are no significant differences between products sold in different regions and products do not have to be adapted to 50 Hz or 60 Hz frequency standards. Different categories of customers have similar quality standards throughout the world and differences between customers' needs are attributable to specific technical requirements and by customers' needs primarily in terms of power, efficiency and level of steam.
- (1466) Regarding local servicing capabilities and sales network, the Notifying Party submits that it has commercial added value but it is not a decisive criterion to

¹²³⁶ See reply to question 139.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹²³⁷ See reply to question 133.1.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹²³⁸ This excludes water-cooled generators which are used only for nuclear applications.

win a tender. Customers value primarily responsiveness and low cost of the service provider, and these can be achieved without local presence.

9.1.2.2. Previous Commission Decisions

- (1467) The Commission has previously considered an EEA-wide or global market but left the precise market definition open.¹²³⁹

9.1.2.3. Commission's assessment

- (1468) The Commission's investigation showed that in general there are no barriers to global supplies of generators related to transport costs and regional regulation.¹²⁴⁰ However the majority of customers indicated that the technical specifications for generators depend on the location of the plant, namely in what concerns grid frequency, type of cooling that can be used, climate, local energy market, ambient conditions, etc.¹²⁴¹
- (1469) The majority of customers indicated that the proximity of the manufacturing/repair/services facility, although it is a benefit, is not a decisive criterion for the choice of the supplier of the generator.¹²⁴² Therefore, the majority of customers also indicated that the geographic location of their plant does not limit the availability of potential alternative suppliers¹²⁴³ and that they invite suppliers irrespective of the location of their manufacturing facilities¹²⁴⁴.
- (1470) Competitors supported this opinion by indicating that they face the same competitors in every world region and that a local presence is not a necessary requirement to be able to compete.¹²⁴⁵
- (1471) As regards price in the EEA and in the rest of the world, the majority of customers indicated that they do not observe any differences.¹²⁴⁶ Competitors however expressed diverse opinions about price differences between the EEA and the rest of the world.¹²⁴⁷

9.1.2.4. Conclusion

- (1472) The Commission concludes that the relevant geographic market for generators bundled with 50 Hz HDGTs, should be the same as the market for 50 Hz HDGTs, given that it is driven by the HDGTs supply. Hence, similarly to the market for 50 Hz HDGTs, for the purpose of assessing the Transaction, the issue whether the relevant geographic market should be considered as worldwide excluding China and Iran or EEA-wide in scope can be left open, as the competitive assessment would not differ.
- (1473) As regards the overall market for generators (air-cooled and hydrogen-cooled) above 35 MW the Commission similarly concludes that it can be left open

¹²³⁹ Case M.6222 – GE/Converteam, paragraphs 32-33.

¹²⁴⁰ See replies to question 34.5 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 34.5 of Phase I Questionnaire Q2 to competitors on the gas business.

¹²⁴¹ See replies to question 35.5 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹²⁴² See replies to question 37.5 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹²⁴³ See replies to question 38.5 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹²⁴⁴ See replies to question 39.5 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹²⁴⁵ See replies to questions 38.5 and 41.5 of Phase I Questionnaire Q2 to competitors on the gas business.

¹²⁴⁶ See replies to question 40.5 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹²⁴⁷ See replies to question 39.5 of Phase I Questionnaire Q2 to competitors on the gas business.

whether the relevant geographic market should be considered as worldwide (excluding China and Iran) or EEA-wide in scope.

9.1.3. *Competitive assessment of the market for generators bundled with 50 Hz HDGTs*

9.1.3.1. The Notifying Party's views

- (1474) The Notifying Party submits that there is no horizontal overlap between the Parties for generators since only Alstom sells generators as a stand-alone product. GE always sells its generators in a package together with HDGTs and STs, which according to GE implies that GE's sales are “captive”.
- (1475) The Notifying Party argues in the Reply to the Statement of Objections that independent generator suppliers would exert competitive pressure on the Parties and other HDGTs OEMs since customers would still have the ability to unpick the bundle and mix-and-match. In addition, the Notifying Party argues that during Phase I investigation respondents explicitly said that they saw no competition concerns or remained neutral.
- (1476) Finally the Notifying Party argues that customer reaction demonstrated that competition will not be adversely affected in the LSTs market.

9.1.3.2. Commission's assessment

(i) The Transaction will lead to market-leading and very large market shares

- (1477) The Commission requested information about market shares on the market for generators bundled with 50 Hz HDGTs. However, the Notifying Party only provided information about the shares of GE and Alstom for the overall market for generators with further differentiation according to power output and cooling method.¹²⁴⁸ In the course of the Phase I market investigation, the Notifying Party explained that it was not in a position to provide a breakdown between sales as stand-alone products and as part of a bundle since this would require the Notifying Party to obtain information about the exact scope requested by the customer and offered by the winning OEM for each project in the relevant time period. Consequently, the Commission does not have such market shares and the exact market structure of the relevant market for bundled generators is not available.
- (1478) The Commission will therefore as a proxy to analyse the market structure of the market for generators bundled with 50 Hz HDGTs use the market shares of the market for 50 Hz HDGTs. As explained in Recital (1451), a vast majority of HDGTs are sold together with a generator. In fact, according to the Figure below, over the period 2009-2014, Alstom sold its HDGT together with a generator in [90-100]% of the overall projects won. For GE this value corresponds to around [80-90]%.¹²⁴⁹ These values should not differ much from the rest of the industry.

¹²⁴⁸ See Annex 4539, sheets 2 and 3.

¹²⁴⁹ See Annex 6415, slide 41.

Figure 68: GE's GTs (40-170 MW) coupled with the relevant generators

[extract from internal GE document containing selling method and names of GE generator manufacturers]

Source: See Annex 6415, slide 41.

- (1479) In addition, the Commission notices that all suppliers of HDGTs are actually able to sell their HDGTs bundled with a generator. In fact, the Notifying Party argued that *"competing OEMs are vertically integrated in the supply of power equipment components and have the capacity to self-supply their own generators"*.¹²⁵⁰ MHPS, which does not manufacture generators, is also able to sell HDGTs bundled with generators since it *"currently sources generators from Mitsubishi Electric Company"*.¹²⁵¹ In their internal documents, the Parties explained that Mitsubishi Electric Company is *"part of Mitsubishi 'Keiretsu' (informal group of companies affiliated with MHI)"*.¹²⁵²
- (1480) Taking into account this proxy, in the period 2009-2014Q1 the combined market share of the Parties is [50-60]% in the EEA and [60-70]% worldwide (excluding China and Iran). In the EEA, GE and Alstom are the number two and number three competitors, respectively. Post-Transaction the merged entity would be the clear leader in terms of market shares, with Siemens as its largest competitor with a market share of [30-40]%. Worldwide (excluding China and Iran) GE is currently the market leader. Its position would be significantly strengthened post-Transaction. The second competitor, Siemens, has less than half of the merged entity's combined market share. Ansaldo (in particular in the worldwide market) and MHPS have much smaller market shares.

Table 45: Shares in the market for 50 Hz HDGTs for the period 2009Q2-2014Q1 (in #GTs)

	EEA	WW (excluding China and Iran)
GE	[20-30]%	[50-60]%
Alstom	[20-30]%	[10-20]%
GE+Alstom	[50-60]%	[60-70]%
Ansaldo	[10-20]%	[5-10]%
MHPS	[0-5]%	[5-10]%
Siemens	[30-40]%	[20-30]%

Source: McCoy.

- (1481) In view of the above, the Commission concludes that pre-merger GE is already the market leader in terms of market shares in the worldwide (excluding China and Iran) market for generators bundled with 50 Hz HDGTs. The Transaction would add a significant market share from Alstom, increasing the gap with Siemens, the second largest competitor. In the EEA, GE and Alstom are two of the most relevant competitors, and post-Transaction the merged entity would become the clear market leader.

¹²⁵⁰ See Form CO, paragraph 1063.

¹²⁵¹ See Form CO, paragraph 1063.

¹²⁵² See Annex 6415, slide 124.

(ii) The Transaction eliminates an important competitive force

- (1482) In the course of the Commission's investigation, customers almost unanimously confirmed that Alstom is an important supplier of generators. Customers expressed similar views regarding GE.¹²⁵³ Both OEMs are considered as having an attractive full-range portfolio. Customers explained that *"both provide a large range of generators and have a large installed base"*¹²⁵⁴ and *"both companies have a large portfolio, and Alstom has a huge installed base."*¹²⁵⁵
- (1483) Competitors also explained that Alstom is a significant competitor on the market for generators. A large European competitor thus indicated that Alstom is *"the market leader for air-cooled generators, in particular in the larger output ranges, as Alstom has in its portfolio the largest air-cooled generator that is on the market (power output of 400/450 MVA). This generator can be used for centralized power generation. GE is also strong in industrial air-cooled generators (from GE's recent acquisition of Converteam)"* and that *"Alstom is the technology leader for hydrogen-cooled generators."*¹²⁵⁶
- (1484) Although customers do not predominantly express that the participation of GE or Alstom allowed them to obtain better terms and conditions from certain generators manufacturers¹²⁵⁷, this is mainly due to the fact that the market for generators bundled with HDGTs is a market strongly driven by the markets for HDGTs itself. In fact, a customer explained that *"it is not possible to say but if there is real competition in a market this is generally reflected in price. For new build projects the cost of the generator is contained within the overall bid price and terms and conditions."*¹²⁵⁸ Nevertheless, customers still referred to the importance of Alstom as a commercial constraint. One of them precisely claimed that *"competition always leads to better commercial conditions"* on the market for generators.¹²⁵⁹
- (1485) A large European OEM stated that *"GE and Alstom are particularly strong and referenced in hydrogen cooled generators"*¹²⁶⁰ In this respect, a customer also states that: *"generally, the generators offered by Alstom and GE are quite similar (offered parameters, used technology) and competitive to the generators offered by other market players."*¹²⁶¹
- (1486) The Commission concludes that the Transaction will remove a significant and close competitor to GE. However, as set out in Recitals (1445) to (1456), the market for generators bundled with 50 Hz HDGTs is driven by the market for 50 Hz HDGTs. Without prejudice to this section, the assessment of the market

¹²⁵³ See replies to questions 133.1.1 and 133.1.2 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁵⁴ See reply to question 133.1.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹²⁵⁵ See reply to question 133.1.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹²⁵⁶ See reply to question 28.1.3 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²⁵⁷ See replies to questions 135.1.1 and 135.1.2 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁵⁸ See reply to question 135.1.3 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁵⁹ See replies to question 135.1.3 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁶⁰ See reply to question 28.3.3 of Phase II questionnaire Q9 to competitors on generators and ST.

¹²⁶¹ See reply to question 133.1.3 of Phase II questionnaire Q7 to customers of Gas fired power plant.

for generators bundled with 50 Hz HDGTs remains subjected to the assessment of the market for 50 Hz HDGTs. Therefore the Commission concludes that the Transaction will remove a significant and close competitor to GE.

(iii) The Transaction significantly reduces the alternatives available to customers with effects on prices

- (1487) The Commission considers that there are few alternatives in the market for generators bundled with 50 Hz HDGTs. In fact, not all suppliers of generators are able to supply a 50 Hz HDGTs and therefore, to compete on the specific segment for generators bundled with a 50 Hz HDGT. Among the major generator suppliers, only GE, Alstom and Siemens are able to supply a 50 Hz HDGTs bundled with a generator, and MHPS is also able to sell the package given that it sources generators from Mitsubishi Electric Company. Therefore, the Transaction reduces the number of suppliers competing for the supply of generators bundled with a 50 Hz HDGTs.
- (1488) Moreover, and as described in Section 8.5, not all HDGT manufactures are as strong or close competitors to Alstom. Similar to the conclusion taken in Section 8.6, the Commission therefore considers that the Transaction significantly reduces the alternatives available to customers in the market for generators bundled with 50 Hz HDGTs.
- (1489) Several competitors mentioned that the Transaction would reduce product choice as regards generators.¹²⁶² One competitor mentions that "*Product choice & quality may decrease as consolidation shall lead to limited players & lesser competition*".¹²⁶³ The majority of competitors considered that the Transaction would thus have a negative impact on prices in both the EEA and worldwide¹²⁶⁴ given that "*Reduced competition will lead to higher prices than would otherwise have been the case*".¹²⁶⁵
- (1490) Customers' views about the Transaction are more balanced.¹²⁶⁶ At the worldwide level, among customers having stated that the Transaction will not affect the competition, some explain that there will "*still [be] enough competition*".¹²⁶⁷
- (1491) On the other hand, various other customers expressed concerns regarding the Transaction "*due to the reduction of the competition*".¹²⁶⁸ In fact, customers stated that there would be a clear "*lack of competition*".¹²⁶⁹, since "*less competitors will remain on the market. There is already a limited number of players which are capable to manufacture generators for 50 Hz gas-fired*

¹²⁶² See replies to questions 39.2 and 40.2 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²⁶³ See reply to question 39.2 of Q9 to competitors on generators and ST.

¹²⁶⁴ See replies to questions 39.4, 39.6, 40.4 and 40.6 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²⁶⁵ See reply to question 39.4 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹²⁶⁶ See replies to questions 154.1 and 154.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹²⁶⁷ See reply to question 154.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹²⁶⁸ See reply to question 154.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹²⁶⁹ See reply to question 154.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

plants."¹²⁷⁰ A customer stated that *"there is the potential for a reduction in product choice if GE/Alstom rationalise their product lines."*¹²⁷¹

- (1492) Some market participants indicated that there would be *"enough suppliers"*¹²⁷² and, again, that *"there are other service suppliers (none OEM's)"*¹²⁷³ in the EEA. On the contrary, other respondents explained that the Transaction would lead to *"less suppliers in a small market"*¹²⁷⁴ and that there is a risk of *"reduction of the competition"*¹²⁷⁵ in the EEA. Customers further argued that *"Mitsubishi is not active in Europe. So in the EEA the competition will be even less than worldwide"*¹²⁷⁶ and that *"if Alstom products are stopped- there will be a negative impact."*¹²⁷⁷

(iv) The Transaction removes a significant innovation force

- (1493) Alstom is also considered by a vast majority of customers as an important innovator for generators.¹²⁷⁸ Customers' views about GE as an important innovator are more mixed but GE is still considered as an important innovator.¹²⁷⁹ A customer explained that *"both companies have produced innovative designs in the past and continue to put significant effort in to R&D programmes."*¹²⁸⁰ Alstom in particular is considered as a high-profile innovator since one customer explained that *"for top gas generator and for TEWAC generator, [Alstom] have really innovated the market in the last 15 years"*.¹²⁸¹ Moreover, a customer acknowledged Alstom' superiority over GE in terms of innovation as *"GE was not able to offer air-cooled generator for HDGT with range of 240-270 MW for [their] new CCGT cogeneration units. Alstom offered air-cooled generator which was more technically attractive to [this customer] in terms of operation and maintenance."*¹²⁸²
- (1494) Competitors supported the view of Alstom as a high-profile innovator. Alstom is said to innovate on the whole range of generators when GE's innovation's efforts focus on a specific part of its portfolio. In fact, a competitor argued that *"GE is an important innovator only in the segment pertaining to hydrogen-cooled generators with an output of between 140-280MW. On the other hand, Alstom is an important innovator with respect to the full range of generators above 50MW given that it has a strong installed base of generators and provides the full range of product technologies"*.¹²⁸³
- (1495) Given the strong innovation path of Alstom, several customers expressed concerns about a potential negative impact of the Transaction on innovation.

¹²⁷⁰ See reply to question 154.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁷¹ See reply to question 154.4.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁷² See reply to question 154.2.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁷³ See reply to question 154.2.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁷⁴ See reply to question 154.2.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁷⁵ See, reply to question 154.2.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁷⁶ See reply to question 154.2.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁷⁷ See reply to question 154.2.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹²⁷⁸ See replies to question 134.1 of Phase II questionnaire Q7 to customers of Gas fired power plant.
¹²⁷⁹ See replies to question 134.1 of Phase II questionnaire Q7 to customers of Gas fired power plant.
¹²⁸⁰ See reply to question 134.1.2 of Phase II questionnaire Q7 to customers of Gas fired power plant.
¹²⁸¹ See reply to question 134.1.2 of Phase II questionnaire Q7 to customers of Gas fired power plant.
¹²⁸² See reply to question 134.1.2 of Phase II questionnaire Q7 to customers of Gas fired power plant.
¹²⁸³ See replies to question 29.1.3 of Phase II questionnaire Q9 to competitors on generators and ST.

One customer explained that *"Alstom is one of the most innovative of the OEMs, and this is unlikely to continue if they follow GE's business model."*¹²⁸⁴ Moreover, another customer also explained that *"less competitors will remain on the market. There is already a limited number of players which are capable to manufacture generators for 50 Hz gas-fired plants. Less competition means less incentive for innovation."*¹²⁸⁵ A competitor also argued that both GE and Alstom *"could be important innovators if new technologies are developed or required in the future."*¹²⁸⁶ However, other customers were of the view that there will be *"enough suppliers which are forced to create innovation"*¹²⁸⁷ and *"number of players in the market is big enough to grant innovation pre and post-merger"*¹²⁸⁸.

- (1496) On balance, the Transaction will remove a significant innovation force of the market. However, as set out in Recitals (1445) to (1456), the market for generators bundled with 50 Hz HDGTs is driven by the market for 50 Hz HDGTs. Without prejudice to this section, the assessment of the market for generators bundled with 50 Hz HDGTs remains subject to the assessment of the market for 50 Hz HDGTs.

(v) Barriers to entry and weakness of the remaining OEMs

- (1497) Finally, without regard to potential bundle, the vast majority of competitors also pointed out that barriers to entry in the overall market for generators are high or very high.¹²⁸⁹ Siemens explained that *"main barriers to enter is the need for good technical know-how, significant Capex and Opex experience"*.¹²⁹⁰ All of the competitors evidenced that starting to produce generators is very complex and requires significant R&D expenses.¹²⁹¹ Technical barriers are especially significant for hydrogen cooled generators, and a large European competitor stated that it *"has not seen many new OEMs in the last years who started offering hydrogen cooled generators"*¹²⁹²
- (1498) Moreover, the market for generators bundled with 50 Hz HDGTs is driven by the market for 50 Hz HDGTs. In addition to the barriers to enter the overall market for generators referred to in Recital (1494), the market for generators bundled with 50 Hz HDGTs also suffers from barriers to enter the market for 50 Hz HDGTs. Indeed, a manufacturer of stand-alone generators which does not manufacture HDGTs will face very high barriers to enter the market. In this respect, barriers to enter the market for 50 Hz HDGTs have been addressed in Section 8.2.4 of this Decision.
- (1499) The Commission's investigation showed that it is very difficult to compete in the market for generators bundled with 50 Hz HDGTs. In fact, a major European competitor acknowledged that *"an OEM usually prefers offering its*

¹²⁸⁴ See reply to question 154.3.1 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁸⁵ See reply question 154.3.1 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁸⁶ See reply to question 29 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁸⁷ See reply to question 154.3.1 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁸⁸ See reply to question 154.1.1 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁸⁹ See replies to question 31 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁹⁰ See reply to question 31.1.1 of Phase II questionnaire Q9 to competitors on generators and ST.

¹²⁹¹ See replies to question 31 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹²⁹² See replies to question 31.3 of Phase II questionnaire Q9 to competitors on generators and ST.

own fossil generator in a package with the gas/steam turbine. This enables the OEM to optimally configure the turbine with the generator but also to avoid double marginalization. This might constitute an additional barrier to entry."¹²⁹³ Therefore, this double expertise needed in both HDGTs and generators makes it very difficult to enter the present market.

- (1500) In line with these findings, a manufacturer of stand-alone generators which is not active on the market for HDGTs stated: "*[packaged offers] differentiate (in terms of competition) the offered solution.*"¹²⁹⁴ This manufacturer is thus unable to compete and to enter the market for generators bundled with 50 Hz HDGTs.
- (1501) Along the same lines this Transaction would lead to further isolate independent generator manufacturers from OEMs producing both generators and HDGTs. Indeed, a generator supplier stated that "*reduced competition will lead to less need for innovation, as large gas turbines will only be available from technology supplied by Siemens, Mitsubishi/Hitachi and GE/Alstom, all of whom would be likely to seek self-sufficiency.*"¹²⁹⁵
- (1502) A large generator supplier also addressed concerns regarding the Transaction: "*more and more customers prefer ordering power islands to separately ordering individual components recently. If this transaction is completed, we are worried that such HDGT OEMs provide only package of GT/ST/Generator/HRSG sets, not individual equipments. As a result, since the CCPP market in EEA will be monopolized by 2 big power islands provider: Siemens and GE-Alstom.*"¹²⁹⁶ This Transaction, therefore, will remove a significant competitor from the market for generators bundled with HDGTs.
- (1503) Finally, competitors indicated that bundled offers were becoming more and more popular and that the demand for "*power islands*" was currently growing".¹²⁹⁷ A large supplier of stand-alone generator thus argued that "*there is a perception that costumers tend to reduce the number of suppliers because the coordination and execution became more effective (less interfaces between equipment at same site).*"¹²⁹⁸
- (1504) In summary, there are significant barriers to enter the market and the presence of the remaining generator suppliers is not likely to counteract the reduction of alternatives resulting from the disappearance of Alstom as an independent competitor. However, as set out in Recitals (1445) to (1456), the market for generators bundled with 50 Hz HDGTs is driven by the market for 50 Hz HDGTs. Without prejudice to this section, the assessment of the market for generators bundled with 50 Hz HDGTs remains subjected to the assessment of the market for 50 Hz HDGTs.

¹²⁹³ See reply to question 31.1.1 of Phase II questionnaire Q9 to competitors on generators and ST.
¹²⁹⁴ See replies to question 36 of Phase II questionnaire Q9 to competitors on generators and ST.
¹²⁹⁵ See replies to question 39.1 of Phase II questionnaire Q9 to competitors on generators and ST.
¹²⁹⁶ See reply to question 59.1 of Phase II questionnaire Q10 to competitors on generators and ST.
¹²⁹⁷ See replies to question 37 of Phase II questionnaire Q9 to competitors on generators and ST.
¹²⁹⁸ See reply to question 37 of Phase II questionnaire Q9 to competitors on generators and ST.

9.1.3.3. Conclusion

- (1505) Both EEA and worldwide markets of generators bundled with 50 Hz HDGTs are characterised by a strong presence of GE and Alstom. GE and Alstom are close competitors and the Transaction will give rise to very large combined market shares with significant increments.
- (1506) Given that the assessment of the market for generators bundled with 50 Hz HDGTs is driven by the market for 50 Hz HDGTs, the Transaction would likely have an impact on prices, product choice and innovation of the bundles that include a HDGT and a generator.
- (1507) The Commission therefore concludes that the Transaction leads to a significant impediment to effective competition on the market for generators bundled with 50 Hz HDGTs.

9.1.4. *Competitive assessment of the overall market for generators (air-cooled and hydrogen-cooled) above 35 MW*

- (1508) The customers in this market include those that do not have a strong preference to buy the generator bundled with the HDGT. These customers may choose to buy it separately or in a bundle if that is cheaper. The market shares relevant for these customers are the ones of the overall market for generators (air-cooled and hydrogen-cooled) above 35 MW.
- (1509) In the overall market for generators (air cooled and hydrogen-cooled above 35 MW there are many suppliers available to customers. In the EEA generator suppliers like Brush, Melco and Hitachi are also present, besides the main OEMs like Siemens and Ansaldo. At a worldwide level (excluding China and Iran), there are even more suppliers present, namely BHEL, Shanghai Electric, Harbin, Dongfang, etc. This was confirmed by competitors, nine of which stated that they are active as producers of generators.¹²⁹⁹
- (1510) Although no market shares are available, from Alstom's installed base database it is possible to estimate that the parties' combined market shares would be around [40-50]% in the worldwide market (excluding China and Iran) and around [20-30]% in the EEA market.

¹²⁹⁹

See reply to question 4 of Questionnaire Q2 to competitors.

Table 46: Market shares of the market for generators above 35 MW (excluding water-cooled) for the period 2009-2013 based on Alstom's database for the installed base of generators

	EEA	WW (excluding China and Iran)
GE	[10-20]%	[30-40]%
Alstom	[10-20]%	[5-10]%
GE+Alstom	[20-30]%	[40-50]%
Siemens	[20-30]%	[10-20]%
Brush	[0-5]%	[0-5]%
Melco	[5-10]%	[0-5]%
Ansaldo	[10-20]%	[0-5]%
Hitachi	[0-5]%	[0-5]%
BHEL	[0-5]%	[10-20]%
Power Machines	[0-5]%	[0-5]%
Shanghai	[0-5]%	[0-5]%
Electrotyazhmash	[0-5]%	[0-5]%
Harbin	[0-5]%	[0-5]%
Elsib	[0-5]%	[0-5]%
Dongfang	[0-5]%	[0-5]%
Others	[10-20]%	[0-5]%

Source: See Annex 5168, sheet 2.

- (1511) The OEMs position is inflated by the fact that the sales of generators bundled with 50 Hz HDGT are included in this market. In the merchant segment GE is not present and Alstom has a market share of [10-20]% at the worldwide level and [0-5]% at the EEA level.
- (1512) During the Commission's investigation the majority of customers as well as EPC companies pointed out that there would be enough alternative suppliers of overall generators post-Transaction, and indicated several suppliers, namely Siemens, Toshiba, Doosan-Skoda, BHEL, Brush, Harbin, Shanghai and Dongfang.¹³⁰⁰ According to a customer *"There are a number of generators and we do not see competition in the EEA being an issue"* and *"Generators are a mature, established product and consequently we do not believe that there will be an impact on innovation"*.¹³⁰¹
- (1513) The Notifying Party's internal documents show that, although Alstom and GE are part of the best in class group for generators, there are other suppliers available also in the same group ([name of competitors]), and many others in a second tier, which generally present advantages in terms of low cost.

¹³⁰⁰ See replies to questions 144 and 145 of Questionnaire Q1 to Customers Gas fired power plant and question 8.2 of Phase I Questionnaire Q3 to EPCs.

¹³⁰¹ See replies to questions 198.1 and 202.1 of Questionnaire Q1 to Customers Gas fired power plant.

Figure 69: Key competitors landscape

[extract from internal GE document – assessment of competitors]

Source: See Annex 6414, slide 43.

- (1514) For the reasons set out at Recitals (1505) to (1509), the Commission finds that the Transaction does not lead to a significant impediment to effective competition in the overall market for generators (air-cooled and hydrogen-cooled) above 35 MW.

9.2. STs

9.2.1. The relevant product markets

9.2.1.1. The Notifying Party's views

- (1515) The Notifying Party submits that all STs should be considered as a relevant product market. Following the Commission's precedents, the Notifying Party considers relevant the segmentation between Industrial Steam Turbines ("IST") and LST, with a cut-off of either 70 MW or 100 MW. Further segmentations based on output are not considered relevant by the Notifying Party given the high degree of supply substitutability.
- (1516) For the sake of completeness, the Notifying Party also discusses the effects of the Transaction on a sub-segment including only LST for CCPP.
- (1517) The Notifying Party additionally submits that a distinction between 50 and 60 Hz is not relevant given that STs are custom-designed, which implies that the speed of the turbine can be addressed in the flow-path design.
- (1518) In the Reply to the Statement of Objections the Notifying Party argues that there is no basis for suppliers to raise prices for any "bundle" above the competitive level. The benefits customers may derive from sourcing a "bundle" are not significant enough so that they would outweigh unpicking the bundle to resist a SSNIP. In addition, according to the Notifying Party, the choice of components for a CCPP – including generators and STs – is customer and project-driven.

9.2.1.2. Previous Commission Decisions

- (1519) The Commission has previously considered that STs constitute a different market from HDGTs.¹³⁰² Within the market for STs, Commission's past Decisions considered a segmentation between ISTs (with an output below 70 MW) and LSTs given the different applications of these two types of STs.¹³⁰³ In another Decision, a 100 MW threshold was additionally considered.¹³⁰⁴ In both cases the market definition was left open.
- (1520) A possible segmentation between back pressure and condensing STs was also analysed in the past by the Commission, which however considered it not to be relevant since these two types are very similar technologically.¹³⁰⁵ A

¹³⁰² Case M.3148 – Siemens/Alstom Gas and Steam Turbines, paragraph 11.

¹³⁰³ Case M.1484 – Alstom/ABB, paragraphs 11 and 21-23.

¹³⁰⁴ Case M.3148 – Siemens/Alstom Gas and Steam Turbines, paragraphs 15-19.

¹³⁰⁵ Case M.3148 – Siemens/Alstom Gas and Steam Turbines, paragraph 19.

segmentation based on end-application was also not considered relevant in a previous Commission Decision given that this distinction is determined by the power output of the turbine.¹³⁰⁶

9.2.1.3. Commission's assessment

- (1521) The Commission's investigation showed that the overall market for LSTs is highly differentiated according to (i) power output, (ii) end-application, (iii) grid frequency and (iv) power plant configuration. The Commission's investigation analysed also the segment of the market for LSTs bundled with 50 Hz HDGTs.

(i) **ISTs and LSTs constitute separate markets**

- (1522) As regards the segmentation between ISTs and LSTs, a majority of customers indicated that they are not substitutable on the basis of their different product characteristics, underlying technology and end use. One of the competitors explained that *"steam turbines are customized in accordance with the underlying thermodynamic parameters (e.g. steam mass flow, pressure, temperature), so that steam turbines with an output >100 MW cannot be substituted with steam turbines with an output <100 MW"*.¹³⁰⁷
- (1523) Although there is no consensus among competitors regarding the cut-off point between ISTs and LSTs, a majority agreed that 100 MW is a more appropriate threshold than 70 MW.¹³⁰⁸ One competitor thus indicated that *"output higher than 100 MW is typically required for utility applications in relation to which LSTs are used, while output lower than 100 MW is typically required for in-house consumption for industrial applications in relation to which ISTs are used"*.¹³⁰⁹
- (1524) The Commission therefore concludes that the market for LSTs constitutes a distinguishable market from the market for ISTs. The Commission further considers that the threshold that defines the market for LSTs should be 100 MW.

(ii) **Segmentation by power output and corresponding end-application¹³¹⁰**

Nuclear plants vs gas or fossil-power plants

- (1525) LSTs for nuclear power plants have a higher output than LSTs for gas or fossil-fuel power plants. Generally LSTs for nuclear plants need to be above 800 MW.
- (1526) The Commission's investigation thus revealed that LSTs for nuclear plants are not comparable with LSTs for gas and fossil-fuel plants.¹³¹¹ Competitors

¹³⁰⁶ Case M.3148 – Siemens/Alstom Gas and Steam Turbines, paragraph 12.

¹³⁰⁷ See reply to question 21.1 of Phase I Questionnaire Q2 to competitors of the gas business.

¹³⁰⁸ See replies to question 4 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁰⁹ See reply to question 4.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³¹⁰ Both GE and Alstom are also active in the sale and supply of steam turbines for concentrated solar power with a combined share at the worldwide level in the period 2009-2013 amounting to [20-30]% (Alstom share amounts to [0-5]%). Alstom does not sell STs for concentrated solar power in the EEA. In view of the limited overlap and due to the presence of a strong competitor Siemens with a share amounting to [50-60]% any competitive concerns with respect to this market are unlikely and it will not be assessed further in the Decision.

identified the segment of LSTs for nuclear power plants as very difficult to enter because of the high capital and R&D investments required.¹³¹²

- (1527) In addition, competitors confirmed that switching from providing 300 MW to 900 MW LSTs would be difficult and would require significant time and cost. One of the competitors stated: *"900MW is significantly larger than 300MW, and OEMs have to adopt large capacity technologies for increase of capacity. The customers almost always request "commercially adopted technology" (for example, 2 units are already in operation for more than 2 years); therefore, even if such OEM successfully developed a new 900MW model, such OEM have to prove the reliability of such new 900MW LST. In some case it might be necessary to build its own power generation plant"*.¹³¹³ Another competitor explained that there are additional hurdles when manufacturing STs for nuclear plants as *"some design modifications are necessary, particularly with regard to safety and availability requirements of the overall steam turbine design (e.g. thermodynamic, process related) as well as to the auxiliary systems and control systems"*.¹³¹⁴

- (1528) Consequently, the Commission considers that LSTs for nuclear application constitute a separate market from the remaining applications for LSTs.

Distinction between fossil-fuel and gas fired plants applications

- (1529) The Phase I market investigation concluded that LSTs are developed from certain "technology platforms", corresponding to certain output ranges.¹³¹⁵ The division by end-application corresponds to different output ranges and associated technological platforms.
- (1530) Alstom's LST platforms have only one end-application, namely either CCPP, fossil-fuel or nuclear. GE, on the other hand, has some separate platforms for CCPP, but it also has other platforms that are used both for CCPP and fossil-fuel plants. However, GE has very reduced sales of LSTs for fossil-fuel plants, which may justify the absence of a fully dedicated platform to fossil-fuel power plants.
- (1531) Competitors considered that LSTs for CCPPs are comparable to LSTs for fossil-fuel power plants in terms of technical characteristics and product costs.¹³¹⁶
- (1532) The Commission concludes that LSTs for fossil-fuel and gas fired plants applications are part of the same relevant product market.

Output segmentation

- (1533) A considerable amount of competitors also agreed that it could be relevant to segment LSTs according to output ranges. However, competitor's views

¹³¹¹ See replies to questions 23 and 24 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 24 of Phase I Questionnaire Q2 to competitors of the gas business.

¹³¹² See replies to question 12 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³¹³ See reply to question 9.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³¹⁴ See reply to question 11.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³¹⁵ See replies to question 25 of Phase I Questionnaire Q2 to competitors of the gas business.

¹³¹⁶ See replies to question 10 of Phase II Questionnaire Q9 to competitors of the gas business.

diverged regarding the appropriate segmentation thresholds, given the continuous nature of the LSTs as regards output.¹³¹⁷

- (1534) The Commission concludes that LSTs should not be segmented according to output, with the exception of the minimum level, given its continuous nature as regards output.

Conclusion

- (1535) Although it is possible to distinguish LSTs according to their output and end-applications, the Commission concludes that given the continuous nature of the LSTs, the market for LSTs should not be segmented according to output and end-applications, with the exception of LSTs for nuclear plant applications which constitute a separate market.¹³¹⁸

(iii) Segmentation by grid frequency

- (1536) The Commission's investigation also showed that segmentation of the market for LSTs between 50 and 60 Hz LSTs is relevant, particularly from a demand point of view. A majority of customers indicated that they would not consider a LST designed for a frequency different from the one where their plant is located.¹³¹⁹ One customer thus stated that *"large LST operate directly at the frequency of the grid and it is not feasible to operate a 60 Hertz LST at 50 Hertz or to use a gear box or a frequency converter"*.¹³²⁰
- (1537) From a supply-side perspective, a majority of LSTs OEMs confirmed that they are able to manufacture LSTs for both 50 Hz and 60 Hz markets.¹³²¹ However, repositioning for another frequency market involves significant costs, as well as adjusting the length of the Last Stage Blade.¹³²² In fact, one competitor explained that *"if certain OEM can design and develop a LST for certain frequency, such OEM will be able to develop corresponding LST for another frequency; however, it takes costs and other resources, they may choose not to develop such model, especially if such OEM's main customer located in the same frequency regions."*¹³²³
- (1538) The Commission therefore considers that LSTs for 50 Hz power plants constitute a different market of the supply of LSTs for 60 Hz power plants.

(iv) Segmentation according to purchasing pattern

- (1539) The Commission also examined the relevance of a segmentation of LSTs on the basis of specific purchasing patterns, namely sold stand-alone or bundled with a HDGT. The investigation revealed that these purchasing patterns are mainly driven by the markets for HDGT.

¹³¹⁷ See replies to question 7 of Phase II Questionnaire Q9 to competitors of the gas business.

¹³¹⁸ Since there is no overlap between the Parties when looking to the sales in the period 2009-2014 as regards LST for nuclear application, this segment will not be discussed in this Decision.

¹³¹⁹ See replies to question 18 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹³²⁰ See replies to question 5.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹³²¹ See replies to question 5 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³²² See replies to question 19 of Phase I Questionnaire Q2 to competitors of the gas business.

¹³²³ See reply to question 5.1.1 of Phase II Questionnaire Q9 to competitors of the gas business.

A customer's preference toward bundled offers

- (1540) A clear majority of customers indicated that there are advantages in purchasing an HDGT bundled with a LST.¹³²⁴ In line with this preference, a majority of customers also replied that they buy their HDGTs coupled with LSTs.¹³²⁵ In addition, a number of customers commented that the shaft-line component integration is the main reason for choosing bundled HDGTs and LSTs.¹³²⁶
- (1541) Customers mainly explained that buying these items from the same OEM provides better overall efficiency and flexibility. In fact, a major customer explained that's convenient *"in most cases for new gas-fired power plants due to the efficiency and flexibility requirements of the gas-fired power plants for which the coherence between gas turbine, steam turbine, generator and boiler is key"*.¹³²⁷ Two other customers added that *"it is preferred to have the steam turbine from the same supplier"*¹³²⁸ and that *"best guarantees will be given on overall efficiency of a gas-fired power plant, if power train is purchased from one OEM"*.¹³²⁹
- (1542) Certain customers then argued that advantages of having HDGT and LST provided by one OEM are so significant that that they would only consider the manufacturer of the same OEM as a credible supplier for the LST.¹³³⁰ Some of these views mainly reflect a preference for single-shaft plant configuration, particularly in the EEA, where the sale of a LST with a HDGT from the sale supplier is almost systematic.¹³³¹ One customer noted: *"in case of single shaft plants it is critical that the GT OEM also supplies the steam turbine"*.¹³³²
- (1543) Other customers explain more generally that they prefer to buy the package given the *"bundled contract negotiations, same T&C, easier project management / implementation, less interface engineering, same automation system"*¹³³³, *"overall design responsibility is important as well as a proven design"*¹³³⁴ and *"proprietary information known for both GT and ST"*.¹³³⁵
- (1544) One competitor also explained that *"[c]ustomers source the equipment for a CCPP i.e. a power island, usually from the same OEM. This is done in order to reduce costs and risks associated with integrating the different components into a power train. Further, the components from the same OEM are usually manufactured so that they can achieve the best result (in particular with regard to higher efficiencies) when combined into a power train"*.¹³³⁶

¹³²⁴ See replies to question 146 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³²⁵ See replies to question 145 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³²⁶ See replies to question 146.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³²⁷ See reply to question 145.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³²⁸ See reply to question 145.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³²⁹ See reply to question 146.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³³⁰ See replies to question 146.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³³¹ See replies to questions 146.2 and 147.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³³² See reply to question 146.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³³³ See reply to question 146.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³³⁴ See reply to question 146.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³³⁵ See reply to question 146.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹³³⁶ See reply to question 34.1 of Phase II Questionnaire Q9 to competitors of the gas business.

- (1545) The Commission therefore considers that CC end-use of LSTs and single-shaft configuration often require bundled sales.

A segment strongly driven by the markets for HDGTs

- (1546) The market investigation also substantiated that the segment for LSTs bundled with HDGTs is highly driven by the markets for HDGTs itself. Most of the respondent competitors agreed that the choice of the HDGT typically drives the choice of LST. One European competitor thus noted that "*GT OEMs many case offer package proposal, or sometimes apply customized design between GT and LST (including single shaft solution) so other LST OEM cannot apply*".¹³³⁷
- (1547) In fact, HDGT manufacturers tend to leverage their market power, by selling more integrated offers. The trend is reflected in GE internal documents where it highlights that "*GT successes are bringing more ST to GE*".¹³³⁸
- (1548) According to information provided by the Notifying Party, for CC projects, GE sold its HDGTs coupled with its LSTs in [50-60]% of the cases in the period 2005-2014Q1.¹³³⁹ This relatively low value is explained by the fact that not all countries where GE sells HDGTs are accessible for GE's LSTs. In fact, in certain countries, such as China for instance, there is the requirement that a percentage of the CCPP projects must have local origin and typically the LSTs must be produced by a national OEM. GE internal documents indicate that in a period 2011-2014, in its accessible regions, GE was able to sell its LSTs above 100 MW coupled with its HDGT [number of tenders] times, which corresponds to [70-80]% of the total accessible market.¹³⁴⁰
- (1549) According to this internal document, from these [number of tenders] bundled sales, GE won [number of tenders] times given its package offer, namely in [80-90]% of the times the package was the sole element determining the sale of the LSTs. From the remaining sales, more than half were determined by the close relationship with the customer and only less than [10-20]% of the total sales were due to competitive wins. This constitutes strong evidence that a HDGT manufacturer leverages its market power when selling an integrated package of HDGT together with LST.
- (1550) As regards Alstom, it sold its HDGTs with LSTs in [80-90]% of the CCPP projects in the period 2005-2014Q1. On average, in [70-80]% of the industry projects for CCPP, the HDGT was sold together with the LST.¹³⁴¹
- (1551) In view of the findings of its investigation, the Commission considers that there is a specific market for LSTs integrated in a bundled offer with a HDGT. This market is distinct from the overall market for LSTs. The Commission also found that this market is strongly driven by the markets for HDGTs.

¹³³⁷ See reply to question 34.1 of Phase II Questionnaire Q9 to competitors of the gas business.

¹³³⁸ See Annex 6429, slide 5.

¹³³⁹ See Form CO, Table 133.

¹³⁴⁰ See Annex 6429, slide 23.

¹³⁴¹ See Form CO, Table 133.

9.2.1.4. Conclusion

- (1552) In summary, the Commission concludes that the market for LSTs for nuclear applications constitutes a separate market from the market for LSTs for gas and fossil-fuel power plants. Moreover, the market for 50 Hz LSTs and the market for 60 Hz LSTs constitute separate markets. Since the EEA is a 50 Hz frequency area, any impact on the market for 60 Hz LSTs would not affect EEA customers.
- (1553) The Commission further defined specific markets for LSTs bundled with HDGTs. In particular, the Commission will consider the market for LSTs bundled with 50 Hz HDGTs since the EEA is a 50 Hz frequency area.

9.2.2. *The relevant geographic markets*

9.2.2.1. The Notifying Party's views

- (1554) The Notifying Party submits that the market for LSTs should be defined as global by the same arguments as the market for 50 Hz HDGTs is considered global.
- (1555) As regards a possible exclusion of India and Japan from the relevant geographic market, the Notifying Party argues in the Reply to the Statement of Objections that the correct focus should be whether customers (including those in the EEA) have access to a global marketplace in sourcing their products and services, in this case STs, not whether GE has or has not entered a particular region.

9.2.2.2. Previous Commission Decisions

- (1556) The Commission has previously considered that the market for LSTs was at least EEA-wide and probably worldwide, but ultimately left the market definition open.¹³⁴²

9.2.2.3. Commission's assessment

- (1557) The Commission's investigation confirmed that in general there are no barriers to global supplies of LSTs related to transport costs and regional regulation. However the majority of customers indicated that the technical specifications for LSTs depend on the location of the plant, namely in what concerns grid frequency (which differ according to the regions of the world considered), type of cooling that can be used, climate, local energy market, ambient conditions, etc.
- (1558) The majority of customers indicated that, although the proximity of the manufacturing/repair/services facility is a benefit, it is not a decisive criterion for the choice of the supplier of the LSTs. Therefore, the majority of customers also indicated that the geographic location of their plant does not limit the availability of potential alternative suppliers and that they invite suppliers irrespective of the location of their manufacturing facilities. Competitors supported this opinion by indicating that they face the same competitors in every world region and that a local presence is not a necessary requirement to be able to compete.

¹³⁴²

Case M.3148 – Siemens/Alstom Gas and Steam Turbines, paragraphs 20-21.

- (1559) As regards price in the EEA and in the rest of the world, the majority of customers indicated that they do not observe any differences. However, some customers indicated that there are differences in prices between LSTs manufactured in Europe and those in China given the labour costs differences. Competitors expressed diverse opinions about price differences between the EEA and the rest of the world.
- (1560) Despite this, a few countries, namely China, Japan and India, appear to be characterised by the requirement for a minimum percentage of the projects to have local origin, that is to say, the LSTs must be produced by a national OEM.¹³⁴³ In its Reply to the Statement of Objection,¹³⁴⁴ GE claims to have made some sales of LSTs in the Indian market, which thus should not be excluded from the relevant geographic market. However, contemporaneous internal documents from GE (dating March 2015)¹³⁴⁵ clearly show that India is currently viewed as non-accessible and excluded from GE's addressable market. In any event, regardless of whether GE has occasionally managed in the past to sell LSTs in India, GE has not contested the existence of the local content requirement in those countries, which represents a specific barrier to entry that create different conditions of competition on the supply side of the market for LSTs. These specific entry barriers and consequent different conditions of competitions for LSTs characterize those countries as separate markets. Finally, as explained in Section 7.3.3, there are particular barriers to enter Iran due to international embargos which create different conditions of competition also in that country.

9.2.2.4. Conclusion

- (1561) The Commission concludes that the relevant geographic market for LST bundled with 50 Hz HDGTs, given that it is driven by the supply of 50 Hz HDGTs, should be the same as that for 50 Hz HDGTs. Hence, similarly to the market for 50 Hz HDGTs, for the purpose of assessing the Transaction, the issue whether the relevant geographic market should be considered as worldwide or EEA-wide in scope can be left open, as the competitive assessment would not differ. Apart from China and Iran, also India and Japan should also be excluded from the worldwide market for LSTs bundled with 50 Hz HDGTs in view of the local origin requirements and international embargo sanctions.
- (1562) As regards the overall market for 50 Hz LSTs (excluding those for nuclear applications), the Commission similarly concludes that it can be left open whether the relevant geographic market should be considered as worldwide (excluding China, Iran, Japan and India) or EEA-wide in scope, as the competitive assessment would not change.

¹³⁴³ See Annex 6229, slide 23

¹³⁴⁴ See paragraphs 698-699.

¹³⁴⁵ See Annex 6429, slide 23.

9.2.3. *Competitive assessment of the market for LSTs bundled with 50 Hz HDGTs*

9.2.3.1. The Notifying Party's views

- (1563) The Notifying Party submits that there is no overlap between the Parties' activities in the market for STs with an output below 70 MW and only limited horizontal overlaps in the market for STs with an output above 70 MW. In a market for STs with an output above 70 MW, there are numerous competitors and customers have an ability to switch to alternative suppliers which would render the merged entity unable to raise prices.
- (1564) The Notifying Party disagrees with the geographic and end-application segmentation. Nevertheless, concerning a competition for CC ST, it would follow CCGT power plant competition as customers would still be able to mix-and-match different OEMs when creating plants.
- (1565) Apart from that, according to the Notifying Party, the number of LST OEMs is likely to increase in the EEA with the increasing presence of Asian OEMs that would be able to leverage their low cost structure. Also, there would be situations where a third party LST would be better suited to combine with an HDGT of the merged entity.
- (1566) The differences of market shares when segmented by end-application do not imply that relevant technologies or competitive conditions are different between regions. Instead, it may reflect the differences in how the CCGT plants are purchased as in some regions more integrated packages are prevalent, where OEMs also offer LSTs and other equipment together with HDGTs.
- (1567) The Notifying Party argues in the Reply to the Statement of Objections that the Commission wrongly excludes competition from independent LST suppliers since customers can unpick a bundle, if they want. Therefore, Alstom is not a unique competitor. According to the Notifying Party's view suppliers like Siemens, MHPS, Doosan, Ansaldo, ManTurbo are relevant competitors in the market.
- (1568) In addition the Notifying Party argues in its Reply to the Statement of Objections that LST is a mature technology and that the market for LSTs is not characterized by high entry barriers. Moreover, there would be over capacity.
- (1569) Finally the Notifying Party argues that customer reaction demonstrated that competition will not be adversely affected in the LSTs market.

9.2.3.2. Commission's assessment

(i) The Transaction will lead to market-leading and very large market shares

- (1570) The Commission will use two proxies for the market structure of the market for LSTs bundled with 50 Hz HDGTs.
- (1571) First, the Commission uses the market shares of the CC segment of the market for 50 Hz HDGTs. This is a good proxy since over the period 2011-2014, a majority of GE's HDGT for CC projects were sold together with a LST. In fact,

in its accessible market for LSTs¹³⁴⁶, GE sold [70-80]% of its HDGTs bundled with a LST.¹³⁴⁷ In addition, it appears that most of Alstom's HDGTs are actually equipped with Alstom LSTs. Therefore, market shares for 50 Hz CC HDGTs constitute a relevant proxy for the assessment of the market for LSTs bundled with 50 Hz HDGTs.

- (1572) When taking into account the market for 50 Hz HDGTs (CC) as a proxy for the market for LSTs bundled with 50 Hz HDGTs, in the period 2009-2014Q1 the combined market share of the Parties was [50-60]% in the EEA and [50-60]% at worldwide level excluding China and Iran.
- (1573) In the EEA, GE and Alstom are the number two and number three competitors, respectively. Post-Transaction the merged entity would be the clear leader in terms of market shares, with Siemens as its largest competitor with a market share of [30-40]%. Worldwide (excluding China and Iran) GE is currently the market leader and its position would be significantly strengthened post-Transaction, with the second competitor, Siemens, having half of the merged entity's combined market share. Ansaldo (in particular in the worldwide market) and MHPS have much smaller market shares.

Table 47: Shares in the market for 50 Hz CC HDGTs for the period 2009Q2-2014Q1 (in #GTs)

	EEA	WW (excluding China and Iran)
GE	[20-30]%	[40-50]%
Alstom	[20-30]%	[10-20]%
GE+Alstom	[50-60]%	[50-60]%
Ansaldo	[5-10]%	[0-5]%
MHPS	[0-5]%	[5-10]%
Siemens	[30-40]%	[20-30]%

Source: McCoy.

- (1574) Second, the Commission considers the market shares for LSTs sold for 50 Hz CCPP applications. In fact, based on the data provided by the Notifying Party, a majority of LSTs for CCPP applications are sold bundled with a HDGT. Over the period 2005-2014Q1, [60-70]% of the LSTs for 50 Hz CCPP applications use were sold bundled with an HDGT.¹³⁴⁸ Therefore, market shares of LSTs used in 50 Hz CCPP applications constitute a relevant proxy for the assessment of the market for LSTs bundled with 50 Hz HDGTs.

¹³⁴⁶ GE's non-accessible countries are not representative of the competitive interaction between the Parties or their strengths in the remaining worldwide regions or both.

¹³⁴⁷ See Annex 6429, slide 23.

¹³⁴⁸ See Form CO, Table 133.

Table 48: Shares in the supply of LSTs for 50 Hz CCPP for the period 2009Q2-2014Q1 (in MW)

	EEA	WW (excluding China, Iran, Japan and India)	WW (excluding China and Iran)
GE	[20-30]%	[30-40]%	[30-40]%
Alstom	[10-20]%	[10-20]%	[10-20]%
GE+Alstom	[30-40]%	[40-50]%	[40-50]%
Ansaldo	[5-10]%	[5-10]%	[5-10]%
MHPS	[5-10]%	[5-10]%	[0-5]%
Siemens	[30-40]%	[20-30]%	[0-5]%
Doosan	[10-20]%	[5-10]%	[5-10]%
Fuji Electric		[5-10]%	[5-10]%
Others		[5-10]%	[5-10]%

Source: GE's reply to the Commission's Request for Information N° 37, 28.05.2015, question 2 and GE's reply to the Commission's Request for Information N° 39, 03.06.2015, question 1.

- (1575) In the EEA, the combined share of the Parties in the supply of LSTs to 50 Hz CCPP projects is [40-50]% in the period 2009-2013, while for the period 2009Q2-2014Q1 it was equal to [30-40]%. Pre-merger GE and Alstom are the number two and number three competitors, respectively. Post-Transaction the merged entity would be the clear leader in terms of market shares, with Siemens as its largest competitor with a market share of [30-40]%. Doosan would be well behind the two main competitors with a market share of [10-20]% in the EEA. MHPS and Ansaldo would be by far the smallest competitor in the EEA with market shares of [5-10]%.
- (1576) At the worldwide level (excluding China, Iran, India and Japan), the combined shares of the Parties in the supply of LSTs to 50 Hz is equal to [40-50]%, with an increment of [10-20]%. The worldwide positioning of the parties would not change significantly if India and Japan were to be also included in the relevant geographic market. It is not relevant to analyse market shares at worldwide level as the scope of the LST market bundled with 50 Hz HDGT cannot be broader than the relevant geographic market for 50 Hz HDGTs, which has been defined on worldwide basis excluding China and Iran (see Section 7.3). Pre-merger GE is already the leader of the market, while Alstom is the third biggest competitor. Post-Transaction the leader position of the merged entity would be strengthened in terms of market shares, with Siemens as its largest competitor with a share of [20-30]%. Post-Transaction, Doosan, MHPS and Ansaldo would be well behind the two main competitors with market shares in the range of [5-10]% to [5-10]%.
- (1577) The Parties' combined shares under this second proxy, although still large, are lower than under the former given the inclusion of some LST suppliers that are not HDGT manufacturers. In fact, the market shares of LST manufacturers which do not sell HDGTs, and which are consequently unable to bundle these products, have to be left out so as to frame the structure of the market.
- (1578) In view of the above, the Commission concludes that pre-merger GE is already the market leader in terms of market shares at worldwide level (regardless of whether India and Japan are included or excluded) in the market for LSTs bundled with 50 Hz HDGTs. The Transaction would add a significant market share from Alstom, increasing the difference with the second largest competitor. In the EEA, GE and Alstom are two of the most relevant

competitors, and post-Transaction the merged entity would become the clear market leader.

(ii) The Transaction eliminates an important competitive force

- (1579) The Notifying Party's internal documents suggest that there are five major competitors in the market for LSTs, namely GE, Alstom, Siemens, MHPS and Toshiba (see Figure 70). In fact, the Notifying Party benchmarked in detail its competitiveness to its four main competitors.

Figure 70: GE's analysis regarding LSTs competitiveness

[extract from internal GE document – assessment of LST competitors]

Source: See Annex 3708, slide 8.

- (1580) In the course of the Commission investigation, customers almost unanimously confirmed that Alstom is an important supplier of LSTs.¹³⁴⁹ One major European customer indicated that *"Alstom has about 20% of the world's installed steam turbine capacity"* and *"is capable to deliver and serve steam turbines for the whole range from 100 to 1200 MW"*¹³⁵⁰. Other customers also indicated that Alstom has a *"flexible approach to commercial terms"*,¹³⁵¹ *"a better know how"*,¹³⁵² *"a diverse portfolio of ST"*,¹³⁵³ and *"proven track record"*.¹³⁵⁴
- (1581) Competitors also considered that Alstom is a strong supplier of STs as compared with other manufacturers.¹³⁵⁵ According to one competitor *"Alstom is one of the main OEM with a full product portfolio based on and a strong IP/know how background"*.¹³⁵⁶
- (1582) Alstom is also considered to play a significant commercial role and set a notable competitive pressure on the supply of LSTs. In fact, several customers stated that the participation of Alstom in tenders for LSTs used in CCGTs may allow customers to obtain better terms and conditions from other LST manufacturers. In fact, more customers expressed this when Alstom participates, than when GE takes part to the bid.¹³⁵⁷ Some customers however stated that GE and Alstom as suppliers of LSTs do not allow to obtain better conditions from other LSTs producers since they *"always purchased CCGT power plants as turnkey therefore the steam turbine is part of the overall scope of supply, therefore it is not critical who the supplier is, as long as it is well integrated in the overall supply"*.¹³⁵⁸

¹³⁴⁹ See replies to question 141.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁵⁰ See reply to question 141.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁵¹ See reply to question 102.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁵² See reply to question 141.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁵³ See reply to question 141.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁵⁴ See reply to question 141.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁵⁵ See replies to question 20 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁵⁶ See reply to question 20.2 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁵⁷ See replies to questions 143.1 and 143.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁵⁸ See reply to question 143.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

- (1583) The Commission's investigation also supported that Alstom is a relatively close competitor of GE for the supply of LST. A customer indicated that *"both OEMs are capable to offer competitive steam turbines for CCGT applications, both single shaft and multi shaft configuration"*.¹³⁵⁹
- (1584) The majority of competitors consider that Alstom and GE are close competitors for the supply of STs. One major competitor further confirmed that Alstom and GE are particularly strong competitors in the CCPP end-application with: *"[l]eaving aside steam turbines for nuclear power plants, both GE and Alstom offer steam turbines with all power outputs and for both, CCPP and fossil-fuel plant applications. In particular regarding CCPP application, GE and Alstom are strong players on the market, serving the same target market for 50 Hz applications"*.¹³⁶⁰ Another competitor mentions that *"There is known competition between GE and Alstom in this market"*.¹³⁶¹
- (1585) Therefore, the Transaction will remove a significant and close competitor to GE. However, as set out in Recitals (1543) to (1548), the market for LSTs bundled with 50 Hz HDGTs is driven by the market for 50 Hz HDGTs. Without prejudice to this section, the assessment of the market for LSTs bundled with 50 Hz HDGTs remains subjected to the assessment of the market for 50 Hz HDGTs.

(iii) The Transaction significantly reduces the alternatives available to customers with likely effects on prices

- (1586) The Commission considers that there are few alternatives in the market for STs bundled with 50 Hz HDGTs. In fact, not all suppliers of LST are able to supply 50 Hz HDGTs and therefore, to compete on the specific segment for LSTs bundled with a 50 Hz HDGT. Among the major LST suppliers, only GE, Alstom, Siemens and MHPS are able to supply 50 Hz HDGTs bundled with a LST. Therefore, the Transaction reduces the number of suppliers competing on this specific segment. With particular regard to CCPP projects often implying bundled HDGTs, a customer thus argued that *"due to reduced competition, commercial and technical choices may be limited while, in the future, there is a possibility to get only one offer in a Tender for a new CCPP"*.¹³⁶²
- (1587) Moreover, and as described in Section 8.5, not all HDGT manufacturers are as strong or close competitors to Alstom. Thus, and similar to the conclusion taken in Section 8.6, the Commission considers that the Transaction significantly reduces the alternatives available to customers in the market for STs bundled with 50 Hz HDGTs.
- (1588) Some of customers expressed the view that there would still remain enough competitors on the market for LSTs after the Transaction.¹³⁶³ However, a majority of customers also stated that the Transaction would have a negative

¹³⁵⁹ See reply to question 141.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁶⁰ See reply to question 22.1.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁶¹ See reply to question 22.1.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁶² See reply to question 156.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁶³ See replies to questions 155.1 and 155.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

impact regarding product choice and quality for LSTs.¹³⁶⁴ This led a majority of customers to state that the Transaction will have a negative impact on price regarding LSTs worldwide and in the EEA.¹³⁶⁵

- (1589) On the one hand, customers explained that *"GE steam turbine [is not seen] as fully competitive, therefore there is no reduction in the key players on the [L]ST market"* and that they would, therefore, be *"surprised if the transaction resulted in a loss of Alstom LST business [as] business appears to have a large installed base and a good reputation"*.¹³⁶⁶ On the other hand, customers also expressed concerns regarding the effects of the merger, and the risk of discontinuation of Alstom's technology. One major European customer argued that *"both GE and Alstom have a broad steam turbine product line and it is expected that they will optimize their R&D, design and manufacturing costs and make Decisions on what product lines they will continue to market. They will not let their own products compete against each other, hence it would lead to reduced offers and less competition"*.¹³⁶⁷
- (1590) Certain customers explained that *"more suppliers [leads to] better prices"*,¹³⁶⁸ that they *"obtained a saving by calling Alstom and GE to a BID"* or even that they *"selected Alstom after the normal bidding process which would have resulted in better terms"*.¹³⁶⁹ With particular regard to bundled offers, a customer explained that the presence of Alstom and GE leads to *"more competition"*, especially when customers *"require the steam turbine to be part of the offer"*.¹³⁷⁰
- (1591) A customer further stated that the Transaction will remove a commercially competitive supplier. Post-Transaction, this customer asserts that it will be more difficult to negotiate better terms and conditions on this specific segment for HDGTs sold bundled with an LST. Indeed, this market participant stated that *"less competitors will remain on the market. There is already a limited number of players which are capable to manufacture steam turbines for 50 Hz gas-fired plants. Less competition means worse commercial conditions & terms and prices for potential buyers. Mitsubishi is not active in Europe. So in the EEA the situation with commercial conditions & terms and prices for potential buyers will become even worse than worldwide."*¹³⁷¹
- (1592) Without prejudice to this section, and more importantly, since the market for LSTs bundled with 50 Hz HDGTs is driven by the market for 50 Hz HDGTs, the assessment of the market for LSTs bundled with 50 Hz HDGTs remains subjected to the assessment of the market for 50 Hz HDGTs.

¹³⁶⁴ See reply to question 155.4 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁶⁵ See replies to questions 155.5 and 155.6 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁶⁶ See reply to question 155.1.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁶⁷ See reply to question 155.1.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁶⁸ See reply to question 143.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁶⁹ See reply to question 143.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁷⁰ See reply to question 143.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁷¹ See reply to question 149.1.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

(iv) The Transaction would remove a significant innovation force

- (1593) In the course of the market investigation, a vast majority of customers explained that Alstom was an important innovator regarding STs used in 50 Hz CCPP.¹³⁷² Although certain customers explained that *"the steam turbine market is a mature and stable market"*¹³⁷³ that requires less innovation investment, customers further stated that Alstom is a top-class innovator in this segment, in comparison to GE especially. Customers indicated that Alstom *"is the leading steam turbine supplier along with Siemens"*.¹³⁷⁴ In addition, a customer explains that *"Alstom's steam turbines can cope with the highest ultra-supercritical steam parameters"*.¹³⁷⁵ A customer eventually indicated that *"both suppliers delivered innovations"*, alluding to *"GE with diamond-tuff-blades or Alstom with new blade designs and service approaches"*.¹³⁷⁶ Finally a customer states that Alstom innovates *"to improve overall CCPP efficiency"*.¹³⁷⁷
- (1594) The Transaction will thus remove a significant innovation force from the market. However, as set out in Recitals (1543) to (1548), the market for LSTs bundled with 50 Hz HDGTs is driven by the market for 50 Hz HDGTs. Without prejudice to this section, the assessment of the market for LSTs bundled with 50 Hz HDGTs remains subjected to the assessment of the market for 50 Hz HDGTs.

(v) Barriers to entry and weakness of the remaining OEMs

- (1595) In the course of the market investigation, customers evidenced that this segment has significant barriers to entry. As a matter of fact, customers almost unanimously confirmed that they have not observed any new OEM entering the market for LSTs in the last 5 years and that no entry is expected for the coming two years as well. The only exception mentioned by one of the HDGT manufacturers was that Chinese OEMs could extend their presence outside the domestic market.¹³⁷⁸
- (1596) When describing the difficulty to enter the market for LSTs, the majority of competitors described the barriers to entry as "high" as opposed to "very high" for the markets for HDGTs.¹³⁷⁹ One of the most highlighted key requirements to enter the market is the proven track record. In addition, R&D expenditures and know-how expertise were mentioned. One of the competitors thus explained that *"[w]ith regard to high out-put products, such products require high cost for new development (high R&D Capex), as the products must have very long life and good performance and price in order to win the bid against competitors. In addition customers will not adopt new OEMs' products until*

¹³⁷² See replies to questions 142.1 and 142.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁷³ See reply to question 141.3 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹³⁷⁴ See reply to question 142.3 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹³⁷⁵ See reply to question 142.3 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹³⁷⁶ See reply to question 142.3 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹³⁷⁷ See reply to question 142.3 of Phase II questionnaire Q7 to customers of Gas fired power plant.

¹³⁷⁸ See replies to questions 23.2, 24.1 and 24.2.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁷⁹ See replies to question 25.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

*they trust such OEMs and until operational records of such products are established".*¹³⁸⁰

- (1597) A major competitor in both HDGT and LST markets further explained that *"[s]team turbine technology is generally mature and intellectual property rights only play a limited role. Nevertheless, significant investments into R&D, manufacturing equipment and engineering capabilities would be necessary for a new entrant. Therefore, any new entrant would have to have sufficient financial resources. In addition, the OEM would also have to build up a track-record and a customer base. This might take time in addition to building up a sales and aftermarket service network to cover those regions where the new entrant is active".*¹³⁸¹
- (1598) Most importantly, it is further highlighted that *"for CCPP applications in certain regions (especially in the EU), customers usually source the gas turbine together with the steam turbine and the generator. So any OEM entering the steam turbine market would also have to be able to supply a gas turbine and a generator optimally configured with the steam turbine. This might constitute an additional barrier to entry".*¹³⁸² Confirming the delineation of a specific segment for LSTs bundled with HDGTs, this statement also demonstrates the significant difficulty for stand-alone LST manufacturers to effectively enter and compete in the market.
- (1599) In summary, there are significant barriers to enter the market and the presence of the remaining LST suppliers is not likely to counteract the reduction of alternatives resulting from the disappearance of Alstom as an independent competitor. However, as set out in Recitals (1543) to (1548), the market for LSTs bundled with 50 Hz HDGTs is driven by the market for 50 Hz HDGTs. Without prejudice to this section, the assessment of the market for LSTs bundled with 50 Hz HDGTs remains subjected to the assessment of the market for 50 Hz HDGTs.

9.2.3.3. Conclusion

- (1600) At both EEA and worldwide levels (regardless of whether India and Japan are included or excluded), the market for LSTs bundled with 50 Hz HDGTs is characterised by a strong presence of GE and Alstom. Post-Transaction the merged entity would become a market leader in the EEA, and strengthen the worldwide position of GE.
- (1601) The Commission's investigation has shown that the market for LSTs bundled with 50 Hz HDGTs is particularly driven by the customer's preference for more integrated solutions and single-shaft combinations of CCPP. Since only major HDGTs suppliers are able to supply both HDGT and LST as a package, this structure of this segment is already highly concentrated. GE and Alstom being already close competitors, the Transaction will give rise to a very large combined market share with significant increments at both EEA and worldwide levels.

¹³⁸⁰ See reply to question 25.1.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁸¹ See reply to question 25.1.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

¹³⁸² See reply to question 25.1.1 of Phase II Questionnaire Q9 to competitors on generators and ST.

- (1602) Furthermore, the Transaction is expected to have an important impact on competition given that the only credible competitors able to package HDGTs with LSTs are Siemens, Ansaldo and MHPS. These competitors would remain well behind the newly created entity at both levels and it is unlikely that new suppliers enter the market.
- (1603) Without prejudice to this section, given that the assessment of the present market remains subjected to the assessment of the market for 50 Hz HDGTs, as exposed in Section 7.4 of the Decision, the Transaction would likely have an impact on prices, product choice and innovation of the packages that include a HDGT and an LST.
- (1604) The Commission therefore considers that the Transaction leads to a significant impediment to effective competition on the market for LSTs bundled with 50 Hz HDGTs.

9.2.4. *Competitive assessment of the overall market for 50 Hz LSTs (excluding those for nuclear application)*

- (1605) The customers in this market include those that do not have a strong preference to buy the LST bundled with an HDGT. These customers may choose to buy it separately or in a bundle if that is cheaper. The market shares relevant for these customers are the ones of the overall market for 50 Hz LSTs (excluding those for nuclear applications).
- (1606) In the overall market for 50 Hz LSTs (excluding those for nuclear applications) there are many suppliers available. In the EEA, LSTs suppliers like Doosan, Franco Tossi and Power Machine are also present, besides the main OEMs like Siemens, MHPS and Ansaldo. At a worldwide (excluding China, Iran, India and Japan), there are even more suppliers present, namely Harbin, Shanghai Electric, Dongfang, Toshiba, Fuji, etc. This was confirmed by competitors. In fact, eight competitors stated that they are active as producers of ST.¹³⁸³ A competitor also points out that "*there is other sufficient competition in the business*".¹³⁸⁴
- (1607) The Parties' combined market share is around [20-30]% in the worldwide market (excluding China, Iran, India and Japan) and around [40-50]% in the EEA market. The OEMs' position is inflated by the fact that the sales of LSTs bundled with 50 Hz HDGT are included in this market.

¹³⁸³ See reply to question 4 of Phase I Questionnaire Q2 to competitors of the gas business.

¹³⁸⁴ See reply to question 169.1 of Phase I Questionnaire Q2 to competitors of the gas business.

Table 49: Shares in the market for 50 Hz LSTs (excluding those for nuclear application) for the period 2009-2013

	EEA	WW (excluding China, Iran, India and Japan)
GE	[10-20]%	[10-20]%
Alstom	[30-40]%	[10-20]%
GE+Alstom	[40-50]%	[20-30]%
Siemens	[10-20]%	[10-20]%
MHPS	[20-30]%	[10-20]%
Ansaldo	[0-5]%	[0-5]%
Doosan	[5-10]%	[5-10]%
Franco Tossi	[0-5]%	[0-5]%
Power Machine	[0-5]%	[0-5]%
BHEL	[0-5]	[0-5]%
Dongfang	[0-5]	[5-10]%
Fuji	[0-5]	[0-5]%
Harbin	[0-5]	[10-20]%
Shanghai Electric	[0-5]	[10-20]%
Toshiba	[0-5]	[0-5]%
Others	[0-5]	[0-5]%

Source: GE's reply to Commission's Request for Information N° 56, 29.07.2015, question 1.

- (1608) The majority of customers as well as EPC companies pointed out that there would be enough alternative suppliers of LSTs after the Transaction, and indicated several suppliers, namely Siemens, Doosan-Skoda, MHPS, Toshiba, Fuji Electric and Ansaldo.¹³⁸⁵ According to a customer *"Steam turbines are a mature market where the technology has not changed significantly in the last 50 years. All established LST manufacturers are able to offer similar products, services and levels of performance"*.¹³⁸⁶ Another customer explains that *"having the 4 strong market competitors remaining and a few more minor players, the level of the competitiveness will be kept"*.¹³⁸⁷
- (1609) For the reasons set out at Recitals (1602) to (1605) to, the Commission finds that the Transaction does not lead to a significant impediment to effective competition in the overall market for 50 Hz LSTs (excluding those for nuclear application).

¹³⁸⁵ See replies to questions 129 and 130 of Phase I Questionnaire Q1 to customers Gas fired power plant and question 8.1 of Phase I Questionnaire Q3 to EPCs.

¹³⁸⁶ See reply to question 188.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹³⁸⁷ See reply to question 188.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

9.3. HRSGs

9.3.1. *The relevant product market*

- (1610) The Notifying Party submits that the exact product market definition can be left open since the Transaction is unlikely to raise competition concerns under any plausible product market definition.¹³⁸⁸
- (1611) In a previous decision the Commission defined the market for HRSGs as a separate product market without segmenting any further.¹³⁸⁹ In another decision, the Commission, considered to segment the market according to the size of the gas turbine and also considered a possible segmentation based on a distinction between "tier one" and "tier two" competitors.¹³⁹⁰ Ultimately, the Commission left open the exact product market definition.
- (1612) In this case, the market investigation provides indications that the market should not be segmented by size of the gas turbines or by "tier one" and "tier two" competitors.¹³⁹¹ Nonetheless, the exact product market definition can be left open since the Transaction is unlikely to raise competition concerns under any plausible market definition.

9.3.2. *The relevant geographic market*

- (1613) The Notifying Party submits that the market for HRSGs is global in scope. Indeed, according to the Notifying Party, customers source HRSGs on a global basis, and a number of specialized HRSG suppliers outsource the manufacturing of HRSGs to licensees around the globe.¹³⁹²
- (1614) In a previous decision the Commission left open whether the market for HRSGs is EEA-wide or global but the market investigation provided support for a global HRSGs market.¹³⁹³
- (1615) The market investigation indicates that there are no major barriers to the global supply of HRSGs. Customers do not consider proximity as a decisive factor and consequently invite suppliers irrespectively of their location. Moreover, availability of suppliers is not influenced by the customers' site location and prices are fairly homogeneous across the world.¹³⁹⁴ The market investigation therefore indicates that the market for HRSGs is at least EEA-wide and potentially worldwide. Nonetheless, the exact geographic market definition can be left open since the Transaction does not raise competition concerns under any plausible market definition.

9.3.3. *Competitive assessment*

- (1616) There is no horizontal overlap in the supply of HRSG given that GE does not manufacture HRSGs but sources 100% of its demand from independent third party suppliers.

¹³⁸⁸ See Form CO, paragraph 1082.

¹³⁸⁹ Case M.1484-ALSTOM/ABB (1999).

¹³⁹⁰ Case M.6350- Siemens/NEM Holding (2011), paragraphs 13-18.

¹³⁹¹ See replies to questions 30 and 31 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹³⁹² See Form CO, 1085.

¹³⁹³ Case M.6350- Siemens/NEM Holding (2011), paragraph 21.

¹³⁹⁴ See replies to question 34 to 40 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

9.3.4. Conclusion

- (1617) Given the absence of a horizontal overlap between the Parties as regards HRSG the Commission finds that the Transaction does not lead to a significant impediment to effective competition in the market for HRSG.

9.4. Plant and Unit Control Systems

9.4.1. The relevant product market

- (1618) The Notifying Party submits that the exact product market definition can be left open since no competition concerns arise under any market product definition.¹³⁹⁵
- (1619) The Commission, in a previous case, considered the distinction between instrumentation and control systems ("I&Cs") for overall power plants and I&Cs for specific components but ultimately left open the exact market definition.¹³⁹⁶
- (1620) The market investigation, in this case, suggests that the market for control systems should be segmented according to whether the control system automates the operation of a specific component or the entire power plant.¹³⁹⁷ Respondents to the market investigation report that the complexity of power plant control systems is much higher and therefore requires specific engineering skills, knowhow and expertise.¹³⁹⁸
- (1621) As regards unit control systems, these are always sold with the respective unit. For instance, according to information provided by the Notifying Party, for both GE and Alstom the gas turbine control system was always sold with the respective HDGT. Thus, the gas turbine control system is included in the market for 50 Hz HDGTs.¹³⁹⁹
- (1622) Moreover, and contrary to generators and LSTs, plant control systems are less often sold in a bundle with the HDGT. According to information provided by the Notifying Party, only [10-20]% of the HDGT sold by GE in the period 2009-2014 were bundled with GE's plant control system. As for Alstom, the sales of HDGT bundled with its plant control system corresponded to around [50-60]% of the total sales of HDGTs.¹⁴⁰⁰

9.4.2. The relevant geographic market

- (1623) The Notifying Party submits that the exact geographic market definition can be left open since no competition concerns arise under any market definition.¹⁴⁰¹
- (1624) The Commission, in a previous case, considered the relevant geographic market for control systems to be at least EEA-wide but ultimately left the exact definition open.¹⁴⁰²

¹³⁹⁵ See Form CO, paragraph 1105.

¹³⁹⁶ Case M.6350 - *Siemens/NEM Holding* (2011), paragraph 32.

¹³⁹⁷ See replies to question 32 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹³⁹⁸ See replies to question 32 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹³⁹⁹ See GE's reply to Commission's Request for Information N° 57, 30.07.2015, question 1.

¹⁴⁰⁰ See GE's reply to Commission's Request for Information N° 57, 30.07.2015, question 1

¹⁴⁰¹ See Form Co, paragraph 1107.

- (1625) The market investigation, in this case, suggests that the market for plant control systems is at least EEA-wide and potentially worldwide. Respondents to the market investigation almost unanimously report that there are no country specific technical requirements or regulations in the market for control systems. Also, there is not a significant price gap between the EEA and the rest of the world. Customers invite suppliers to tenders irrespectively of their location, and ultimately transport costs do not play a major role in this market. Hence, in the market for plant control systems the conditions of competition are fairly homogeneous across the world and as such this market potentially is worldwide.¹⁴⁰³ Nevertheless, the Commission considers that the exact geographic market definition can be left open since under any market definition the Transaction is unlikely to give rise to competition concerns.

9.4.3. *Competitive assessment*

9.4.3.1. The Notifying Party's views

- (1626) The Notifying Party submits that there is no horizontal overlap between the Parties for control systems since only Alstom sells control systems as a stand-alone product. GE always sells its control systems in a package together with HDGTs, which according to GE implies that GE's sales are “captive”.

9.4.3.2. Commission's assessment of the market for plant control systems

- (1627) The overlap between the Parties in the market for plant control system is limited (lower than [10-20]%) both at EEA and worldwide level, therefore the Commission concludes that the Transaction does not lead to a significant impediment to effective competition

9.4.3.3. Conclusion

- (1628) The Commission concludes that the Transaction does not lead to a significant impediment to effective competition in the market for plant control system both at an EEA and worldwide level.

9.5. **Competitive assessment of vertical effects**

9.5.1. *Notifying Party's views*

- (1629) The Notifying Party submits that no vertical effects would result from the Transaction as regards the supply of STs, generators, HRSG and control systems.
- (1630) With regard to customer foreclosure, the Notifying Party argues that the merged entity would have no ability to foreclose access to a sufficient customer base since independent suppliers would still be able to serve OEMs that are not vertically integrated and EPC providers. Moreover, the Notifying Party submits that the merged entity would have no economic incentive to purchase inputs only internally given that the selection of CCGT components is customer driven and project oriented.

¹⁴⁰² Case M.6350 - *Siemens/NEM Holding* (2011), paragraph 32-33.

¹⁴⁰³ See replies to questions 34 to 40 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

- (1631) With regard to input foreclosure, the Notifying Party argues that the merged entity would not have the ability to foreclose rivals since there are various suppliers of each and every component to which rivals could turn. Moreover, it would not have any incentive to deny supplying its components for CCPP, since every sale is an opportunity to make profit and because it also opens the possibility for future service revenues.
- (1632) As regards input foreclosure of competing OEMs, the Notifying Party submits that OEMs rarely sell CCPP plant components for inclusion in another OEM package. However, even in those cases, the merged entity would have the incentive to supply a rival OEM. In fact, the foreclosed OEM could easily retaliate in a future project where the roles would be inverted. Moreover, the Notifying Party argues that selling a part of a power plant would be better than selling nothing. In fact, given the strong buyer power of customers, by refusing to supply the input to a rival OEM, the merged entity would risk losing the opportunity to make a sale.
- (1633) As regards input foreclosure of EPC companies, the Notifying Party submits that the merged entity would have all the incentives to supply EPC companies with power plant components, since EPC companies do not compete directly with the merged entity in the same tenders. Moreover, the Notifying Party submits that EPC companies often have better customer or government relations or both than OEMs and better knowledge of the local business environment or more focused localized capabilities. This allows them to provide EPC services quicker, more efficiently and at lower cost than OEMs. In many cases, EPC contractors are driven by the customers themselves. Finally, EPC companies are also important customers. As a result, the Notifying Party argues that even OEMs with the capabilities to offer full turnkey solutions in-house will often still opt to work with third-party EPC companies.
- (1634) The Notifying Party also submits that, even if it were to engage in foreclosure strategies, this would not have any anti-competitive effect since (i) competition between OEMs will remain vigorous after the Transaction and all other OEMs are vertically integrated and produce and sell a broad range of CCPP components, and (ii) EPC companies will continue to thrive because they do not depend on the merged entity.

9.5.2. *Commission's assessment*

- (1635) As regards customer foreclosure, the Commission's investigation supports the Notifying Party's view that the merged entity would have no ability or incentive to foreclose its rivals by not acquiring the input from third-parties for the reasons set out below.
- (1636) The Parties are not important customers for any of the components. As regards generators and control systems the Parties are vertically integrated and only use the in-house production. Only in very rare occasions do the Parties buy from third-party generators or control systems. In the case of HRSG, while Alstom also uses mostly in-house production given that it is vertically integrated, GE needs to buy from third-parties. However, given that GE sourced only a small number of HRSG units (2010: [number of units], 2011: [number of units], 2012: [number of units], 2013: [number of units], and 2014: [number of units]), its current share of demand for HRSGs is lower than [10-20]%. GE cannot

therefore be considered as being a significant purchaser of such components. Finally, in the case of LSTs, although both of the Parties buy occasionally from third-parties, they tend to use in-house LSTs. Moreover, all competitors stated that none of the Parties is an important buyer of their LSTs.¹⁴⁰⁴

- (1637) As regards input foreclosure, the Commission's investigation supports the Notifying Party's view that the merged entity would have no ability or incentive to foreclose its rivals by limiting or denying access to any input product for the reasons set out below.
- (1638) First, in the case of generators, HRSG and control systems GE does not supply any third-party (and in the case of HRSG does not have any in-house production), while Alstom has a market share on the merchant market of less than 10%. Therefore, given the absence of market power in the merchant segment of the market, the merged entity would not have the ability to foreclose a downstream competitor. As for LSTs, all OEMs are vertically integrated and there are several other alternative suppliers available in the market.
- (1639) Second, the majority of customers and all EPC companies do not consider that post-Transaction the merged entity will have incentives to foreclose third party EPC companies in order to favour the merged entity since it is not the sole supplier of the equipment.¹⁴⁰⁵ According to EPCs: *"to maintain adequate business volume GE will have to continue to provide turbines to EPCs on a supply basis and, to make projects viable to the end customer, will have to supply them on established market terms"* and *"The merged entity may prefer to extend its presence in the competition also with other EPCs acting as a Supplier"*.¹⁴⁰⁶ Moreover, the large majority of EPC companies think that that the OEM of certain CCPP equipment (for example, a GT OEM) generally do not succeed in imposing the EPC contractor of its choice (for example, a company belonging to the same group) as a condition for supplying certain CCPP equipment.¹⁴⁰⁷ Despite the concern expressed by a competitor,¹⁴⁰⁸ this would also be the case as regards the merged entity supply of stand-alone HDGTs by the merged entity to suppliers of CCPP that do not produce their own HDGT.

9.5.3. Conclusion

- (1640) The Commission concludes that no vertical competition effects are likely to result from the Transaction, both as regards customer and input foreclosure.

¹⁴⁰⁴ See replies to question 126 of Phase I Questionnaire Q2 to competitors of the gas business.

¹⁴⁰⁵ See replies to question 177 of Phase I Questionnaire Q1 to customers of Gas fired power plant and questions 2 and 3 of Phase I Questionnaire Q3 to EPCs.

¹⁴⁰⁶ See replies to question 3 of Phase I Questionnaire Q3 to EPCs.

¹⁴⁰⁷ See replies to question 4 of Phase I Questionnaire Q3 to EPCs.

¹⁴⁰⁸ See minutes of the conference call held with a competitor of 1 April 2015.

10. SERVICES

10.1. Servicing of mature GE's 50 Hz HDGT frames

- (1641) GE only provides services for its own HDGTs. Therefore the overlaps are confined to the servicing of GE's mature 50 Hz HDGTs frames, where Alstom's subsidiary, PSM, is active, namely the 9FA, 9E, 6FA and 6B.

10.1.1. The relevant product markets

10.1.1.1. The Notifying Party's views

- (1642) The Notifying Party submits that it is not appropriate to segment the relevant market for the servicing of HDGTs based on the different types of services, such as field services, component repair and supply of replacement parts. Moreover, the Notifying Party submits that it is not necessary to define a separate relevant market for upgrades. According to the Notifying Party, all the above services (field services, component repair, supply of replacement parts) and upgrades should constitute a single relevant market.
- (1643) The Notifying Party also submits that no separate HDGT service markets can be defined on the basis of frequency (either 50 or 60 Hz), since the services provided for 50 and 60 Hz HDGTs are substitutable and require the same expertise and similar tooling. Moreover, the Notifying Party submits that the relevant market for the servicing of HDGTs should not be subject to segmentation based on HDGT model or HDGT output.

10.1.1.2. Previous Commission Decisions

- (1644) The Commission has previously examined the market for the servicing of GTs. In one relevant Decision¹⁴⁰⁹, the Commission took as its starting point a putative market for the provision of services to all power generation plants, except for nuclear plants. The Commission also considered whether it would be appropriate to define the market more narrowly by reference to GTs (as opposed to, for example, STs), or by reference to mature technology turbines or to both.
- (1645) In another Decision¹⁴¹⁰, the Commission took as its starting point a putative market for the provision of overhaul and repair services in relation to IGTs. The Commission also considered whether it would be appropriate to define the market more narrowly by reference to the turbine manufacturer that is the OEM. Ultimately, the exact market definition was left open. A further segmentation of the market according to size of the turbine and to the OEM has been considered but eventually the market definition was left open. The market definition was also left open in the most recent relevant Decision of the Commission.¹⁴¹¹
- (1646) The Commission has in a previous Decision¹⁴¹² considered as an appropriate segmentation distinguishing between the servicing of mature and non-mature GT technologies. When OEMs first develop and start to supply a new model of

¹⁴⁰⁹ Case M.3084 - Siemens / Sequa / JV, paragraphs 12-15.

¹⁴¹⁰ Case M.1224 - TPM / Wood Group, paragraphs 7-8.

¹⁴¹¹ Case M.7284 - Siemens/ John Wood Group / Rolls-Royce, paragraph 47.

¹⁴¹² Case M.7083 - John Wood Group / Siemens, paragraphs 18-21 and 25-28.

a turbine (non-mature technology), all the know-how is proprietary to the OEM and often protected by the intellectual property rights. No competition is taking place at this stage because gas turbines cannot be serviced by service providers other than OEM. As the turbine reaches its maturity (approx. 8-16 years), other service providers start entering the market as all the necessary know-how is no longer exclusive to OEM. Upon expiry of a warranty or a first long term services agreement (LTSA) with OEM, customers start tendering aftermarket services for their gas turbines. This means that competition exists only for the supply of aftermarket services of mature HDGTs. In addition, the Commission established that the services offered by OEMs and ISPs are part of the same market.

10.1.1.3. Commission's assessment

(i) Servicing of HDGTs vs servicing of other parts of a CCPP

(1647) The investigation supports the Commission's view that the servicing of HDGTs constitutes a market separate from the servicing of other power plant components. For example, according to a competitor *"Servicing GT market requires a higher know how degree than other power plant part (steam turbines, HRSG, balance of plant, etc.). Moreover the spare parts are more complex and technologically developed"*.¹⁴¹³ A customer also explains that *"Most GTs (especially F-class) are only maintained by the OEM as this is considered a specialist area. This is not the case for STs, HRSG or BoP¹⁴¹⁴ where there is more competition as more general skills are needed and there are lower barriers to entry"*.¹⁴¹⁵

(ii) Servicing of mature HDGTs vs non-mature HDGTs

(1648) The investigation supports the Commission's views that there is competition in the servicing of a HDGT frame only for mature technologies.¹⁴¹⁶ One customer points out that *"Most new machines are sold with an LTSA and this generally provides exclusivity to the OEM for this period. It is usually once the LTSA has expired that other providers are able to start to investigate and service these machines"*.¹⁴¹⁷ A competitor confirms that *"At the beginning the know-how and is deeply protected by the OEM (patents and new technological development); after some years other service providers understand how to offer similar solutions through reverse-engineering"*.¹⁴¹⁸ The majority of customers and competitors indicated that a HDGT frame becomes a mature technology usually after 10-15 years of operation, although the exact period is HDGT

¹⁴¹³ See reply to question 14 of Phase I Questionnaire Q2 to competitors of the gas business.

¹⁴¹⁴ Balance of the Plant, which includes the remaining parts of the power plant outside the power island, such as the Cooling tower (removes heat from the water discharged from the condenser so that the water can be discharged or recirculated and reused) and plant cooling systems, water system, tanks, plant piping, valves, and automation and control systems for the entire plant.

¹⁴¹⁵ See reply to question 10 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴¹⁶ See replies to questions 12.1 and 13 of Phase I Questionnaire Q1 to customers of Gas fired power plant and questions 16.1 and 17 of Phase I Questionnaire Q2 to competitors of the gas business.

¹⁴¹⁷ See reply to question 12.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴¹⁸ See reply to question 16.1 of Phase I Questionnaire Q2 to competitors of the gas business.

specific.¹⁴¹⁹ The Commission also concludes on the basis of its investigation that for the servicing of mature HDGT, the services of an OEM-service provider are substitutable to those provided by the non-OEM service provider.¹⁴²⁰

(iii) Three core services vs upgrades

- (1649) During the Phase I investigation, market participants indicated that HDGT services mainly consist of three "core" services: (i) field services/on-site interventions, (ii) parts repairs/reconditioning, and (iii) the supply of spare parts. In addition, core maintenance services can be complemented by (iv) upgrades, where new technology is integrated into mature equipment in order to improve performance.¹⁴²¹ Each of these services is usually bought in a bundle with other services, with the possible exception of upgrades, which according to the majority of customers are purchased separately.¹⁴²² This may be an indication that the three "core" services may belong to the same relevant market, while upgrades belong to a separate relevant market, as in fact confirmed by the results of Phase II investigation. Field services, parts repairs and spare parts are generally bought in a bundle, while for upgrades this is less the case.¹⁴²³
- (1650) According to some competitors the capabilities to provide some of the different types of services are similar. However, generally service providers are not able to offer all categories of services in the market.¹⁴²⁴ According to one competitor *"Providing upgrades to a given mature HDGT frame requires extensive development and engineering skills and resources and thus an enlarged development team and the timeframe associated with that. This means more and other risks to bear for the service provider; smaller companies are less capable of offering this to their customers than OEM's"*.¹⁴²⁵
- (1651) On balance, the Commission considers as possible segmentations of the market for the servicing of mature HDGTs the market including the three core services and the market including upgrades. However, the exact market definition can be left open since the competitive assessment will not differ whether it is conducted at an overall or a narrower level (namely, with a segmentation between the three core services and upgrades).

(iv) The servicing of each frame of HDGT is a separate market

- (1652) In the course of the investigation the Commission also tested whether the servicing of each HDGT frame could constitute a separate market. According to the large majority of market participants, when a service provider develops

¹⁴¹⁹ See replies to question 12.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 16.2 of Phase I Questionnaire Q2 to competitors of the gas business.

¹⁴²⁰ See replies to question 15 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴²¹ See replies to question 11 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 15 of Phase I Questionnaire Q2 to competitors of the gas business.

¹⁴²² See replies to question 11.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 15.2 of Phase I Questionnaire Q2 to competitors of the gas business.

¹⁴²³ See replies to questions 16.1, 16.2, 16.3 and 16.4 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁴²⁴ See replies to questions 5 and 7 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴²⁵ See reply to question 6 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

the capabilities to service another OEM's HDGTs, the relevant know-how and expertise is typically built up at the level of specific gas turbine frames.¹⁴²⁶ Customers explain that *"products from one OEM can be very different. Developing capabilities on one gas turbine frame does not necessarily entail developing capabilities on the full range of products of that OEM"* and *"generally a service provider will have to develop technology for each frame regardless of whether it already has experience with that OEM or frequency (50/60Hz)"*.¹⁴²⁷

- (1653) The Parties internal documents look to the servicing of HDGTs on a segmentation by frame perspective.¹⁴²⁸ The offering of different ISPs is very different according to the frames under consideration, even when considering similar frames as the 7FA and the 9FA.¹⁴²⁹
- (1654) On balance, the Commission considers that the servicing of each HDGT frame constitutes a separate market.

10.1.1.4. Conclusion

- (1655) The Commission considers that the market for servicing of each of the Parties' mature HDGTs by frame is the relevant market for the purpose of assessing the Transaction, with a potential segmentation between the three core services and upgrades.
- (1656) In particular, since GE only provides services for its own HDGTs, the overlaps regarding servicing of mature HDGTs are confined to the markets for the servicing of GE's mature HDGTs, where Alstom's subsidiary, PSM, is active. In addition, because the grid frequency in the EEA is 50 Hz, this Decision focuses only on the market for the servicing of GE' mature 50 Hz HDGT 50 Hz frames, and its possible segmentation between the three core services and upgrades.

10.1.2. The relevant geographic markets

10.1.2.1. The Notifying Party's views

- (1657) The Notifying Party submits that the market for the servicing of mature HDGTs is at least EEA-wide, and potentially worldwide.

10.1.2.2. Previous Commission Decisions

- (1658) In its previous Decisions¹⁴³⁰, the Commission found that the HDGT servicing market is at least EEA-wide and potentially worldwide but the exact geographic market definition was left open.

¹⁴²⁶ See replies to question 16 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 17 of Phase I Questionnaire Q2 to competitors of the gas business.

¹⁴²⁷ See replies to question 16 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴²⁸ See Annex 1412. In this internal document Alstom establishes commercial targets by frame and analyses market positions by frame. See also Annex 3788 for a GE analysis of the servicing market of its mature HDGTs by frame.

¹⁴²⁹ Annex 3788, slide 3.

¹⁴³⁰ Case M.7284 - Siemens/ John Wood Group / Rolls-Royce, paragraphs 48-53, Case M.7083 - John Wood Group/Siemens/JV, paragraphs 41-44, Case M.3084 – Siemens/Sequa/JV, paragraphs 16-17.

10.1.2.3.Commission's assessment

- (1659) The Commission's investigation confirmed that in general there are no barriers to the global servicing of HDGTs related to transport costs and regional regulation.¹⁴³¹ A competitor explains that *"there are transport costs, technical specifications, regulations and other standards applied on region by region, but to accommodate those cost and modification, the overall cost is not much significant compare to GT"*.¹⁴³²
- (1660) The Commission's investigation showed that the technical specifications for servicing GTs do not depend on the location of the power plant.¹⁴³³ As a customer indicated it *"would specify the same service level regardless of location, and the GT service suppliers would not have a difficulty in complying with this"*.¹⁴³⁴ A competitor also mentions that *"the requirements for servicing the GT do not change based on location. There may be ancillary issues such as security or local content requirements, but the specifications of the technical services do not depend on the location"*.¹⁴³⁵
- (1661) The majority of customers and competitors indicated however that the proximity of the manufacturing/repair/services facility is a decisive criterion for the choice of the supplier.¹⁴³⁶ As a customer explains, *"the proximity of a supplier's manufacturing/repair/services facilities may reduce the downtime in case of unscheduled maintenance events or failure of a unit"*.¹⁴³⁷ The Phase II investigation confirmed that it is important that a service provider has facilities in the EEA if the customer is operating a mature HDGT in the EEA.¹⁴³⁸ As one customer explains *"Service providers and parts need to be relatively close by to guarantee short response times and high availability"*.¹⁴³⁹
- (1662) The majority of customers however also indicated that they invite suppliers irrespective of the location of their manufacturing facilities when organizing tenders for their EEA-based plants.¹⁴⁴⁰ One of the reasons is the fact that all major HDGT service providers have an EEA base even if it is not their primary location. In fact, competitors confirm that they generally face the same competitors in the EEA and worldwide.¹⁴⁴¹
- (1663) The majority of customers also do not observe any significant price differences between the EEA and the rest of the world.¹⁴⁴² However, competitors consider

¹⁴³¹ See replies to question 34.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 34.2 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁴³² See reply to question 34.2 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁴³³ See replies to question 35.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 34.2 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁴³⁴ See reply to question 35.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴³⁵ See reply to question 36.2 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁴³⁶ See replies to question 37.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴³⁷ See reply to question 37.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴³⁸ See replies to question 17 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁴³⁹ See reply to question 17 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁴⁴⁰ See replies to question 39.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴⁴¹ See reply to question 8.1 of Phase II Questionnaire Q8 to competitors on servicing HDGTs

¹⁴⁴² See replies to question 40.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

that prices are not similar between the different regions of the world,¹⁴⁴³ also because demand requirements tend to be different¹⁴⁴⁴.

10.1.2.4. Conclusion

- (1664) For the purpose of assessing the present Transaction, the issue whether the relevant geographic market should be considered as worldwide or EEA-wide in scope can be left open. The competitive assessment of the markets for servicing of mature GE's 50Hz HDGTs frames (and its possible segmentation between the three core services and upgrades) will not differ whether it is conducted at a worldwide or an EEA level

10.1.3. Competitive assessment

10.1.3.1. The Notifying Party's views

- (1665) The Notifying Party submits that the Transaction gives rise to limited horizontal overlaps between the Parties. Since GE only provides services for its own HDGTs, the overlaps are confined to the market for the servicing of GE's mature HDGTs, where Alstom's subsidiary, PSM, is active. Additionally, the Notifying Party submits that there are numerous competitors that also offer services for GE's mature HDGTs. The Notifying Party also argues that customers have the ability to switch suppliers and that entry barriers are not significant.

10.1.3.2. Characteristics of the markets for servicing GE's HDGTs

- (1666) The market for servicing a given frame from an OEM is typically characterised by a strong position of the OEM supplying the HDGT under consideration. In fact, this service supplier almost always sells together with the newly built HDGT a LTSA that covers the servicing of the first years of the HDGT (see Section 7.2.3). After expiration of the LTSA the OEM still has the know-how and the commercial contacts to better continue servicing the installed fleet of that frame. Other ISPs will enter the market and start offering some services that can compete with the OEM only when the frame becomes mature and there are a sufficient number of HDGTs free of LTSA.
- (1667) The Figure below provides evidence about this as regards GE's frames. For all the frames GE has market shares above [60-70]%. In particular for the more recent 50 Hz frame, namely the 9FA, GE's has a market share above [90-100]%, thus enjoying a dominant position.

Figure 71: Market structure of servicing GE's mature HDGTs

[extract from internal ALSTOM document showing ALSTOM's market share estimates by platform]

Source: Annex 895, slide 7.

- (1668) In conclusion, the markets for servicing GE's mature HDGTs are characterised by a strong position of GE, and in the particular case of the market for servicing GE's 9FA, GE has a dominant position.

¹⁴⁴³ See reply to question 8.3 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁴⁴ See reply to question 8.2 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

- (1669) Alstom's PSM services most of GE's HDGT models, including the 6FA, 7FA and 9FA. In the case of the 7FA, GE's 60 Hz model of a Large HDGT, PSM has a market share of around [10-20]%, being GE's main challenger (see Figure 71: Market structure of servicing GE's mature HDGTsFigure 71). The other ISPs are significantly smaller than PSM, namely Ethos and PWPS.

10.1.3.3.Commission's assessment of the market for the servicing of GE's 9FA HDGT

- (1670) GE's 9FA HDGT frame corresponds to the 50 Hz model of GE's Large HDGT. The competition in this market is still in its infancy given the recent stage of maturity of this HDGT. The servicing of the sister 60 Hz version, the 7FA, is at a more mature stage. Given the spill-overs of the servicing of GE's 7FA to the servicing of GE's 9FA, the Commission considers relevant for the assessment of the market for servicing GE's 9FA HDGTs the strengths of suppliers in the servicing of the 7FA.

(i) Alstom's PSM is GE's strongest competitor in the servicing of GE's 7FA, the "sister" HDGT of GE's 9FA, with a unique offer, as compared with other ISPs, covering the whole range of services

- (1671) The success of PSM in the servicing of the frame 7FA results from its unique ability to offer upgrades that can even improve GE's product line. According to Alstom internal document presented in Figure 72, illustrating an upgrade by PSM, this ISP is able to offer the possibility to increase the output and efficiency level of the 7F fleet to higher levels than GE's offering.¹⁴⁴⁵

Figure 72: PSM new development of upgrades for 7FA

[extract from internal ALSTOM document showing PSM's upgrade programs]

Source: Annex 895, slide 28.

- (1672) According to another Alstom internal document, PSM is able to provide, for instance, full offering with reliability improvements including shaft-line, performance upgrades, bundled LTA's with HDGT controller solution and rotor repair with life extension assessments.¹⁴⁴⁶
- (1673) In the same internal documents, the main differentiated elements of PSM, including from GE offering, are described as: *"(i) proven technology – Use of Alstom GT24 forgings, weld technology and facilities; (ii) reduced maintenance – field replicable compressor blade and welded rotor no longer requires destack after every 2 MI's; (iii) upgraded R1 Turbine Disk – redesigned and improved material solve known reliability issues; (iv) greater GT Upgrade potential – improved torque capability up to 20% additional load turndown from the current GE's limit, a wide fuel flexibility and an extended maintenance interval"*.¹⁴⁴⁷

¹⁴⁴⁵ See Annex 895, slide 28.

¹⁴⁴⁶ See Annex 875, slide 96.

¹⁴⁴⁷ See Annex 875, slide 98.

(1674) GE, in an internal document, also recognises some of Alstom's differentiating factors.[information from GE internal document regarding evaluation of Alstom].¹⁴⁴⁸

(1675) In another internal document from GE, it is mentioned that PSM is able to offer repairs and spare parts for the 7FA.[information from GE internal document regarding evaluation of Alstom].

Figure 73: PSM offering for GE's HDGTs

[extract from internal GE document listing PSM offering]

Source: Annex 196.

(1676) One US customer explains that *"We have contracted with PSM to provide parts and services to some of our existing GE 7FA.03 fleet. They provide high quality services at a significant discount to what GE offers for the same scope"*.¹⁴⁴⁹ Regarding innovation, US customers state that PSM *"manufactures with improved designs compressor, combustion, and hot gas path components for many frame sizes. They are also a leader in fuel nozzle repair" and "has offered solutions to the problems with the GE 7FA compressor blades, specifically the R0 blade"*.¹⁴⁵⁰

(1677) Competitors also explain that *"PSM provides full range of service from field services to upgrades and retrofits" and that for "some important items Alstom/PSM's abilities are stronger than that from competitors"*.¹⁴⁵¹

(1678) The other ISPs are considerably behind in the servicing of the 7FA frame, in particular as regards upgrades. [information on IPSs for 7A].¹⁴⁵²

Figure 74: GE's competitive assessment of the competitors servicing GE's HDGTs

[extract from internal GE document showing assessment of the competitive strength of competitors]

Source: Annex 3788, slide 3.

(1679) Given these factors, GE considers PSM [GE assessment of PSM based on internal GE documents].¹⁴⁵³ [GE assessment of IPSs based on internal GE documents]. The main factors justifying the positioning of PSM in [GE assessment of PSM based on internal GE documents].¹⁴⁵⁴

¹⁴⁴⁸ See Annex 330.

¹⁴⁴⁹ See reply to question 120.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁴⁵⁰ See reply to question 123 of Phase I Questionnaire Q1 to customers of Gas fired power plant .

¹⁴⁵¹ See reply to question 113 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁴⁵² See Annex 3788, slide 3.

¹⁴⁵³ See Annex 330.

¹⁴⁵⁴ See Annex 196.

Figure 75: GE's formidality ranking of service providers

[extract from internal GE document showing GE's assessment of competing ISPs]

Source: Annex 330.

- (1680) This is confirmed by one competitor that explains "*PSM, which is currently the only ISP besides PWPS which can provide any kind of meaningful competition to the OEMs with respect to 7FA class parts*".¹⁴⁵⁵
- (1681) An internal document from Alstom shows similar evidence regarding the comparison of the different ISPs as regards servicing GE's 60 Hz HDGTs frames.¹⁴⁵⁶ Once again for the servicing of the 7F frame [internal Alstom evaluation of ISPs].

Figure 76: Alstom's competitive assessment of the competitors servicing GE's 60 Hz HDGTs

[extract from internal ALSTOM document showing ALSTOM's assessment of service competitors in 60HZ products]

Source: Annex 1279, slide 30.

- (1682) In conclusion, Alstom's PSM is GE's strongest competitor in the servicing of GE's 7FA, with a unique offer, as compared with other ISPs, covering the whole range of services.
- (ii) Alstom's PSM is leveraging its customer relationships and its 60 Hz servicing know-how to enter the market for the servicing of GE's 9FA where it plans to achieve a significant position**
- (1683) The 9FA frame constitutes the second largest market value frame in terms of servicing GE's HDGTs, namely EUR [value of total 9FA segment], right behind the 7FA frame.¹⁴⁵⁷
- (1684) In its business plan for the servicing of the 9FA, PSM recognises that it enjoys the advantages of Alstom's customer relationships.¹⁴⁵⁸ In fact, [60-70]% of the 9FA fleet is owned by Alstom customer. In addition, some solutions used for servicing the 7FA are directly applicable to the 9FA (for example, compressor and hot gas parts components). In an internal document Alstom mentions that it can "*Strongly leverage proven PSM 7FA Technology*" to the 9FA.¹⁴⁵⁹
- (1685) Despite these advantages, PSM still has a very insignificant position in the servicing of the 9FA since it only started competing more actively in this market in 2014. This is reflected in the reduced number of customers that consider PSM as better able to provide services for the 9FA HDGTs.¹⁴⁶⁰ In fact, as one European customer explains "*PSM have presented good capability but market penetration is small at present*".¹⁴⁶¹ Despite this, one European

¹⁴⁵⁵ See minutes of the conference call held with a competitor of 5 February 2015.

¹⁴⁵⁶ See Annex 1279, slide 30.

¹⁴⁵⁷ See Annex 895, slide 6.

¹⁴⁵⁸ See Annex 1413, slide 13.

¹⁴⁵⁹ See Annex 3766, slides 10, 12 and 15.

¹⁴⁶⁰ See replies to question 124 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁴⁶¹ See reply to question 124 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

customer states that “PSM knows very well the model 7FA, so it should be easy to service 9FA GT. In my opinion Alstom is a very good service provider with more capabilities than other alternative suppliers”.¹⁴⁶² Moreover, half of the customers considered that PSM offering is an important addition to the market product offering.¹⁴⁶³

- (1686) In fact, PSM started in a first phase to offer reconditioning (combustion, aerofoil, and rotor) and field services and compressor products for the 9FA as an entry strategy to select customers. In a second phase, [PSM strategic plans]. In a third stage, [PSM strategic plans].¹⁴⁶⁴ The objective is to have complete product and service offering in the different services areas.¹⁴⁶⁵

Figure 77: PSM roadmap for the servicing of the 9FA

[PSM strategic plans for the service of the 9FA frame, including value of R&D and Capex investment in the period 2014-2017, and R&D roadmap]

Source: Annex 895, slide 42.

- (1687) According to Alstom internal documents, the biggest share of the 2014/2015 R&D budget for servicing other OEM HDGTs is dedicated to developing capabilities to serve the 9FA.¹⁴⁶⁶ In fact, in these two years Alstom's budget dedicated to the 9FA corresponds to EUR [R&D budget], that is to say, [20-30]% of the total budget for R&D in servicing OEM HDGTs.
- (1688) According to Alstom internal documents, the PSM value proposition for the servicing of the 9FA is “Providing 9FA capabilities to the market increases competition and an alternative to the OEM. Alstom will need to be competitive and offer solutions to suit market requirements (i.e. increasing cyclic lifetime, providing lower price alternatives)”.¹⁴⁶⁷ PSM intends to “Offer new innovative products e.g. upgrades to increase flexibility and reduce maintenance cost”.¹⁴⁶⁸
- (1689) In 2014, the first year where PSM competed for servicing 9FA HDGTs, it already won from GE two contracts with EEA relevant customers, namely [PSM customer name] and [PSM customer name]. Although these contracts corresponded to less than [0-5]% of the market for the servicing of 9FA HDGTs in 2014, Alstom's target is to capture [10-20]% of this market by 2020.¹⁴⁶⁹ PSM is therefore likely to become a significant competitor for servicing of GE's 9FA HDGTs.
- (1690) According to one competitor “PSM is one of the few companies positioned to develop its own 9F (50 Hz) GT spare parts, in order to provide an alternative to GE. If PSM is acquired by GE, this project will be killed”.¹⁴⁷⁰

¹⁴⁶² See reply to question 124 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹⁴⁶³ See replies to question 128 of Phase II Questionnaire Q7 to customers of Gas fired power plant.
¹⁴⁶⁴ See Annex 1413, slide 18.
¹⁴⁶⁵ See Annex 3766, slide 10.
¹⁴⁶⁶ See Annex 1412, slide 16.
¹⁴⁶⁷ See Annex 1242, slide 52.
¹⁴⁶⁸ See Annex 1242, slide 50.
¹⁴⁶⁹ See Annex 1412, slide 41.
¹⁴⁷⁰ See minutes of the conference call held with a competitor of 5 February 2015.

- (1691) In conclusion, Alstom's PSM is leveraging its customer relationships and its 60 Hz servicing know-how to enter the market for the servicing GE's 9FA where it plans to achieve a significant position.
- (iii) Other ISPs that are entering the market are offering only limited services to the 9FA, in particular as regards spare parts and upgrades**
- (1692) No other ISP seems to be in the same position to compete with GE for the complete range of servicing to the 9FA as PSM (from field services to upgrades). Most of the ISPs are only active in some limited servicing activities of GE's mature HDGTs. Therefore, according to one competitor *"Although PSM cannot yet manufacture 9FA GT components, it would be one of the only companies that would be able to develop 9FA GT components, because it has already developed a similar technology for the 7FA GTs and it is relatively straightforward to use such technology to develop parts for the 9FA compared to companies which do not have 7FA capabilities"*.¹⁴⁷¹
- (1693) In its business case, PSM recognises the presence of some competition for the servicing of GE's 9FA HDGTs, namely PWPS, Sulzer, Ethos and Chromalloy, altogether mostly focus on reconditioning.¹⁴⁷²
- (1694) This is also evident in a report produced in 2012 for Alstom, where it is mentioned as regards the 9FA that *"long-term GE contracts seem difficult to attack and competition from ISPs is intense on this frame (reconditioning mostly)"*.¹⁴⁷³ In fact, in the analysis by type of service, it is reported that only few ISPs were developing new parts for the 9FA, namely Chromalloy, PWPS and Ethos. Even so, these ISPs did not cover the complete range of spare parts. The report concludes that *"No ISP is able to provide a relevant offer for 9FA but some of them (Chromalloy, PWPS and Wood Group [Ethos]) are developing blades and vanes mostly for the turbine section"*. As regards upgrades, only some claims were mentioned, and mostly in partnerships. As for repairs and field services, the 9FA is the most covered frame according to the Mars report.
- (1695) PWPS and Chromalloy are the ISPs advertising more complex services, namely as regards the servicing of hot gas parts.¹⁴⁷⁴ PWPS is also claiming the capability for developing some upgrades with a partner.¹⁴⁷⁵ In fact, this ISP explains that *"PWPS' business plan is to target more 9FA frames and PWPS is making the necessary investments"*.¹⁴⁷⁶ Ethos offers field services and part repairs/reconditioning for the 9FA. This ISP has some plans for developing upgrades for the next three years *"by building on the existing 7FA capability. However, at this time it is not feasible to do so because GE has the 9FA market locked up through LTSAs. [...] could certainly develop 9FA capability, however there is no addressable customer base given the GE lock, so the*

¹⁴⁷¹ See minutes of the conference call held with a competitor of 5 February 2015.

¹⁴⁷² See Annex 1413, slide 10 and Annex 1279, slide 26.

¹⁴⁷³ See Annex 3769.

¹⁴⁷⁴ See Annex 3769 and Annex 1279, slide 26.

¹⁴⁷⁵ See Annex 3769, slide 21.

¹⁴⁷⁶ See minutes of the conference call held with a competitor of 2 February 2015.

incremental investment does not make sense at this time".¹⁴⁷⁷ Customers confirm that they have seen Ethos and Chromalloy offering some limited upgrades services.

- (1696) Sulzer is mentioned in an Alstom internal document as being very aggressive on the 9FA servicing.¹⁴⁷⁸ This may justify the significant market shares of this ISP in what concerns the market for outages services for GE's 9FA as estimated by the Notifying Party. However, this position only reflects the strength of this competitor as regards the supply of field services and reconditioning. In fact, Sulzer is currently only able to provide field services, part repairs/reconditioning and the supply of some spare parts for the compressor of the 9FA. In the next three years it may be able to supply some spare parts for the combustor depending on the existence of demand.¹⁴⁷⁹

Figure 78: Notifying Party estimates for the market for servicing GE's 9FA as regards the three core services (2014)

[internal GE market share estimates]

Source: GE's reply to the Commission's Request for Information N° 28, 23.04.2015, questions 4 and 5.

- (1697) In a GE internal document evaluating the offer of the different ISPs, there is almost no reference to offerings in terms of spare parts for the 9FA. PWPS is mentioned as expected to develop replacement hot gas parts, Sulzer is working on reverse engineered 9FA parts and Chromalloy is indicated to support 9FA HDGTs.¹⁴⁸⁰
- (1698) As regards the market for upgrade services to GE's 9FA HDGTs, according to the Notifying Party's estimations, GE has a market share of [90-100]% both at a worldwide and an EEA level.¹⁴⁸¹
- (1699) In conclusion, although it is true that other ISPs are entering the market for servicing GE's 9FA, these entries are based on a very limited offering, in particular as regards spare parts and upgrades. Therefore, no strong competitor to GE is likely to emerge in the market for servicing GE's 9FA, and its segments, except Alstom's PSM.

(iv) New entries in servicing the 9FA are unlikely in view of high technological barriers and significant investments required

- (1700) Entry barriers for the servicing of GE's 9FA HDGTs are high. In fact, despite the very large size of the revenues associated to the servicing of GE's 9FA HDGTs¹⁴⁸², the "*majority of the fleet is captured in LTS's*" by GE which is "*extending LTS length in Europe*".¹⁴⁸³ Moreover, according to Alstom internal

¹⁴⁷⁷ See competitor's reply to the Commission's Request for Information, 04.05.2015.

¹⁴⁷⁸ See Annex 895, slide 15.

¹⁴⁷⁹ See competitor's reply to the Commission's Request for Information, 07.05.2015.

¹⁴⁸⁰ See Annex 196.

¹⁴⁸¹ See GE's reply to the Commission's Request for Information N° 28, 23.04.2015, questions 4 and 5.

¹⁴⁸² See Annex 1412, slide 3.

¹⁴⁸³ See Annex 1412, slide 43.

document, potential customers for the servicing of the 9FA are reluctant to be involved with ISPs until the product portfolio is available and proven.¹⁴⁸⁴

- (1701) The majority of competitors supported this fact.¹⁴⁸⁵ As a competitor indicates *"It's a very long process to study operating condition and service practices of a new GT, in order to be able to successfully service in the market efficiently. Further, regarding the capital spares hot gas part components, the build-up of a world class supply chain requires strong intensity of qualified engineering man power and capital. Also considering the IP point of view, the work to avoid any IP issue in redesign parts/processes for a specific GE frame, can be very expensive and time consuming"*.¹⁴⁸⁶ Another competitor explains that *"No other ISP could reasonably undertake the risk to make the relevant investments, because currently 90% of the 9FA customers are locked in LTSA's with a term of 12-20 years. The barrier to entry in terms of investment cost required vs available market space is incredible"*.¹⁴⁸⁷
- (1702) During the Phase II investigation, the large majority of competitors confirmed that the costs of starting to supply spare parts and upgrades to GE's 9FA HDGTs are very high. As regards field services and parts repairs the costs are lower.¹⁴⁸⁸
- (1703) One competitor explains about the offering of upgrades that it *"requires full gas turbine system knowledge"*.¹⁴⁸⁹ Other competitors state about spare parts supply that: *Investment in re-engineering and tooling is huge (repair parts / spare parts)"*¹⁴⁹⁰ and *"Parts development for the Frame 9FA requires significant equipment and process expenditures"*.¹⁴⁹¹ Finally, another competitor explains that the *"cost of starting to provide field services would be moderate given that the provision of field services is much less complex technically than carrying out repairs, performing upgrades and manufacturing spare parts (field services)"*.¹⁴⁹² According to one competitor the time needed to start supplying spare parts and upgrades to the 9FA is 2 to 4 years and more than 3 years, respectively.¹⁴⁹³
- (1704) In conclusion, new entry is unlikely in view of high technological barriers and significant investments required.

(v) The Transaction is likely to increase the barriers to entry and reduce the addressable market for servicing GE's 9FA HDGTs

- (1705) In addition, the Transaction may have an effect of foreclosing the market for servicing GE's 9FA HDGTs by increasing the ability of the merged entity to impose longer LTSA on customers when they buy a newly built 9FA HDGT.

¹⁴⁸⁴ See Annex 1413, slide 5.

¹⁴⁸⁵ See replies to question 117 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁴⁸⁶ See reply to question 117 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁴⁸⁷ See minutes of the conference call held with a competitor of 5 February 2015.

¹⁴⁸⁸ See replies to question 13.2 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁸⁹ See reply to question 13.2 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁹⁰ See reply to question 13.2 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁹¹ See reply to question 13.2 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁹² See reply to question 13.2 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁹³ See replies to question 15 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

The large majority of customers do not consider that ISPs will be affected by the Transaction as regards their ability to serve GE's HDGTs.¹⁴⁹⁴ However, according to several competitors, the Transaction will have a negative impact on their ability to compete in the area of servicing the Parties' HDGT because it will reduce the addressable market, thus making less viable any investment by ISPs.¹⁴⁹⁵

- (1706) One competitor explains that *"if the OEM has market dominance over both the sale of the new units and the long term maintenance needs of those units then the ISPs will largely be reduced or eliminated over time. In fact, I would suggest that if each OEM were to adopt the same model as aggressively, the addressable market would become very small as large aspects of the market are removed"*.¹⁴⁹⁶ This competitor adds that *"There needs to be a reasonable addressable market to encourage the investment. 9FA is one of those areas where today it would seem unlikely that any ISP would make a material investment in this area under current market conditions. [...] However, we fully expect that the increased market leverage that GE will have on the Alstom markets will come to bear against us in these pursuits"*.¹⁴⁹⁷
 - (1707) Another competitor explains that *"Customers will feel forced to accept whatever GE/Alstom dictates in the market (terms and conditions, pricing, upgrades, etc) to avoid that they will be left with no capable service provider or that they will become "non-priority" for the OEM. LTSA thus become more attractive to customers, pushing competing service providers out of the market, eventually leaving only OEM's in the market and increasing the price"*.¹⁴⁹⁸
 - (1708) In conclusion, the Transaction is likely to increase the barriers to entry in the market for servicing GE's 9FA and reduce the addressable market to competitors.
- (vi) The Transaction, by eliminating a competitor with a disruptive role in the servicing of the frame 9FA, is expected to have an important impact on competition**
- (1709) The introduction of competition to the OEM in the market for servicing generally has a significant effect on prices. As one customer explains *"Once a GT must be serviced for a long period of time, it is important to have the possibility of finding alternative suppliers to put pressure on OEM or to replace it if better conditions are offered"*.¹⁴⁹⁹
 - (1710) According to an Alstom internal document, the price for servicing the 9FA is expected to decrease by [20-30]% as a result of competition.¹⁵⁰⁰ The strong impact of competition on the pricing of servicing is also evident from the example of the entry of competition for the servicing of GE's 7FA. According to one competitor, *"At the time that [...] entered the market for 7FA GT, GE*

¹⁴⁹⁴ See replies to question 131.1 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁴⁹⁵ See replies to question 23 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁹⁶ See reply to question 23 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁹⁷ See reply to question 24 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁹⁸ See reply to question 25 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁴⁹⁹ See reply to question 128 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁵⁰⁰ See Annex 1413, slide 15.

was offering its services at a rate of approximately [GE rate]. When [...] entered this market [...], it offered the same service at a reduced rate, by combining its own capabilities and the capabilities of others (such as PSM) resulting in an overall reduction of the price for services, which are now provided at a rate of approximately [GE rate]. The impact upon competition and the consumer cannot be overstated. The end-to-end capability of the OEM to control pricing of the new unit purchases through to 20 years of services combined with aggressive commercial tactics stifles the environment for competition. Before ISPs entered the market, power plants were facing major financial difficulties and were even going bankrupt because of the highly priced LTSAs. These services clearly benefitted customers since OEMs were forced to renegotiate contracts".¹⁵⁰¹

- (1711) During the Phase I investigation, the majority of customers indicated that they do not expect a significant impact of the Transaction on the servicing of GE mature GTs fleet since they consider there will be enough alternatives.¹⁵⁰² However, these customers were referring to the overall GE's mature HDGT fleet and not in particular to the 9FA frame. Moreover, most of these customers do not know the expansion plans of PSM as regards the servicing of GE's 9FA HDGTs. During the Phase II investigation, and when asked more specifically about impact of the Transaction on the servicing of the 9FA, half of the customers expressed concerns as regards the Transaction's impact on competition, in particular in the EEA, and on price.¹⁵⁰³
- (1712) In fact, although some customers explained that there "*remain sufficient alternative suppliers to ensure sufficient competition after the transaction*",¹⁵⁰⁴ some of the largest customers in the EEA expressed concerns, in particular some of those that have already been contacted by PSM. A large EEA customer explains "*This is the most adverse effect of the merger. Alstom currently owns PSM who is one of the very few company performing reverse engineering to supply non-OEM spare parts. PSM is the unique company that have reversed engineered the all GE 7FA turbine HGPI parts. [...] The absorption of PSM by GE will create a monopoly situation for the 7FA and reduce the opportunity of 9FA technology to be developed*".¹⁵⁰⁵ Another EEA customer explains that "*PSM, will likely stop servicing GE turbines. PSM is regarded by [customer] as a very valuable alternative to GE for servicing its GTs. It is also very likely that PSM would, absent the merger, enter the 50Hz market for the servicing of GE's turbines*".¹⁵⁰⁶ Finally, a customer indicates that the Transaction would result in "*Reduced competition in the market place as GE and Alstom may no longer be in direct competition*".¹⁵⁰⁷

¹⁵⁰¹ See minutes of the conference call held with a competitor of 5 February 2015

¹⁵⁰² See replies to questions 183 and 184 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁰³ See replies to questions 153.1, 153.2, 153.5 and 153.6 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁵⁰⁴ See reply to question 153.5 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

¹⁵⁰⁵ See reply to question 183 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁰⁶ See minutes of a conference call held with a customer on 6 November 2014.

¹⁵⁰⁷ See reply to question 183 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

- (1713) As regards competitors, during Phase I the majority of competitors had already expressed concerns as regards the impact of the Transaction on the market for servicing GE's mature 9FA HDGTs. Competitors explain that *"GE already had a market share of more than 70% in the service aftermarket and this will increase"* and that *"This merger will have a negative effect on competition in servicing of mature GE HDGT frames in the EEA, because GE will face less competition there due to PSM in its group"*.¹⁵⁰⁸ Another competitor explains that *"PSM is one of the few companies positioned to develop its own 9F (50 Hz) GT spare parts, in order to provide an alternative to GE. If PSM is acquired by GE, this project will be killed"* and that *"It is not easy to form and replicate a company like PSM, as tens of millions of USD were invested in creating this company and the situation was quite unique"*.¹⁵⁰⁹
- (1714) During Phase II, these concerns were reiterated. In fact, almost all competitors expressed concerns about a negative impact of the Transaction on prices and innovation in the market for servicing GE's 9FA¹⁵¹⁰. This is true for all types of services, but most significantly for the supply of spare parts and upgrades.
- (1715) One competitor explains that *"with the acquisition of Alstom/PSM the OEM is cancelling one potential competitor on the frame 9FA (according to the existing information PSM, in addition to the 7FA, has also developed 9FA capabilities) reconfirming its supremacy on F Class and its capability to set the prices on the market"*.¹⁵¹¹ This same competitor explains regarding the impact on innovation that *"it will not foster development in Alstom/PSM (as previously planned), probably it will not significantly change the OEM plans and could increase the barriers to enter in this market, reducing the capability of certain parties to invest on it"*.¹⁵¹²
- (1716) Another competitor explains that *"The market is estimated to be dominated by GE with 90+ market share under LTSA making it very difficult to penetrate. This in turn has very few competitors attempting to compete for a very small market share. The result is aggressive price position with the OEM and others in the remaining addressable market on limited product and service offering. Not only does this impact pricing for the ISP negatively but it also impacts pricing for the customer negatively as the remaining products and services not yet available in the open market are then offered to customers at prices higher than they would pay under the an LTSA"*. According to this competitor the Transaction will thus reduce incentives to invest since *"the risk to generate a return in an unbalanced and dominated market is very high"*.¹⁵¹³
- (1717) In fact, according to one competitor *"PSM is a company designed to 'disrupt' the thermal services strategy of OEMs"* and *"It is not easy to form and*

¹⁵⁰⁸ See reply to question 164 of Phase I Questionnaire Q2 to customers of Gas fired power plant.

¹⁵⁰⁹ See minutes of the conference call held with a competitor of 5 February 2015.

¹⁵¹⁰ See replies to questions 22.1, 22.2 and 22.3 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁵¹¹ See reply to question 22.1 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁵¹² See reply to question 22.3 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

¹⁵¹³ See reply to question 22.1 of Phase II Questionnaire Q8 to competitors on servicing HDGTs.

*replicate a company like PSM, as tens of millions of USD were invested in creating this company and the situation was quite unique".*¹⁵¹⁴

- (1718) In conclusion, in the absence of any other strong competitors to GE, by eliminating a competitor with a disruptive role in the servicing of the frame 9FA and its possible segments, the Transaction is therefore expected to have an important impact on competition conditions, namely price and innovation.

(vii) Conclusions

- (1719) The market for servicing GE's 9FA HDGTs is characterised by a dominant position of GE. According to the Horizontal Merger Guidelines, paragraph 25, generally, a merger giving rise to such non-coordinated effects *"would significantly impede effective competition by creating or strengthening the dominant position of a single firm, one which, typically, would have an appreciably larger market share than the next competitor post-merger"*.
- (1720) Alstom's PSM is currently leveraging its customer relationships and its 60 Hz servicing know-how to enter the market for the servicing GE's 9FA HDGTs where it plans to achieve a significant position. Some other ISPs are also entering the market for servicing the 9FA HDGTs. However these entries are based on a very limited offering, in particular as regards spare parts and upgrades. In addition new entries are unlikely in view of high technological barriers and the significant investments required. Alstom is therefore most likely to be the main challenger of GE in the servicing of GE's 9FA HDGTs, both in terms of the three core services and upgrades.
- (1721) By eliminating Alstom's PSM as a significant potential competitor in the market for servicing GE's 9FA HDGTs, the Transaction would thus strengthen GE's dominant position. This would likely have a significant impact on competition, and in particular on prices and innovation. Moreover, the Transaction is likely to increase the barriers to entry in the servicing of the 9FA and reduce the addressable market for other ISPs.

10.1.3.4. Commission's assessment of the markets for the servicing of GE's 9E frame and lower output HDGTs frames

(i) The markets for the servicing of GE's 9E and lower output gas turbines are generally very fragmented with several ISPs present

- (1722) According to Figure 71 the positioning of GE in servicing its 6FA gas turbine and E fleet is weaker when compared to the servicing of the 9FA frame. This is because many other ISPs can also service these HDGTs frames and have a significant position in these markets.
- (1723) Figure 79 presents the market shares of the Parties and their main competitors in the market for the servicing of GE's 9E fleet for outages services (namely, field services/on-site interventions, part repairs/reconditioning and supply of spare parts). At a worldwide level¹⁵¹⁵, GE has a market share of [40-50]% followed by Ansaldo with [30-40]%. Alstom is only one among several other ISPs with market shares below 5%. At an EEA level, GE's market share is even

¹⁵¹⁴ See minutes of the conference call held with a competitor of 5 February 2015.

¹⁵¹⁵ The inclusion of China would not change significantly the figures, in particular for PSM.

lower (namely, [20-30]%). The leader in the EEA is Chromalloy with [30-40]%, with the rest of the market being very fragmented with several ISPs having market shares below 10%. Alstom has a market share of [0-5]% at a worldwide level and [5-10]% in the EEA.

Figure 79: Notifying Party estimates for the market for servicing GE's 9E as regards the three core services (2014)

[internal GE market share estimates]

Source: GE's reply to the Commission's Request for Information N° 28, 23.04.2015, questions 4 and 5.

- (1724) Figure 80 presents the market shares of GE in the market for servicing of GE's 6FA fleet for outages services. At a worldwide level, GE is the clear leader of the market with [70-80]% market share, while at an EEA level its market share is only [20-30]%.

Figure 80: Notifying Party estimates for the market for servicing GE's 6FA as regards the three core services (2014)

[internal GE market share estimates]

Source: GE's reply to the Commission's Request for Information N° 28, 23.04.2015, questions 4 and 5.

- (1725) Figure 81 presents the market shares of the Parties and their main competitors in the market for servicing of GE's 6B fleet for outages services. At a worldwide level, GE has a market share of [50-60]%, with the rest of the market being very fragmented among around 10 ISPs. At an EEA level, GE's market share is higher, namely [80-90]%, and there are less ISPs with significant market shares, although Alstom is not among them.

Figure 81: Notifying Party estimates for the market for servicing GE's 6B as regards the three core services (2014)

[internal GE market share estimates]

Source: GE's reply to the Commission's Request for Information N° 28, 23.04.2015, questions 4 and 5.

- (1726) As regards upgrades, and with the exception of the market for servicing the 6FA where GE has a smaller market shares, GE's market share is above 90%.

(ii) Internal documents show that there are many competitors capable of servicing GE E-HDGT fleet as well as lower output 50 Hz HDGTs

- (1727) GE in its internal documents assesses the competitive servicing landscape of its GT fleet. In Figure 74 it can be seen that for the 6B and 9E fleets several competitors are able to provide parts, repairs, services and upgrades. Notably, TurboCare, Ethos Energy, Masaoood John Brown and Chromalloy are able to provide the complete package of services, while Sulzer MD&A and PWPS provide all services except upgrades. As for the 6FA, TurboCare, Ethos Energy, Sulzer, Masaoood John Brown and Chromalloy provide all outage services.

- (1728) Alstom in its internal documents also assesses the dynamics of the competitive servicing landscape for 50 Hz HDGTs. Here the different types of services provided are not clearly divided between platforms. Nevertheless, for parts and

reconditioning of B/E classes, it is clear that there are a number of competitors having strong presence and there is a consistent trend for the increase in competition for servicing B/E fleets.[internal Alstom assessment of competitors].

Figure 82: Alstom's competitive assessment of the competitors servicing GE's 50 Hz HDGTs

[extract from internal ALSTOM document containing competitive assessment of service competitors]

Source: Annex 1279, slide 31.

- (1729) In another internal document by Alstom it is mentioned as regards the B and E classes that this is a *"Highly Competitive Parts and Service Market: Multiple, well established competitors, Heavily eroding prices in all markets over past 5 years, OEM consistently lowering prices, likely resulting in a reduced number of competitors, Other ISP's often combine with others to provide full scope"*.¹⁵¹⁶ As for the 6FA, although competition is more limited, Sulzer is *"expanding offer"* and *"Developing HGP parts at Chromalloy"*.¹⁵¹⁷ This is also confirmed by another Alstom internal document according to which several other competitors (Ethos, Sulzer, Ansaldo, etc.) have a full scope offering for the 9E, including HGP, compressor and rotor repair.¹⁵¹⁸
- (iii) Market investigation reveals that customers are not concerned about the anti-competitive effects for the servicing of the GE E-class fleet as well as lower output HDGTs**
- (1730) In Phase I the large majority of customers indicated that several ISPs are able to service 9E machines including Alstom, Ethos, PWPS, Ansaldo and Sulzer.¹⁵¹⁹ In their replies, customers consistently compared E-class and F-class HDGTs indicating that there are many competitors for lower class HDGTs as opposed to F-class HDGTs where GE is the only service provider: *"Latest technology can only be serviced by GE"*¹⁵²⁰, *"We understand that the services of matured GTs (7E.3, 9E.3, 7F.4, 9F.03) can be taken by service providers, except for core spare parts procurements and retrofit, but relatively new GTs (7F.05, 9F.05) can only be served by GE because of latest GE's technologies which cannot be managed by service providers."*¹⁵²¹, *"[our] fleet is actually composed by Frame 9E (where we have many alternative service supplier), Frame 6 (B&FA) and 9 FB. [...]. Frame 9FB (9F.05) is actually covered only from GE (especially for spare parts)"*¹⁵²². Another EEA customer confirms that there are many service providers for GE's classes below the 9FA:

¹⁵¹⁶ See Annex 895, slide 60.

¹⁵¹⁷ See Annex 895, slide 48.

¹⁵¹⁸ See Annex 1279, slide 29.

¹⁵¹⁹ See replies to questions 120.1 and 120.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵²⁰ See reply to question 120.6.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵²¹ See reply to question 120.6.1 of Phase I Questionnaire Q1 to customers of Gas fired power.

¹⁵²² See reply to question 120.6.1 of Phase I Questionnaire Q1 to customers of Gas fired power.

*"We are nonetheless aware of several service providers as indicated. As far as [we are] aware, only GE can service the 9F family."*¹⁵²³

- (1731) The entry barriers were also deemed to be much lower for the E-class machines because of their more mature nature: *"[h]igh [entry barriers] for 9F.05 products due to the high costs on investments to develop HGP spare parts compared also to the dimension of the fleet and the reduction of CCGT power demand. For 9E products moderate since it is a mature product."*¹⁵²⁴ This view was also supported by a competitor differentiating between entry barriers of the F-class and lower classes: *"The newer units (F, G and H class) have a high barrier to entry, while older engines (E and B class) have a moderate barrier."*¹⁵²⁵ Another competitor highlighted that *"Entering in service of mature technology [is] relatively easy"*¹⁵²⁶
- (1732) Respondents also expressed little concern with respect to the servicing of the E-class HDGTs. One customer explains that *"In case Alstom though their subsidiary could provide services on frame 9E, due to the fact that it is a mature technology and the offer in the market is large, we deem that the innovation that they could bring is very limited"*.¹⁵²⁷ Other customers state that *"[s]everal service contractors are available for Frame 9Es. But for Frame 9FA, PSM was expected to be an important competitor of GE."*¹⁵²⁸, *"We have only 9E in our fleet. Considering this model of GT there are already other services providers that can cover both maintenance activities and spares supply", "The market is already open to other providers since long time, especially for 9E with good quality and interesting prices"*.¹⁵²⁹

(iv) Conclusions

- (1733) The markets for servicing GE's 9E and lower output GTs, namely the 6FA and 6B, are characterised by the presence of several ISPs, many of them with a full scope offer. Entry barriers are lower than in the market for servicing of GE's 9FA given that these are more mature technologies. Given these factors the Transaction will not significantly impede effective competition in these markets.

10.1.3.5. Conclusions

- (1734) The Commission therefore considers that the Transaction leads to a significant impediment to effective competition on the market for servicing GE's 9FA HDGTs, and its segments (that is to say, the three core services and upgrades).
- (1735) As regards the other markets for servicing of mature GE's HDGTs the Commission finds that the Transaction does not lead to a significant impediment to effective competition.

¹⁵²³ See reply to question 120.6.1 of Phase I Questionnaire Q1 to customers of Gas fired power.

¹⁵²⁴ See reply to question 127.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵²⁵ See reply to question 117.1 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁵²⁶ See reply to question 117.1 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁵²⁷ See reply to question 123.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant

¹⁵²⁸ See reply to question 153.1.1 of Phase II Questionnaire Q7 to competitors on the gas business.

¹⁵²⁹ See replies to questions 153.1.1 and 153.4.1 of Phase II Questionnaire Q7 to competitors on the gas business.

10.2. Servicing of generators

- (1736) Both Parties are active in servicing of generators, ranging from simple inspection and testing to more advanced services like rewinds and upgrades.¹⁵³⁰

10.2.1. The relevant product markets

10.2.1.1. The Notifying Party's views

- (1737) The Notifying Party submits that it not justified to segment the overall market for servicing of generators according to the cooling method (namely into servicing of air-cooled and liquid-cooled generators). The Notifying Party submits that liquid-cooled generators are larger and more complex and thus require more engineering-intensive services. The Notifying Party also claims that segmentations by OEM or by frequency are irrelevant for services of generators.
- (1738) As regards the potential segmentation on the basis of type of service offered, the Notifying Party admits that a relevant segment for "rewind" of generators might exist. "Rewind" amounts to changing the wires, coils or bars of a generator and is the only service that depends on the characteristics of the generator and therefore requires specific skills and know-how.

10.2.1.2. Commission's assessment

- (1739) A majority of customers and competitors who responded to the Commission's questionnaire agrees that services of all types of generators should be considered as belonging to one product market, since both OEMs and non-OEMs are able to provide them due to the mature nature of generators technologies.¹⁵³¹ In particular according to one of the customers: *"Generator technology has changed very little over a fairly long period of time and (...) there are a number of generator service providers who can provide the whole range of services for all kind of generators"*.¹⁵³²
- (1740) Customers who responded to the Commission's questionnaire appear to support the Parties' view that no distinct market should be defined according to the generator cooling method.
- (1741) The Commission's investigation also did not confirm that a segmentation of the overall market for the servicing of generators according to the generators' application is relevant.¹⁵³³
- (1742) Responses of both customers and competitors were not conclusive on the relevance of the other potential segmentations, in particular according to (i) generator output,¹⁵³⁴ (ii) frequency of the generator,¹⁵³⁵ (iii) OEM,¹⁵³⁶ or (iv) generator model.¹⁵³⁷

¹⁵³⁰ See Form CO, paragraph 1503.

¹⁵³¹ See replies to question 29.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant and question 30 of Phase I Questionnaire Q2 to competitors of the gas business.

¹⁵³² See response to question 29 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵³³ See replies to question 30.2.3 of Phase I Questionnaire Q2 to competitors of the gas business and replies to question 29.2.3 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵³⁴ See replies to question 30.2.4 of Phase I Questionnaire Q2 to competitors of the gas business and replies to question 29.2.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

10.2.1.3. Conclusion

- (1743) For the purpose of this Decision the issue whether the overall market for servicing of generators should be segmented further can be left open, as the Transaction would not significantly impede effective competition in the internal market under any plausible market definition.

10.2.2. The Relevant geographic markets

10.2.2.1. The Notifying Party's views and the previous Commission Decisions

- (1744) The Notifying Party submits that since the servicing of generators is similar to the servicing of STs the same geographic market definition should be applied for the purpose of the competitive assessment. The Commission in a previous decision¹⁵³⁸ found that the market for the servicing of STs is at least EEA wide and potentially worldwide.

10.2.2.2. Commission's assessment

- (1745) The majority of competitors and customers who responded to the Commission's questionnaire consider that for servicing of generators there are no country-specific technical requirements or other barriers to global provision of these services.¹⁵³⁹ Customers state that these services are provided globally and are "*less dependent on geographic locations*".¹⁵⁴⁰ A competitor observes: "*Generator-service requirements depend on level of engine maturity, technology and work safety regulations regardless of venue.*"¹⁵⁴¹
- (1746) On the other hand some customers consider the proximity of the supplier important given that a lower distance to the plant implies faster and less costly services.¹⁵⁴² Competitors also confirmed that proximity to customers might create a competitive advantage but at the same time it is not a necessary requirement.¹⁵⁴³

10.2.2.3. Conclusion

- (1747) On the basis of the Commission's investigation it can be concluded that the market for servicing of generators is at least EEA wide and potentially worldwide. However, the exact scope of the geographic market can be left open, as the Transaction does not significantly impede effective competition in the internal market under either of the alternative geographic market definitions.

¹⁵³⁵ See replies to question 30.2.6 of Phase I Questionnaire Q2 to competitors of the gas business and replies to question 29.2.6 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵³⁶ See replies to question 30.2.5 of Phase I Questionnaire Q2 to competitors of the gas business and replies to question 29.2.5 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵³⁷ See replies to question 30.2.7 of Phase I Questionnaire Q2 to competitors of the gas business and replies to question 29.2.7 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵³⁸ Case M.7083 – John Wood Group/Siemens/JV (2014), paragraph 44 and 47.

¹⁵³⁹ See replies to questions 34.6 and 36.6 of Phase I Questionnaire Q2 to competitors on the gas business and replies to question 34.6 and 35.6 - Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁴⁰ See reply to question 35.6.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁴¹ See replies to question 35.6.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁴² See replies to question 37.6.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁴³ See replies to question 40.6 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

10.2.3. Competitive assessment

10.2.3.1. The Notifying Party's view

- (1748) The Notifying Party submits the Transaction does not raise competition concerns in the market for servicing of generators, even under the most narrow market definition.
- (1749) First of all the Notifying Party argues that the overlap between the Parties activities in servicing of generators is limited.
- (1750) Secondly the Notifying Party claims that generators technology is mature and therefore both OEMs and ISPs can and do compete in providing services for generators immediately since generators are sold to customers. As a result, according to the Notifying Party, there are numerous competitors active globally in this market including OEMs (such as Siemens, Hitachi, Toshiba, Doosan, Ansaldo and ABB) and ISPs (such as MD&A, Regenco, Sulzer, EthosEnergy, National Electric Coil, AGT Services, Brush, Stork, Quartzelec, E.on Anlagenservice and Jeumont Electric).
- (1751) Thirdly, the Notifying Party submits that the mature character of generators technology and a large number of customers offering servicing of generators implies that customers are able to switch between these customers easily. As regards the more sophisticated services (for example, rewind) the Notifying Party states that these are required after 10 or 20 years of generator use. It is therefore unlikely that customers would still be bound to any OEM agreement.

10.2.3.2. The Commission's assessment

- (1752) In the EEA, the combined market shares of the Parties in the overall market for servicing of generators would be [40-50]%, with an increment of [5-10]%. The Parties' aggregate worldwide market share, after the Transaction, would be [20-30]% with an increment of [10-20]%.

Table 50: Market shares for servicing of generators (2013)

	Overall market for servicing of generators		GE generators services		Alstom generators services	
	Worldwide	EEA	Worldwide	EEA	Worldwide	EEA
GE (PGS+ Sensoplan)	[10-20]%	[5-10]%	[60-70]%	[40-50]%	[0-5]%	[5-10]%
ALSTOM	[10-20]%	[40-50]%	[0-5]%	[5-10]%	[50-60]%	[50-60]%
GE+Alstom	[20-30]%	[40-50]%	[60-70]%	[50-60]%	[50-60]%	[50-60]%
Siemens	[10-20]%	[20-30]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
MHI	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Toshiba	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
NEC	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Turbocare	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Ansaldo	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Brush	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Quartzelec	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Jeumont	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
ABB	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Stork	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Sulzer	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Ethos Energy					[0-5]%	[0-5]%
Others	[40-50]%	[20-30]%	[30-40]%	[30-40]%	[30-40]%	[30-40]%

Source: Form CO.

- (1753) For the reasons set out at Recitals (1751) to (1758), the Commission finds that the Transaction does not lead to a significant impediment to effective competition in the market for servicing of generators.
- (1754) First, the Transaction would not materially affect the market structure. Worldwide, the combined market share of the Parties would remain below 30%. At the EEA level, the combined market share would be higher, but the increment is lower ([5-10]%). In potential narrower segments of servicing GE's or Alstom's generators the combined shares of the Parties would be higher (at most [60-70]% in the potential segment for servicing of GE generators at worldwide level and at least [50-60]% in this market at the EEA level). However the overlaps resulting from the Transaction in these putative segments are not significant and amount at most to [5-10]%.
- (1755) Both at the EEA and worldwide level, following the Transaction other competitors would still compete effectively with the Parties on the market for servicing of generators. Among them the second largest competitor, Siemens (market share of [20-30]% in the EEA and [10-20]% worldwide) will remain exerting competitive pressure on the Parties. As a result, customers would have alternatives to choose from.
- (1756) For servicing of GE generators the Parties would face competition from Toshiba and Turbocare at the worldwide level and from the latter competitor also at the EEA level. For servicing of Alstom's generators the Parties would face competition from Ansaldo both in the EEA and worldwide.
- (1757) An internal document prepared by GE on the basis of publicly available information and used in the ordinary course of business, which describes the capabilities of the various providers of servicing of generators, indicates that there is no service which could be provided exclusively by Alstom.¹⁵⁴⁴ This implies that Alstom does not have a particular competitive advantage in terms of its offer over the other competitors and instead they all are able to provide a comparable portfolio of generator services.
- (1758) The Commission's market investigation also confirmed that a large number of competitors are active in the market for the servicing of generators. Customers mention NEC, Stork, Jeumont, Ethos Energy, Brush, Siemens, Mitsubishi Hitachi, Toshiba, ABB, Quartzelec among others as potential providers of servicing of generators alternative to the Parties.¹⁵⁴⁵ Also the majority of customers confirmed that for the more sophisticated rewind services they will have enough alternative providers also after the Transaction.¹⁵⁴⁶
- (1759) As regards the putative segment of services of Alstom's generators, the majority of competitors confirmed that they are able to provide outage and even the more sophisticated rewind services for these generators.¹⁵⁴⁷ The respondents to the Commission's investigation did not confirm that Sensoplan has a competitive advantage in the servicing of Alstom generators.¹⁵⁴⁸

¹⁵⁴⁴ See Annexes 194-196.

¹⁵⁴⁵ See replies to question 149 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁴⁶ See replies to question 152 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁴⁷ See replies to questions 138 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁵⁴⁸ See replies to questions 139 of Phase I Questionnaire Q2 to competitors on the gas business.

Therefore even in this putative segment the Transaction does not lead to anticompetitive effects.

- (1760) No substantiated concerns as to the effects of the Transaction on competition in the market for servicing of generators, their prices or availability in the EEA or worldwide were raised by the customers who responded to the Commission's questionnaire.¹⁵⁴⁹ A customer stated that *"...there are enough players so the transaction will have no impact on competition"*,¹⁵⁵⁰ while another noted *"[h]aving the 4 strong market competitors remaining and a few more minor players, the level of the competitiveness will be kept. It is expected that the transaction will have a neutral impact on the market"*¹⁵⁵¹ and yet another observed *"[g]enerators are a mature, established product and there are many more generator service providers."*¹⁵⁵²
- (1761) One of the competitors who responded to the Commission's investigation stated *"There is other sufficient competition in this business. We believe that this merger will not have a significant effect on prices and availability on the generator service business worldwide"*.¹⁵⁵³

10.2.3.3. Conclusion

- (1762) For the reasons set out at Recitals (1751) to (1758) above, the Commission finds that the Transaction does not lead to a significant impediment to effective competition in the market for servicing of generators.

10.3. Servicing of STs

10.3.1. The Relevant product markets

10.3.1.1. The Notifying Party's views

- (1763) The Notifying Party claims that it is not necessary to segment the overall market for servicing of STs according to (i) the type of ST service, (ii) ST output, (iii) OEM technology or (iv) frequency.
- (1764) The Notifying Party submits that while it is not necessary to segment the market for servicing of STs according to the fuel type there is a potential exception for nuclear plant STs due to technical (more specialised services since these turbines operate under wet steam and face adverse environmental conditions) and commercial (risk-aversion of nuclear plant customers) reasons.¹⁵⁵⁴
- (1765) The Notifying Party admits that specific aspects of the servicing of STs are the retrofits, which consist of inserting a major new ST module in the casing/foundation of an existing older ST to improve performance without

¹⁵⁴⁹ See replies to questions 198.2, 199.2, 200.2, 201.2 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁵⁰ See reply to questions 198.2.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁵¹ See reply to questions 198.2.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁵² See reply to questions 198.2.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁵³ See replies to question 182 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁵⁵⁴ See Form CO, paragraphs 1494-1500.

complete replacement. Notably, only OEMs and ISPs backed by an OEM are able to offer retrofits.¹⁵⁵⁵

10.3.1.2.Previous Commission Decisions

- (1766) The Commission has identified a separate market for servicing of STs in a previous decision, while leaving it open whether it could be segmented further.¹⁵⁵⁶

10.3.1.3.Commission's assessment

- (1767) The majority of customers who responded to the Commission's investigation confirm that all services for all STs may constitute one single market because ST technologies are typically mature (that is to say, non-OEMs service providers can compete with the ST OEMs from the point at which the ST is sold to a customer) and a number of ST services providers can provide the whole range of services for all types of STs.¹⁵⁵⁷ In support of this claim, one of the customers explains that "*The steam turbines market could be considered as a „mature”. The technology is well known and there are plenty of service providers who are able to provide the complete service of the ST.*"¹⁵⁵⁸
- (1768) As regards competitors one of them noted in particular that the servicing of nuclear STs could be considered as a separate market.¹⁵⁵⁹ In its internal documents GE looks at the addressable market for servicing of STs per fuel source.¹⁵⁶⁰
- (1769) When considering other possible market segmentations, responses of customers and competitors were not conclusive on which of these segmentations is indeed relevant. However some customers indicated that delineating the market by type of ST service would be of some importance.¹⁵⁶¹ Within this segment retrofits are mentioned as a differentiating factor between different service providers. One customer explains that "*field service (mere assembly and disassembly activities) are provided by a wider range of contractors as opposed to retrofits or lifetime assessments*"¹⁵⁶².

10.3.1.4.Conclusion

- (1770) For the purpose of this Decision the issue whether the overall market for servicing of STs should be segmented further can be left open, as the Transaction would not significantly impede effective competition in the internal market under any plausible market definition

¹⁵⁵⁵ See Form CO, paragraphs 1489 and 1490.

¹⁵⁵⁶ Case M.7083 – John Wood Group/Siemens/JV (2014).

¹⁵⁵⁷ See replies to question 25.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁵⁸ See reply to question 25.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁵⁹ See reply to question 26.1 of Phase I Questionnaire Q2 to competitors of the gas business.

¹⁵⁶⁰ See Form CO, Table 149.

¹⁵⁶¹ See replies to question 25.2.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁶² See reply to question 25.2.8 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

10.3.2. The relevant geographic markets

10.3.2.1. Notifying Party's views and previous Commission Decisions

- (1771) The Notifying Party follows the geographic market definition as outlined in the previous Commission decisions¹⁵⁶³ and submits that the markets for servicing of STs are at least EEA-wide and potentially worldwide.¹⁵⁶⁴

10.3.2.2. Commission's assessment

- (1772) The market investigation revealed that the majority of customers and competitors do not see transport costs, technical specifications, regional regulations or other standards to constitute a barrier to the global provision of ST services.¹⁵⁶⁵ However, a significant number of customers indicated that the proximity of a supplier's manufacturing, repair and services facilities is a decisive factor when awarding contracts for LST servicing.¹⁵⁶⁶ One of the major EEA utilities comments that *"[a] regional presence of services facilities will facilitate planned and unplanned maintenance support. The proximity of parts manufacturing facilities is not a criterion"*¹⁵⁶⁷. Another major utility adds that *"[w]orkshop location is an important criterion if the services involve the removal, transport and off-site repair to GT components. Close proximity assists with reduced down time and ease of quality assurance"*.¹⁵⁶⁸

10.3.2.3. Conclusion

- (1773) On the basis of the Commission's investigation it can be concluded that the market for servicing of STs is at least EEA wide and potentially worldwide. However, the exact scope of the geographic market can be left open, as the Transaction does not significantly impede effective competition in the internal market under either of the alternative geographic market definitions.

10.3.3. Competitive assessment

10.3.3.1. Notifying Party's view

- (1774) The Notifying Party submits that since GE does not provide ST services to OEMs the overlap between the Parties' activities is limited. Secondly the Notifying Party argues that there exists sufficient competition in the market from ST OEMs and ISPs.¹⁵⁶⁹ In particular the Notifying Party notes that at least two ISPs other than Alstom are able to service every GE ST platform and that there are numerous competitors which can service GE's nuclear STs.¹⁵⁷⁰

¹⁵⁶³ Case M.7083 – John Wood Group/Siemens/JV (2014) and Case M.1224 – TPM/Wood Group (1998).

¹⁵⁶⁴ See Form CO, paragraphs 1516-1518.

¹⁵⁶⁵ See replies to question 34.4 of Phase I Questionnaire Q1 to customers of Gas fired power plant and replies to question 34.4 of Phase I Questionnaire Q2 to competitors on the gas business.

¹⁵⁶⁶ See replies to question 37.2.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

¹⁵⁶⁷ See reply to question 37.2.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant. ([name of customer])

¹⁵⁶⁸ See reply to question 37.2.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant. ([name of customer])

¹⁵⁶⁹ See Form CO, paragraphs 1605-1611.

¹⁵⁷⁰ See Form CO, table 155.

10.3.3.2. The Commission's Assessment

- (1775) The combined share of the Parties in the overall market for servicing STs amounts to [30-40]% worldwide with an overlap of [10-20]% and [40-50]% in the EEA with an overlap of [0-5]%.

Table 51: Market shares for servicing of STs (2013)

	ST Services		GE ST services	
	Worldwide	EEA	Worldwide	EEA
GE (PGS)	[10-20]%	[0-5]%	[50-60]%	[70-80]%
ALSTOM	[20-30]%	[30-40]%	[5-10]%	[0-5]%
GE + Alstom	[30-40]%	[40-50]%	[50-60]%	[70-80]%
Siemens	[20-30]%	[20-30]%	[0-5]%	[0-5]%
MHI/Hitachi	[5-10]%	[0-5]%	[5-10]%	[0-5]%
SEC/DEC/HEC	[5-10]%	[0-5]%	[0-5]%	[0-5]%
LMZ/UTZ/TA602	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Toshiba	[0-5]%	[0-5]%	[0-5]%	[0-5]%
BHEL	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Doosan	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Ansaldo	[0-5]%	[0-5]%	[0-5]%	[10-20]%
Others (incl. ISPs)	[20-30]%	[10-20]%	[30-40]%	[10-20]%

Source: Form CO.

- (1776) For the reasons set out below at Recitals (1774) to (1781), the Commission finds that the Transaction does not lead to a significant impediment to effective competition in the market for servicing of STs.
- (1777) Although the Transaction will create the largest competitor in the market for servicing of STs with [30-40]% market share, it will be followed by a relatively strong Siemens with a share of [20-30]% and two other competitors with a share of [5-10]%. In the EEA the combined share of the Parties is higher, amounting to [40-50]% but the overlap is much more limited and equal to only [0-5]%. Siemens is also a strong competitor in the EEA with a share of [20-30]% followed by Ansaldo with [0-5]%.
- (1778) As GE provides ST services solely for its own fleet the putative segment for servicing of GE STs is also considered. In this segment there is no overlap between the Parties at an EEA-wide level. Worldwide the combined share will not be insignificant, amounting to [50-60]% but competitors such as MHI/Hitachi, Toshiba and Doosan will be present in this segment with shares above [0-5]%.
- (1779) As illustrated by Figure 83, showing to which competitors GE lost opportunities to provide any type of servicing of STs, GE acknowledges that several competitors are present in the market for servicing of STs. Notably, "Turbo Care – Siemens" and "MD&A/Hitachi" were the two most important competitors of GE leaving Alstom as the third.

Figure 83: GE ST services lost opportunities – 2013 - worldwide

[extract from internal GE document showing competitors from whom GE lost opportunities and share (%) of lost opportunities they represent]

Source: Form CO.

- (1780) An overwhelming majority of customers who responded to the Commission's questionnaire consider that after the Transaction there will be enough alternative suppliers of services for STs.¹⁵⁷¹ A customer noted that in addition to the OEMs providing those services *"there are multiple service companies"*.¹⁵⁷² Another customer stated that *"ST are usually mature products and many of the competitors have bought in the past licences, [there is] no problem in providing services and spares"*.¹⁵⁷³
- (1781) As regards the putative segment of services for GE ST, the majority of competitors who responded to the Commission's questionnaire confirmed that they are also able to service GE's STs.
- (1782) In the course of market investigation no substantiated concerns were raised by customers with respect to the impact of the Transaction on competition, prices or availability of ST services either worldwide or in the EEA.¹⁵⁷⁴ Also in the potential narrower segment of services for nuclear STs customers did not raise concerns as to the impact of the Transaction.¹⁵⁷⁵
- (1783) Customers submitted that *"there [is] sufficient competition in the market"*¹⁵⁷⁶, *"[s]upplier base still wide enough to grant competition"*¹⁵⁷⁷, *[h]aving the 4 strong market competitors remaining and a few more minor players, the level of the competitiveness will be kept."*¹⁵⁷⁸, *"There are a number of options for servicing steam turbines other than GE and Alstom"*.¹⁵⁷⁹
- (1784) The customers also do not expect negative impact of the Transaction on innovation in services for ST, since *"[s]team turbines (...) technology (...) has not changed significantly in the last 50 years. All established LST manufacturers are able to offer similar products, services and levels of performance and the scope for innovation is quite limited."*¹⁵⁸⁰

10.3.3.3. Conclusion

- (1785) For the reasons set out at Recitals (1774) to (1781) above, the Commission finds that the Transaction does not lead to a significant impediment to effective competition in the market for servicing of STs.

1571 See replies to question 138 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

1572 See reply to question 137 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

1573 See reply to question 138 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

1574 See replies to questions 193.1, 194.1, 195.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

1575 See replies to questions 193.3, 194.3 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

1576 See reply to question 193.1.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

1577 See reply to question 193.1.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

1578 See reply to question 193.1.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

1579 See reply to question 193.1.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

1580 See reply to question 197.1 of Phase I Questionnaire Q1 to customers of Gas fired power plant.

11. GRID

11.1. Introduction

- (1786) Electrical power generated in a power plant is delivered to end users through transmission and distribution ("T&D") equipment and networks. The primary customers of grid products are transmission system operators ("TSO"s) and distribution system operators ("DSO"s).
- (1787) Alstom's grid business unit ("Alstom Grid") is active in power transformers, other high voltage substation products, high voltage flexible alternate current systems ("FACTS systems") and high-voltage direct current systems ("HVDC systems"), substation automation solutions ("SAS") and network management software ("NMS") for transmission and distribution networks, consulting services as well as servicing its own installed base of solutions and equipment. Alstom Grid sources some medium voltage products but does not manufacture them.
- (1788) GE's grid related activities are organised in the GE Digital Energy business unit, which forms part of GE Energy Management. GE Digital Energy manufactures and supplies SAS products, NMS products, a specific type of high voltage instrument transformer, FACTS systems, HVDC as well as high voltage substation turnkey solutions. GE Digital Energy is also active in technical consulting and operation of service shops for repair and rebuilding of power transformers. In addition GE has a Mexico-based joint venture Prolec GE, which manufactures power transformers used in transmission networks, distribution transformers and transformers used in specific industry application. Prolec GE has not sold its products in the EEA in the past five years. Furthermore GE is an exclusive distributor in – among others – Europe and the United States of XD, which is a Chinese manufacturer of high voltage products.
- (1789) According to the Notifying Party grid activities of GE and Alstom overlap with respect to the following products: (i) transformers, (ii) other high voltage products, (iii) transmission systems, (iv) substation automation equipment, (v) network management systems, (vi) power management systems, (vii) communications equipment and (viii) energy automation and information systems.

11.2. The relevant product markets

11.2.1. Notifying Party's views

- (1790) The Notifying Party argues that it is not necessary for the Commission to reach a final conclusion on the precise product market definitions for the various grid products, since competition issues do not arise on the basis of any of the plausible market definitions.
- (1791) More specifically the Notifying Party submits that with respect to switchgear, which are the main high voltage products other than transformers, these are bought either as part of turnkey solution or as separate components (such as: Air Insulated Switchgear – "AIS", Gas Insulated Switchgear – "GIS", circuit breakers, disconnectors, instrument transformers, insulators and bushings as well as arrestors).

- (1792) As regards transmission systems, the Notifying Party argues that (i) high voltage AIS and GIS turnkey solutions, (ii) HVDC systems and (iii) FACTS should be looked at separately, even though they may all belong to a single market for transmission systems. On the other hand, according to the Notifying Party it is not necessary to look at technology sub-categories¹⁵⁸¹ within any of these three system categories.
- (1793) With respect to power management systems, the Notifying Party claims that while all the products and services included in that broad definition are designed to achieve the same objective, which is more efficient management of the transmission system, a distinction should be made between SAS and NMS because from demand-side perspective they perform different functions. The Notifying Party notes that SAS, which consists of hardware and some automation/software elements, is primarily used to electronically diagnose, monitor, protect and control the power equipment within a substation. On the other hand NMS, according to the Notifying Party are essentially software solutions and, although they are interconnected with SAS, they perform a much broader and more sophisticated network management function typically for a larger number of substations. Furthermore the Notifying Party does not see reasons to consider protective relays from other SAS or to distinguish power management systems according to voltage level.
- (1794) With regard to NMS the Notifying Party submits that these software solutions are usually adapted to customers' specific needs and thus it is difficult to provide their complete overview. Nevertheless the Notifying Party mentions the following main categories of NMS for which the Parties' activities overlap: Energy Management Systems (EMS), Distribution Management Systems (DMS) and Wide Area Monitoring Systems (WAMS).

11.2.2. *Previous Commission's Decisions*

- (1795) In its previous decisions the Commission has considered the overall market for transmission and distribution and its various components, both when they are supplied individually or integrated into a system.¹⁵⁸² However in all these cases the product market definitions were ultimately left open.
- (1796) In one decision, while the market definitions were ultimately left open, the following potential product markets were identified: (i) high voltage products, (ii) medium voltage products, (iii) power transformers, (iv) transmission systems and distribution systems, (v) energy automation and information systems and (vi) transmission and distribution services.¹⁵⁸³
- (1797) In particular as regards energy and automation systems it was noted that these consist of products (such as among other protective relays), systems and services. In another decision it was considered that the larger segment of energy automation and information systems could be divided into two sub-

¹⁵⁸¹ In particular there are the following FACTS devices/technologies: static VAR compensators, static synchronous compensators, fixed shunt compensation, fixed series compensation, mechanically switched compensation devices and synchronous condensers.

¹⁵⁸² Case M.3296 - Areva/Alstom T&D, Case M.3653 - Siemens/VA Tech, Case M.5754 -Alstom Holdings/Areva T&D Transmission activities, Case M.5755 - Schneider Electric/Areva T&D.

¹⁵⁸³ Case M.3296 - Areva/Alstom T&D, paragraphs 11-15.

segments: power station management and protective relays.¹⁵⁸⁴ A similar view was expressed in a subsequent decision, where the market investigations, confirmed that these are two different products from a technical perspective, based on different technical procedures.¹⁵⁸⁵

- (1798) In another decision¹⁵⁸⁶ the Commission has considered various high voltage products (circuit breakers, switchgears, instrument transformers and disconnectors) as well as transmission systems. With respect to the former it was left open whether the individual high voltage products belong to separate markets or if they all belong to one market.¹⁵⁸⁷ With respect to the latter it was also left open whether high voltage turnkey projects (transmission systems) should be distinguished from medium voltage turnkey projects (distribution systems) or whether they should all be considered as belonging to one overall market.¹⁵⁸⁸

11.2.3. Commission's assessment

- (1799) For the purpose of the Decision the exact scope of the product market for the transmission and distribution products can be left open since the Transaction does not significantly impede effective competition in the internal market under either of the alternative market definitions.

11.3. The relevant geographic markets

11.3.1. Notifying Party's view

- (1800) The Notifying Party submits that the relevant geographic market for all types of T&D products can be left open, since the Transaction does not lead to competition concerns notwithstanding the exact geographic scope of the relevant markets.
- (1801) In any case the Notifying Party considers that the relevant market(s) for the various T&D products is (are) at least EEA-wide and probably worldwide in scope.

11.3.2. Past Commission Decisions

- (1802) In the most recent Commission's Decisions concerning T&D products, while the geographic scope of the relevant market(s) was left open, it was concluded that the market(s) were at least EEA-wide in scope,¹⁵⁸⁹ while the effects on worldwide markets were also considered.¹⁵⁹⁰

11.3.3. Commission assessment

- (1803) For the purpose of this Decision the exact scope of the geographic market for the transmission and distribution products can be left open since the Transaction does not lead to significant impediment to effective competition neither at the EEA nor at a worldwide level.

¹⁵⁸⁴ Case M.3653 - Siemens/VA Tech, paragraph. 76.

¹⁵⁸⁵ Case M.3653 - Siemens/VA Tech, paragraph. 25.

¹⁵⁸⁶ Case M.5754 -Alstom Holdings/Areva T&D Transmission activities.

¹⁵⁸⁷ Case M.5754 -Alstom Holdings/Areva T&D Transmission activities, paragraphs 52-53.

¹⁵⁸⁸ Case M.5754 -Alstom Holdings/Areva T&D Transmission activities, paragraph 65.

¹⁵⁸⁹ Case M.5754 -Alstom Holdings/Areva T&D Transmission activities, paragraph 71.

¹⁵⁹⁰ Case M.5755 - Schneider Electric/Areva T&D, paragraph 32.

11.4. Competitive assessment

- (1804) On the basis of the information provided by the Notifying Party the Transaction leads to affected markets for the following T&D products¹⁵⁹¹: (i) potential market for fixed series compensation (FSC) worldwide, (ii) potential market for EMS worldwide and in the EEA, (iii) potential market for WAMS worldwide and in the EEA, (iv) potential market for network management systems (NMS) combined worldwide.

11.4.1. Notifying Party's view

- (1805) The Notifying Party emphasizes that the two leading suppliers of T&D equipment globally and in the EEA are Siemens and ABB. It also argues that, while Alstom is the third largest supplier, GE has a more limited product portfolio and an emphasis on Northern America with minor activities in the EEA.
- (1806) Specifically with respect to FSC the Notifying Party claims that this is a mature technology and that the incumbent supplier has typically no specific advantage over the other bidders in case of a tender for a new system. The Notifying Party also submits that GE and Alstom are not particularly close competitors for FSC, because the former offers FSCs with fuseless capacitors.
- (1807) Specifically with respect to network management systems the Notifying Party cites examples of switching EMS supplier by various customers. In addition with respect to WAMS, the Notifying Party argues that GE and Alstom are not close competitors insofar as Alstom focuses on WAMS software and overall systems projects, whereas GE focuses on WAMS hardware and does not offer enterprise level WAMS software, and its overall systems capabilities are not well developed.

11.4.2. Commission's assessment

11.4.2.1.FSC

- (1808) As mentioned in footnote 1581, FSC systems (also called fixed capacitor banks) are another form of FACTS. They mainly comprise: controlled capacitor banks and parallel arrestors, spark gaps and a bypass switch. The main purpose of an FSC system is to increase the power throughput of a network.
- (1809) The combined share of the Parties in the potential market for FSC in 2013 amounted to [40-50]% worldwide with an overlap of [20-30]%. In the EEA Alstom's last FSC system was installed in 2007, therefore there has been no overlap between the Parties since then.

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With respect to (i) AIS products combined, (ii) AIS circuit breakers and (iii) AIS disconnectors the Notifying Party estimates that while Alstom's share would amount to around [20-30]% worldwide and above [20-30]% in the EEA; GE has had orders for all these products, which are minimal and all outside the EEA. Therefore these markets will not be considered further in the Decision.

Table 52: Worldwide market shares for FSC

	2013	2012	2011
Alstom	[20-30]%	[5-10]%	[20-30]%
GE	[20-30]%	[40-50]%	[20-30]%
GE+Alstom	[40-50]%	[50-60]%	[50-60]%
ABB	[20-30]-[30-40]%	[0-5]%	[0-5]%
Siemens	[20-30]%	[0-5]%	[0-5]%
Others	[10-20]%	[0-5]%	[0-5]%

Source: Form CO.

- (1810) Even though the Transaction would give rise to the largest supplier of FSC, the Parties would still face competition from strong competitors such as ABB and Siemens. In addition, the Notifying Party mentions other suppliers, such as Chinese CEPRI (active also outside China) and Indian NARI and BHEL.

Furthermore, as can be seen from

- (1811) Table 52 above, the shares in the FSC market are highly volatile and depend on success rate in projects. Therefore the yearly market shares do not necessarily reflect the competitive position of competitors in this market.
- (1812) The customers who replied to the Commission's investigation and who purchase FSC systems did not identify any specific advantage of either GE or Alstom's FSCs in terms of technical characteristics, pricing and performance.¹⁵⁹² Indeed as one customer put it clear, the tendency is to "*source from several suppliers with no one supplier having an advantage over the others*".¹⁵⁹³ In fact the majority of those who purchase FSC multisource it from different suppliers (some even from four or five) and state that they could switch their current FSC supplier quickly and without incurring significant costs.¹⁵⁹⁴
- (1813) Along this line, the majority of the customers who replied to the market investigation that buy FSC systems, explained that if they were no longer able to purchase FSC from the Parties, or only at a significant higher price, they would still have enough alternative supplies.¹⁵⁹⁵ In this context they mentioned ABB, Siemens and Asian suppliers. One of the customers noted that "*the suppliers offer competitive solutions which are close in terms of technical characteristics and performance*".¹⁵⁹⁶
- (1814) According to the Notifying Party, entry into the FSC market is possible in particular since the existing suppliers of other FACTS technologies would be capable of developing FSC systems. Some customers in the course of the market investigation pointed to new entries in the market for FSC in the last five years, as well as the likelihood of new entries within the next two years in particular by the Chinese and Korean players who "*are improving quickly their products*" and could potentially enter the European market.¹⁵⁹⁷
- (1815) The majority of customers who responded to the market investigation and that source FSC systems consider that the Transaction will not have an impact on prices or availability of FSCs because there will still be a sufficient number of suppliers in the market.¹⁵⁹⁸
- (1816) Thus, in view of the fact that after the Transaction Siemens and ABB will continue to exercise competitive pressure on the merged entity, that switching suppliers is not problematic for customers and that no competition concerns were raised in the course of market investigation, it can be concluded that the Transaction does not lead to a significant impediment to effective competition in the putative worldwide market for FSCs.

¹⁵⁹² See replies to questions 4 and 5 of Phase I Questionnaire Q5 to customers of Grid.

¹⁵⁹³ See reply to question 5 of Phase I Questionnaire Q5 to customers of Grid.

¹⁵⁹⁴ See replies to questions 6 and 7 of Phase I Questionnaire Q5 to customers of Grid.

¹⁵⁹⁵ See replies to question 10 of Phase I Questionnaire Q5 to customers of Grid.

¹⁵⁹⁶ See reply to question 11 of Phase I Questionnaire Q5 to customers of Grid.

¹⁵⁹⁷ See replies to questions 8 and 9 of Phase I Questionnaire Q5 to customers of Grid.

¹⁵⁹⁸ See reply to question 37 of Phase I Questionnaire Q5 to customers of Grid.

11.4.2.2.NMS

- (1817) NMS are software solutions for grid control rooms used for piloting and controlling grids as well as handling energy transaction. In particular EMS manage the transmission network from the power plant through (and including) the transmission (step-down) substations. WAMS enables monitoring the energy flow, voltage and current in multiple locations of the transmission network in order to improve network observability.
- (1818) As regards the various network management systems, the Transaction leads to affected markets in the potential markets for EMS (combined share in the EEA amounting to [40-50]% with an overlap of [20-30]% and combined worldwide share [40-50]% with an overlap of [5-10]%; WAMS (combined worldwide share amounting to [60-70]% with an overlap of [0-5]%) and for the combined network management systems (combined worldwide share amounting to [20-30]%).

Table 53: Market shares for NMS

	EMS (12 months ending 3/2014)		WAMS (12 months ending 3/2014)		Network management systems combined (12 months ending 3/2013)	
	EEA	Worldwide	EEA	Worldwide	EEA	Worldwide
GE	[20-30]%	[5-10]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%
Alstom	[10-20]%	[30-40]%	[30-40]%	[50-60]%	[5-10]%	[10-20]%
GE+Alstom	[40-50]%	[40-50]%	[30-40]%	[60-70]%	[10-20]%	[20-30]%

Source: Form CO.

- (1819) The Notifying Party was not able to provide estimates of market shares of competitors for NMS. However it submits that for the EMS both on an EEA and worldwide basis ABB and Siemens are the most significant competitors to the merged entity. Worldwide the following competitors are also active: Open Systems International (OSI), which has had several significant wins in recent years, Advanced Control Systems (previously known as Efacec), Hitachi and NARI (now called NR Electric). The presence of these competitors in the worldwide EMS market was confirmed in a conference call with a customer.¹⁵⁹⁹ In the EEA a successful supplier is PSI, which notably has supplied EMS to most of the German TSOs. There are also large TSOs (such as RTE in France and Terna in Italy) that have built proprietary EMS systems with the help of system integrators. Moreover, the Parties understand that OSI is bidding for EMS projects in the EEA.
- (1820) The Parties' main competitors for WAMS products are ABB, Siemens, SEL, Arbiter and Electric Group.

(i) EMS

- (1821) While the combined market share of the Parties in the potential market for EMS is not insignificant, it should be noted that at least in the EEA their shares were volatile in the past three years ([40-50]% in 2012 and down to [20-30]% in 2013). The Notifying Party states that EMS are long-term investments that customers make only infrequently and therefore EMS can be described as a

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See minutes of the conference calls held with customers of 24 December 2014 and 15 January 2015.

bidding market. In such markets the market shares do not necessarily reflect the competitive position of competitors.

- (1822) In fact a significant majority of customers who purchase EMS noted in response to the Commission's questionnaire that they do have enough alternative suppliers to the Parties.¹⁶⁰⁰ They mentioned Siemens, PSI, ABB, Elektrosystem, OSI. A customer explained that *"even if one of their EMS was to be withdrawn from the market, there would be no impact on RTE, as the market will remain competitive due to the high number of alternative suppliers (at least 5)"*.¹⁶⁰¹
- (1823) A majority of customers does not consider that EMS offered by GE has any advantage in terms of technical characteristic, pricing and performance, when compared to the offering of the other suppliers.¹⁶⁰²
- (1824) A large majority of respondents to the market investigation stated that the Transaction will have no impact on price and availability of EMS.¹⁶⁰³ This is because customers believe they would still have enough alternative suppliers in the market. Indeed, as stated by a customer *"number of competitors can lower, but strong competitors remain on the market"*.¹⁶⁰⁴ Another customer stated that *"there are enough alternative suppliers to provide competition"*.¹⁶⁰⁵
- (1825) Finally, some of the customers pointed to the fact that the Transaction is likely to spur innovation.¹⁶⁰⁶

(ii) WAMS

- (1826) While the combined worldwide share of the Parties for 2014 is high and amounts to [60-70]% it should be noted that in 2013 it amounted to only [10-20]% (with an overlap of [0-5]%) and in 2012 to less than [20-30]%. This suggests that WAMS has characteristics of a bidding market, in which market shares do not necessarily reflect the competitive position of the competitors. The Notifying Party argues that the strong position of GE in the worldwide WAMS market results from its winning of a single exceptionally large project in India. The Notifying Party believes that projects of a similar size will not occur in the foreseeable future anywhere in the world.
- (1827) The majority of the customers purchasing WAMS who replied to the Commission's Questionnaire explained that if they were no longer able to purchase WAMS from the Parties, or only at significantly higher prices, they would have enough alternative suppliers.¹⁶⁰⁷ In particular ABB, Siemens, AIS, SEL, ELPROS and ELCOM were mentioned. Another customer mentioned: *"we have just recently closed our first bidding process for WAMS software"*

¹⁶⁰⁰ See replies to question 35 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶⁰¹ See minutes of the conference call held with customer of 15 January 2015.

¹⁶⁰² See replies to question 31 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶⁰³ See replies to questions 40.1.1 and 40.2.1 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶⁰⁴ See reply to questions 40.1.1 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶⁰⁵ See reply to questions 40.2.1 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶⁰⁶ See replies to questions 40.3.1 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶⁰⁷ See replies to question 25 of Phase I Questionnaire Q5 to customers of Grid.

*where ELPROS has produced the best technical and pricing performance, which let it to enter our market".*¹⁶⁰⁸

(1828) As regards switching between different suppliers, one customer clearly put forward *"we could swiftly change PDC and PMU because existing system allow receive data with standard protocols. One main requirement is for new devices – they support international standards".*¹⁶⁰⁹

(1829) The majority of those customers who purchase WAMS and replied to the Commission's investigation consider that the Transaction will have no impact on price or availability of WAMS.¹⁶¹⁰ Customers stressed that there is *"competition enough in the market"* and that *"GE's main market is North America where Alstom is not a big player".*¹⁶¹¹ Some customers also pointed to a potential increase in innovation resulting from the Transaction.¹⁶¹²

(iii) NMS combined

(1830) The Commission has also investigated whether the Transaction could lead to competition concerns in a putative market combining the various NMS. However an overwhelming majority of customers purchasing NMS stated that their choice of supplier for one NMS software (for instance EMS) does not dictate the choice of suppliers of other software (such as DMS or WAMS) for instance to ensure interoperability.¹⁶¹³ The customers noted that standard protocols ensure information exchange between for instance EMS and WAMS software and therefore suppliers of these products can be different.¹⁶¹⁴ Furthermore the combined share of the Parties in the putative market combining all NMS is not significant ([20-30]% worldwide and [10-20]% in the EEA).

(iv) Conclusion

(1831) In view of the fact that after the Transaction the customers would still have other alternative suppliers of NMS and since no substantiated concerns as to the impact of the Transaction on competition were raised in the course of market investigation, it can be concluded that the Transaction does not lead to a significant impediment to effective competition with respect to the various NMS products.

11.5. Conclusion

(1832) Accordingly, for the reasons set out in Recitals (1805) to (1828), the Commission finds that the Transaction does not lead to a significant impediment to effective competition in the market(s) for grid products.

¹⁶⁰⁸ See reply to question 23.1 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶⁰⁹ See reply to question 37 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶¹⁰ See replies to questions 39.1 and 39.2 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶¹¹ See reply to questions 39.1 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶¹² See replies to question 39.3 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶¹³ See replies to question 29 of Phase I Questionnaire Q5 to customers of Grid.

¹⁶¹⁴ See replies to question 29 of Phase I Questionnaire Q5 to customers of Grid.

12. MODIFICATIONS TO THE TRANSACTION

- (1833) In order to render the Transaction compatible with the internal market in relation to the market for 50 Hz HDGTs, in particular in the Large and Very Large segments, the market for generators bundled with 50 Hz HDGTs, the market for LSTs bundled with 50 Hz HDGTs and the market for servicing GE's 9FA HDGTs, the Notifying Party submitted commitments pursuant to Article 8 (2) of the Merger Regulation on 16 July 2015 (the "First Commitments").
- (1834) The Commission concluded that the First Commitments were insufficient to remove the significant impediment to effective competition, did not market test the First Commitments and informed the Notifying Party accordingly.
- (1835) The Notifying Party submitted a second version of commitments on 21 July 2015 (the "Second Commitments"). The Commission concluded that the Second Commitments of 21 July 2015 were insufficient to remove the significant impediment to effective competition, did not market test the Second Commitments and informed the Notifying Party accordingly.
- (1836) The Notifying Party submitted a third version of commitments on 24 July 2015 (the "Third Commitments"). The Commission market tested the Third Commitments.
- (1837) In order to address the issues raised in the market test, the Notifying Party submitted a final set of commitments on 6 August 2015 (the "Final Commitments").
- (1838) The commitments submitted by the Notifying Party consist essentially in the divestment to Ansaldo of the advanced HDGT and gas turbine power plant business currently owned by Alstom ("Alstom's Gas Business") combined with the PSM Business¹⁶¹⁵, excluding however (i) those areas of Alstom's Gas Business where no competition issues arise, and (ii) elements of Alstom's Gas Business and the PSM Business that are not needed by Ansaldo to replicate Alstom's position as a viable and competitive force in HDGTs, in so far as Ansaldo's resources and capabilities are taken into account (the "Divestment Business").
- (1839) The commitments submitted by the Notifying Party have elements of both a fix-it-first remedy as described in paragraphs 56 and 57 of the Remedies Notice and an up-front buyer remedy as described in paragraphs 53 to 55 of the Remedies Notice. The commitments structure includes elements of a fix-it-first solution in that GE has already pre-selected the purchaser, Ansaldo. The current assets of Ansaldo can thus be taken into account in the Commission's assessment about the viability and competitiveness of Ansaldo in operating the assets divested. The commitments structure is also an upfront buyer solution since the implementation of the Transaction can only take place after the final approval by the Commission of the purchaser and the purchase agreements.
- (1840) The assets retained by GE (the "Retained Business") consist of the (tangible and intangible) assets and personnel included in Alstom's Gas Business and the

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PSM Business is defined as all shares in PSM together with intellectual property owned or controlled by Alstom Technology Limited insofar as it was created or is used by PSM or both.

PSM Business that will not be included in the Divestment Business, because they are related to areas of Alstom's Gas Business where no competition issues arise, or are not needed by Ansaldo to replicate Alstom as a viable and competitive force in HDGTs, insofar as Ansaldo's resources and capabilities are taken into account or both of these cases.

12.1. General principles for the assessment of remedies

- (1841) As set out in the Remedies Notice¹⁶¹⁶ the following principles apply where parties to a merger choose to offer commitments in order to restore effective competition.
- (1842) Where a concentration raises competition concerns in that it could significantly impede effective competition, the parties may seek to modify the concentration in order to resolve the competition concerns and thereby gain clearance of their merger.¹⁶¹⁷
- (1843) The Commission only has power to accept commitments that are capable of rendering the concentration compatible with the internal market in that they will prevent a significant impediment to effective competition in all relevant markets where competition concerns were identified.¹⁶¹⁸ To that end, the commitments have to eliminate the competition concerns entirely¹⁶¹⁹ and have to be comprehensive and effective from all points of view.¹⁶²⁰
- (1844) In assessing whether proposed commitments are likely to eliminate its competition concerns, the Commission considers all relevant factors including *inter alia* the type, scale and scope of the commitments, judged by reference to the structure and particular characteristics of the market in which those concerns arise, including the position of the parties and other participants on the market.¹⁶²¹ Moreover, commitments must be capable of being implemented effectively within a short period of time.¹⁶²²
- (1845) In case of implementation risks and implementation uncertainties for instance related to third party consents, it is incumbent to the parties to remove such uncertainties.¹⁶²³
- (1846) Where a proposed concentration threatens to significantly impede effective competition the most effective way to maintain effective competition, apart from prohibition of the concentration, is to create the conditions for the

¹⁶¹⁶ Commission's Notice on Remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004 ("Remedies Notice"), OJ C 267, 22.10.2008, page 1.

¹⁶¹⁷ Remedies Notice, paragraph 5.

¹⁶¹⁸ Remedies Notice, paragraph 9.

¹⁶¹⁹ Case C-202/06 P *Cementbouw Handel & Industrie v Commission* [2007] ECR 2007 I-12129, paragraph 54: "it is necessary, when reviewing the proportionality of conditions or obligations which the Commission may, by virtue of Article 8(2) of Regulation No 4064/89, impose on the parties to a concentration, not to determine whether the concentration still has a Community dimension after those conditions or obligations have been complied with, but to be satisfied that those conditions and those obligations are proportionate to and would entirely eliminate the competition problem that has been identified".

¹⁶²⁰ Remedies Notice, paragraph 9 and 61.

¹⁶²¹ Remedies Notice, paragraph 12.

¹⁶²² Remedies Notice, paragraph 9.

¹⁶²³ Remedies Notice, paragraph 11.

emergence of a new competitive entity or for the strengthening of existing competitors via divestiture by the merging parties.¹⁶²⁴

- (1847) The divested activities must consist of a viable business that, if operated by a suitable purchaser, can compete effectively with the merged entity on a lasting basis and that is divested as a going concern. The business must include all the assets which contribute to its current operation or which are necessary to ensure its viability and competitiveness and all personnel which are currently employed or which are necessary to ensure the business' viability and competitiveness.¹⁶²⁵
- (1848) Personnel and assets which are currently shared between the business to be divested and other businesses of the parties, but which contribute to the operation of the business or which are necessary to ensure its viability and competitiveness, must also be included. Otherwise, the viability and competitiveness of the business to be divested would be endangered. Therefore, the divested business must contain the personnel providing essential functions for the business such as, for instance, group R&D and information technology staff even where such personnel are currently employed by another business unit of the parties—at least in a sufficient proportion to meet the on-going needs of the divested business.¹⁶²⁶
- (1849) Normally, a viable business is a business that can operate on a stand-alone-basis, which means independently of the merging parties as regards the supply of input materials or other forms of cooperation other than during a transitory period.¹⁶²⁷
- (1850) The intended effect of the divestiture will only be achieved if and once the business is transferred to a suitable purchaser in whose hands it will become an active competitive force in the market. The potential of a business to attract a suitable purchaser is an important element of the Commission's assessment of the appropriateness of the proposed commitment.
- (1851) In the present case by analogy with paragraph 30 of the Remedies Notice, the resources of the purchaser can be taken into account in the Commission's assessment because the Notifying Party has committed to divest the business to a pre-identified purchaser and because the Transaction cannot be closed before the divestment to that purchaser is agreed and approved by the Commission.
- (1852) Given that the purchaser has been identified, in this case the Commission can consider in this Decision the sufficiency of the commitments made in the light of the characteristics of the purchaser in order to assess to what extent the divestiture of the business to such a purchaser will likely remove the competition concerns identified.¹⁶²⁸
- (1853) However, the commitments provide that the Commission only takes its final decision on the suitability of the purchaser when it examines the Sale and

¹⁶²⁴ Remedies Notice, paragraph 22.

¹⁶²⁵ Remedies Notice, paragraph 23-25.

¹⁶²⁶ Remedies Notice, paragraph 26.

¹⁶²⁷ Remedies Notice, paragraph 32.

¹⁶²⁸ Remedies Notice, paragraph 53.

purchase Agreement ("SPA"). The effectiveness of this solution is assured by the upfront clause (clause 4 of Schedule I of the Final Commitments).

- (1854) Where the parties modify the proposed commitments after the deadline of 65 working days, the Commission will only accept these modified commitments where it can clearly determine – on the basis of its assessment of information already received in the course of the investigation, including the results of prior market testing, and without the need for any other market test – that such commitments, once implemented, fully and unambiguously resolve the competition concerns identified.¹⁶²⁹

12.2. First Commitments

12.2.1. Description of the First Commitments

- (1855) According to the First Commitments; the structure of the Divestment Business was defined as a selective transfer of assets from Alstom's Gas Business and PSM Business.
- (1856) In particular the Divestment Business in the First Commitments included the following.
- (1857) Main intangible assets:
- (a) Technology and know-how related to the GT26 2006, including the MXL2 upgrade;
 - (b) Technology and know-how related to the GT26 2011;
 - (c) Technology and know-how related to the GT36;
 - (d) Design tools owned and developed by Alstom; for design tools not owned by Alstom ([details of remedy package]) and used by Alstom, at the option of Ansaldo, GE would assist Ansaldo, at Ansaldo's cost, in securing a licence to such third party design tools;
 - (e) Technology and know-how related to the feasibility study for and any work completed as at Closing in the development of the [name of ALSTOM pipeline program].
 - (f) All technology and know-how developed or used by the PSM Business.
- (1858) Main tangible assets:
- (a) All equipment located within the power plant testing facility for the GT26 (Birr 3 facility);
 - (b) Work in progress assets associated with the GT36 programme, to be transferred to the power plant testing facility for the GT36 programme (Birr 4 facility, under construction).
 - (c) Tooling exclusive to the GT26 2011;
 - (d) Tooling exclusive to the GT36;

¹⁶²⁹ Remedies Notice, paragraph 94.

- (e) Tangible assets of PSM, including but not limited to the assets located at PSM's facilities and copies of or a negotiated split of all PSM tooling assets, subject to a GE right to use the PSM tooling transferred on a transitional basis.
- (1859) Main contracts, agreements, leases:
- (a) Regarding the Birr 3 and Birr 4 testing facility, a lease for the full duration of the lease that Alstom currently holds, subject to GE being provided with access to facilities shared between [details of remedy package], Birr 3 and Birr 4 for up to a total of [duration of GE access to shared facilities];
 - (b) [details of remedy package];
 - (c) GE would provide to Ansaldo a list of all third party Alstom's suppliers of inputs for the manufacturing of a GT26 2006, GT26 2011 or GT36;
 - (d) PSM's leased facilities located in Jupiter, Florida, and its leased field services facility in Houston, Texas, United States, together with all the assets located therein, [details of remedy package];
 - (e) Contracts, agreements, commitments and understandings of PSM with third parties existing as of the Closing.
- (1860) Customer, credit and other records:
- (a) Open tenders for new units (GT26 2006, GT26 2011 and GT36);
 - (b) Active contracts for new units (this included [details of remedy package]);
 - (c) Customer contracts and customer records (including open tenders) of PSM.
- (1861) Personnel and Key Personnel:
- (a) Personnel: [number of employees] GT business employees in the Divestment Business and [number of employees] PSM employees in the Divestment Business;
 - (b) Key Personnel: included [number of employees] personnel for the GT26, GT36-S6 and GT36-S5 and PSM (no Key Personnel for the servicing of GT26).
- (1862) Arrangement to supply Ansaldo with the following products or services by GE:
- (a) GE would offer supply of [details of supply arrangements], assembled in accordance with Alstom's designs and procedures as at Closing, for a transitional period, [duration of transitional period].
- (1863) Under the First Commitments, the Notifying Party proposed not to include in the Divestment Business, among other, the following elements:
- (a) Sales and servicing of Alstom's Medium HDGT (the GT13E2);
 - (b) Sales and servicing of Alstom's Large HDGT in 60 Hz (the GT24);
 - (c) Servicing of all Alstom's GT26 (Large HDGT in 50 Hz);
 - (d) All tooling related to the servicing of the GT26 2006 or earlier GT26 ratings;
 - (e) Servicing of Alstom's Base fleet (all gas turbines except GT13E2, GT24, GT26 and GT36);
 - (f) All STs and generators, and all tangible and intangible assets and personnel related thereto that are not used for gas turbine products;

- (g) All balance of plant, boiler, control system, HRSG and EPC activities and all tangible and intangible assets and personnel related thereto and that are not used for gas turbine products;
- (h) Any product of either GE or Alstom other than the GT26 2006, GT26 2011 and GT36 development programme and products of PSM;
- (i) All Alstom manufacturing facilities, other than facilities of PSM located in Jupiter (Florida) and Houston (Texas);
- (j) Fully-fledged license back to GE, excluding the technology and know-how exclusively used in the GT26 2011 or GT36 and the ability of GE to use the technology and know-how to sell new GT26 series or sell or service GT36 units;
- (k) Approximately [...] personnel of PSM, comprising approximately [...] research and development and service engineers, [...] field and repairs personnel, [...] commercial operations, [...] procurement and logistics, and [...] workshop operations personnel;
- (l) Fully-fledged license back to GE of PSM Technology, excluding the PSM Technology exclusively used in the GT26 2011 or GT36, the PSM Technology exclusively used in GE FA-series GT and the ability of GE to use the PSM technology to service GE FA-series GTs.

12.2.2. *Assessment of the First Commitments*

- (1864) The Commission considered that several issues were not addressed properly in the First Commitments and therefore the First Commitments could not be made subject to a market test.
- (1865) In particular, in the First Commitments GE proposed to transfer a limited list of assets, essentially referring to assets for the new sales for the GT26 2006, GT26 2011 and GT36, instead of proposing to divest the entire Alstom's Gas Business excluding only (i) elements of Alstom's Gas Business and PSM business not needed by Ansaldo to replicate Alstom as a viable and competitive force in all the markets where a significant impediment to competition was identified and (ii) those areas of Alstom's Gas Business where no competition issues arise. This limited scope of the assets transferred would not allow the Divestment Business to be viable and competitive and thus would not allow Ansaldo to replicate Alstom's competitive pressure in all the markets where a significant impediment to competition was identified.
- (1866) The First Commitments, in particular, did not include the transfer to Ansaldo of Alstom's Pipeline Projects¹⁶³⁰, which involve [ALSTOM pipeline projects] and the previously envisaged GT12, 14, 16 platform, etc. This would prevent Ansaldo from benefiting from Alstom's most recent innovations, and thus replicate its role as one of the main innovators in the market for 50 Hz HDGTs.
- (1867) GE proposed to licence back to itself essentially all elements which were not used exclusively for GT26 2006, GT26 2011 and GT36. According to that

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Pipeline Projects are defined as all (i) patents; (ii) patent applications; (iii) invention disclosures; or (iv) other documents or data files articulating inventions or know-how, created for the gas turbines business.

proposal GE would have obtained a very wide licence back of the Alstom's HDGT technology, allowing it not only to access critical information about the Divestment Business but also reducing any competitive advantage Ansaldo could obtain from using Alstom's assets and know-how.

- (1868) The transfer of design tools not owned by Alstom ([details of remedy package]) and used by Alstom was not properly addressed as GE merely proposed to [details of remedy package]. These design tools are very important for Ansaldo to be able to replicate Alstom's innovative path.
- (1869) Furthermore, in the First Commitments GE did not include any transfer to Ansaldo of servicing agreements for GT26 units, with the exception of [details of remedy package] contracts related to the GT26 2011, and related servicing assets and personnel. This would endanger Ansaldo's competitiveness in the newly-built HDGTs business since it would prevent Ansaldo from obtaining the benefits of an installed base in terms of (i) the information about the GT26 fleet, (ii) the reputation/credibility to develop new products, and (iii) the possibility of selling upgrades and testing/validating innovations related to the GT26. This would also endanger the viability of Ansaldo since the installed base constitutes a source of sales opportunities and, as described in Section 8.3.3, the main revenues from the HDGT business are derived from the aftermarket servicing.
- (1870) The First Commitments also did not include any Key Personnel related to upgrades for the GT26 and GT36 programmes, further weakening the ability of Ansaldo to develop upgrades compared to what Alstom was doing pre-merger.
- (1871) The transitional agreements foreseen in the First Commitments were only broadly described, namely in what regards the technical assistance and consultation to support the transition. This would reduce their effectiveness.
- (1872) The scope of PSM's technology license back was too extensive as it allowed GE to access all PSM's information about upgrades and servicing of GE's machines. This would have reduced the ability of Ansaldo to compete through PSM with GE for the servicing of its mature fleet. It would also prevent Ansaldo from replicating PSM's role in the market for servicing of GE's 9FA HDGTs.
- (1873) The Commission therefore concluded that the First Commitments were insufficient to remove the significant impediment to effective competition identified in the markets for 50 Hz HDGTs, and in particular in the Large and Very Large segments, the market for generators bundled with 50 Hz HDGTs, the market for LSTs bundled with 50 Hz HDGTs and the market for servicing GE's 9FA HDGTs. Based on this assessment, the Commission did not market test the First Commitments and informed the Parties accordingly.

12.3. Second Commitments

12.3.1. Description of the Second Commitments

- (1874) On 21 July 2015 the Notifying Party submitted the Second Commitments where it introduced some changes to address the concerns expressed by the Commission.
- (1875) The Notifying Party introduced a clause which brought the proposed commitment closer to an up-front buyer scenario as the closing of the

transaction became conditional to the Commission's approval of the buyer and the SPA.

- (1876) The Notifying Party also defined a new structure of the Divestment Business closer to the structure of a reverse carve-out. The Divestment Business was described in this version as the combination of Alstom's Gas Business with the PSM business modified (i) to exclude elements of Alstom's Gas Business and PSM business not needed by the Ansaldo to replicate Alstom as a viable and competitive force in all the markets where a significant impediment to competition was identified; and (ii) to exclude those areas of Alstom's Gas Business where no competition issues arise.
- (1877) In this context, the Notifying Party added a brief description of Alstom's Gas Business, and defined some of the assets to be included in the Retained Business. However, a field of use restriction was also introduced [details of remedy package].
- (1878) The Notifying Party extended the intangible assets to be transferred to Ansaldo in order to include all Pipeline Projects, that is to say any patent, patent applications, inventions or other documents articulating inventions or know-how created for the gas business. This included [information on pipeline projects].
- (1879) As regards the license back to GE of Alstom's Pipeline Projects, the Notifying Party included three conditions that should be cumulatively met for such project to be licensed back, namely that (i) there is an Alstom business case, (ii) the project has received funding and (iii) the technology and know-how relates to the Retained Business.
- (1880) The Notifying Party committed to transfer to Ansaldo the service agreements for [details of remedy package] units located in the EEA which would add to the initial contracts offered for the [details of remedy package]. [details of remedy package]. In addition, the Notifying Party added a commitment to transfer additional personnel to support the transfer of the GT26 2006 servicing agreements.
- (1881) As regards design tools not owned by Alstom, the Notifying Party added a clause where it commits to use its best efforts to secure a license to Ansaldo. The Notifying Party also added a commitment to use its best efforts to transfer to Ansaldo the contractual arrangements with [details of remedy package].
- (1882) The Notifying Party added a more detailed description of the transitional services to be provided to Ansaldo.

12.3.2. Assessment of the Second Commitments

- (1883) The Commission considered that progress was made in addressing some of the concerns expressed after the First Commitments. In particular, the change of the structure of the commitments (similar to a reverse carve-out) brought the Second Commitments closer to what the Commission foresees in paragraph 35 of the Remedy Notice.
- (1884) However, several issues were either still not addressed or not properly addressed in the Second Commitments, including some of those already described in Recitals (1861) to (1870). Amongst the latter, the main elements were the ones described in Recitals (1882) to (1884).

- (1885) The Commission considered, *inter alia*, that the licensing back to GE as regards Pipeline Projects was potentially too broad, including projects whose date of commercialisation would be too far in the future. This would reduce any competitive advantage Ansaldo could obtain from having access to them, thus eventually endangering its competitiveness and viability.
- (1886) In addition, the Second Commitments included a perpetual field of use restriction [details of remedy package] which would not only reduce the incentives of Ansaldo to invest in the development of upgrades (as they could only be sold to a reduced number of HDGTs) but would also put in danger its viability.
- (1887) GE made some relative progress in terms of the GT26 installed base to be transferred to Ansaldo by adding, to the initially offered [number of contracts] service contracts for the GT26 2011 and [number of contracts] units of GT26 2006. The Commission considered however that, in principle, this would be insufficient to guarantee (i) the incentives of Ansaldo to invest in upgrades and servicing, as well as the (ii) viability of the Divestment Business.
- (1888) Based on this assessment, the Commission did not market test the Second Commitments and informed the Parties accordingly.

12.4. Third Commitments

12.4.1. Description of the Third Commitments

- (1889) The Notifying Party changed the Second Commitments by:
- (a) introducing a specific clause as regards best efforts to transfer the license [details of remedy package];
 - (b) reducing the scope of the licensing back of PSM intangible assets to only the assets necessary to service Siemens and MHPS's HDGTs, where no concerns emerge;
 - (c) adding the transfer of all tangible assets necessary for Ansaldo to service, supply parts and upgrade the GT26 2006; and
 - (d) adding Key Personnel related to upgrades for the GT26 and GT36.

12.4.2. Results of the market test

- (1890) The Commission considered that the Notifying Party made progress in addressing the concerns expressed after the First and Second Commitments. Several issues were still not addressed, and in particular that related to the size of the installed base. However, the Commission decided to subject the Third Commitments to a market test, which was launched on 24 July 2015.
- (1891) The market test mainly aimed at assessing: (i) the suitability of Ansaldo as a purchaser, (ii) whether the transfer of a part of the GT26 installed base to Ansaldo is sufficient to replicate Alstom, (iii) whether field of use restrictions on the transferred technology affect the competitiveness and viability of Ansaldo, (iv) whether the scope of the license back restricts competition or the viability/competitiveness of Ansaldo or both, (v) the sufficiency of the scope of tangible and intangible assets to be transferred, (vi) the sufficiency of the Personnel and Key personnel to be transferred, and (vii) the overall suitability of the Third Commitments.

- (1892) The market test showed that there were doubts about the effectiveness of the Third Commitments, and these doubts were expressed by both the Parties' customers and competitors.¹⁶³¹

12.4.2.1. The suitability of Ansaldo as a purchaser

- (1893) The majority of customers considered Ansaldo in principle as a suitable buyer in terms of expertise, R&D capabilities and resources, production and manufacturing assets and sales organisation.¹⁶³² By contrast, competitors were divided on Ansaldo's capabilities in terms of expertise, production and manufacturing assets and sales organisation.¹⁶³³ As regards R&D, the large majority of competitors considered that Ansaldo's capabilities are limited.¹⁶³⁴
- (1894) As regards Ansaldo's financial resources, some respondents were positive in particular if the resources of one of Ansaldo's shareholders, Shanghai Electric, were taken into account.¹⁶³⁵ Some respondents, by contrast, said that Ansaldo's financial means were too limited to bring such a large project as the GT36 successfully to the market and that Ansaldo needed to receive a larger installed base to have access to sufficient resources to finance R&D.¹⁶³⁶
- (1895) While the majority of customers and competitors considered that Ansaldo is in principle able to manufacture generators and STs for gas fired power plants, some important customers and competitors stated that Ansaldo on its own is not able to achieve comparable efficiencies for the overall GT26 CCPP solution as Alstom.¹⁶³⁷
- (1896) As regards Ansaldo's incentives, a majority of customers considered that Ansaldo will have the incentives to maintain and develop the Divestment Business in a viable and competitive way.¹⁶³⁸ Competitors, by contrast, were more sceptical on Ansaldo's incentives to maintain and develop the transferred HDGT business as an active and viable competitive force.¹⁶³⁹

12.4.2.2. The transfer of a part of the GT26 installed base to Ansaldo

- (1897) A clear majority of customers and all competitors expressing a view considered that the transfer of LTSAs covering only [10-20] units of the GT26 was insufficient for Ansaldo to have the ability and incentives to develop the divestment business in a viable and competitive way.¹⁶⁴⁰

¹⁶³¹ See replies to questions 49, 50, 51 and 52 Phase II Market Test Remedies Questionnaire Q11 to customers and replies 48, 49 and 50 Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶³² See replies to questions 4, 6, 7 and 8 of Phase II Market Test Remedies Questionnaire Q11 to customers.

¹⁶³³ See replies to questions 4, 7 and 8 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶³⁴ See replies to question 6 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶³⁵ See replies to question 3 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to question 3 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶³⁶ See replies to question 3 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to question 3 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶³⁷ See replies to questions 9 and 10 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to questions 9 and 10 of Market Test Remedies Questionnaire Q12 to competitors.

¹⁶³⁸ See replies to question 5 of Phase II Market Test Remedies Questionnaire Q11 to customers.

¹⁶³⁹ See replies to question 5 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁴⁰ See replies to question 36 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to question 36 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

- (1898) Customers were concerned that a small number of LTSAs may lead to (i) Ansaldo having lower incentives to innovate and develop upgrades; (ii) Ansaldo facing higher cost relative to the merged entity, because of lower economies of scale, for example, for the sourcing of spare parts; and (iii) customer fleets being split between two OEMs.¹⁶⁴¹ Competitors additionally stressed a small installed base will (i) constitute a loss of revenues necessary to finance relevant Capex and R&D, as well as (ii) result in lower incentives to develop an adequate servicing network for such a small fleet.¹⁶⁴²
- (1899) Ansaldo itself responded that the transfer of [10-20] units is not enough to ensure that it will be able to act as a viable and competitive competitor.¹⁶⁴³
- (1900) Another competitor indicated that the transfer of [10-20] units would not allow the purchaser to replicate Alstom on the market and solve the competitive concerns identified by the Commission. In order to do that, according to that competitor, the service contracts for at least 281 gas turbines should be transferred to the purchaser.¹⁶⁴⁴
- (1901) The majority of customers that currently have a GT26 in their fleet explained that they would not be willing to transfer their servicing contract to Ansaldo in view of the divestment package.¹⁶⁴⁵
- (1902) The main reasons expressed by customers for not being willing to transfer their servicing contract to Ansaldo included: (i) the fact that the total number of units of Ansaldo would be too small, and that customers would end up "in the minority"; (ii) losses associated to the servicing of the other plant equipment (for example, resulting from warranties or cost efficiencies or both); and (iii) Ansaldo's perceived lack of experience relative to GE/Alstom.¹⁶⁴⁶
- (1903) Overall, a large majority of both customers and competitors saw difficulties or risks associated with the transfer of any ongoing customer contracts to Ansaldo. Such difficulties mostly related to the swift and successful transfer of the necessary skills and resources to Ansaldo, which has no experience to date in servicing the GT26, with possible service disruption, loss of expertise, loss of continuity and delays in supply and execution.¹⁶⁴⁷
- (1904) In view of the expected difficulties to convince customers to transfer to Ansaldo, certain competitors argued that an effective transfer could only be achieved via a "NewCo" solution, under which contracts to be transferred are contributed into a NewCo, the shares of which are subsequently purchased by Ansaldo.¹⁶⁴⁸

¹⁶⁴¹ See replies to question 36 of Phase II Market Test Remedies Questionnaire Q11 to customers.

¹⁶⁴² See replies to question 36 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁴³ See replies to question 36 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁴⁴ See Siemens, Non-confidential observations on the Commitments proposed by GE, 2 August 2015.

¹⁶⁴⁵ See replies to question 39 of Phase II Market Test Remedies Questionnaire Q11 to customers.

¹⁶⁴⁶ See replies to question 39 of Phase II Market Test Remedies Questionnaire Q11 to customers.

¹⁶⁴⁷ See replies to question 41 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to question 40 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁴⁸ See replies to question 40 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

12.4.2.3.Field of use restrictions on the transferred technology

- (1905) A clear majority of customers and competitors feared that the field of use restrictions on transferred technology as regards the possibility to service and offer upgrades to the pre-2006 GT26 fleet might have a negative impact on Ansaldo's ability and incentives to effectively serve the acquired GT26 installed base (both from the upgrades and service point of view).¹⁶⁴⁹ Although to a lesser extent, respondents expressed a similar opinion as regards to the field of use restrictions to service and offer upgrades to the Base fleet, GT13 and GT24.¹⁶⁵⁰
- (1906) As regards upgrades, the restriction will limit the potential accessible market for Ansaldo and reduce returns on upgrade investments, and thus, reduce Ansaldo's incentives to invest in upgrades. In relation to services, the limited size of the accessible market will prevent Ansaldo from gaining scale and efficiencies to become competitive. Moreover, the limited size of the fleet will also imply limited learning/information from the installed base to support further development of the GT26 technology.¹⁶⁵¹

12.4.2.4.Scope of the licence granted back

- (1907) Regarding the licence granted back to GE concerning intangible assets relating to Pipeline Projects subject to conditions, the majority of customers did not believe that it would have a negative impact on Ansaldo's incentives and ability to replicate Alstom, while the majority of competitors stated that it would have a negative impact.¹⁶⁵²
- (1908) Regarding the licence back to GE of PSM technology for servicing MHPS and Siemens' HDGTs, customers' views were mixed on whether it would have a negative impact on Ansaldo's incentives and ability to replicate Alstom, while the majority of competitors stated that it would have a negative impact.¹⁶⁵³

12.4.2.5.Scope of tangible and intangible assets

- (1909) The majority of customers and competitors considered that the exclusion of manufacturing facilities and tooling related to servicing the GT216 2006 from the divestment business would negatively affect Ansaldo's ability to compete since it would create some delays in starting operations related to the GT26 and GT36.¹⁶⁵⁴

¹⁶⁴⁹ See replies to questions 22 and 23 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to questions 22 and 23 of Phase II Market Test Questionnaire Q12 to competitors.

¹⁶⁵⁰ See replies to questions 24 and 25 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to questions 24 and 25 of Phase II Market Test Questionnaire Q12 to competitors.

¹⁶⁵¹ See replies to question 23 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to question 23 of Phase II Market Test Questionnaire Q12 to competitors.

¹⁶⁵² See replies to question 28 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to question 28 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁵³ See replies to question 29 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to question 29 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁵⁴ See replies to questions 30 and 31 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to questions 30 and 31 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

12.4.2.6. Personnel and Key personnel

- (1910) The majority of customers expressing a view stated that the personnel transferred to Ansaldo is sufficient for Ansaldo to develop the divestment business in a viable and competitive way, while competitors' view is mixed.¹⁶⁵⁵

12.4.2.7. Suitability of the Third Commitments

- (1911) The majority of customers and almost all competitors expressing a view stated that the Third Commitments is not suitable to remove all competition concerns identified by the Commission in the supply of 50 Hz HDGTs.¹⁶⁵⁶
- (1912) The central concerns expressed are that (i) the installed base transferred to Ansaldo is too limited, and (ii) the restrictions on Ansaldo to service the remaining Alstom's HDGTs (in particular as regards early ratings of GT26 and the GT24) would reduce Ansaldo's incentives to upgrade.¹⁶⁵⁷
- (1913) The majority of customers thought that the Third Commitments was suitable to remove all competition concerns identified by the Commission in the market for servicing of GE's 9FA, while the majority of competitors expressed the opposite opinion.¹⁶⁵⁸
- (1914) The majority of customers thought that the Third Commitments was suitable to remove all competition concerns identified by the Commission in the markets for generators bundled with HDGTs and STs bundled with HDGTs, while the majority of competitors commenting on this question believe that the Third Commitments were unsuitable.¹⁶⁵⁹

12.4.3. Assessment of the Third Commitments

- (1915) The Commission found that the results of the market test highlighted a variety of risks associated with the Third Commitments.
- (1916) The Commission considered that the responses to the market test suggested that Ansaldo might be a suitable buyer, subject to, *inter alia*, (i) the size and composition of the remedy package offered to compensate for Ansaldo's weaknesses in terms of current capabilities and (ii) the effectiveness and (iii) timing of Ansaldo's business plans for the acquisition of the Divestment Business.
- (1917) The Commission considered that, also in the light of the market test outcome, the lower acceptable bound of the transferred GT26 installed base ensuring Ansaldo's viability and effectiveness would require about half of the overall

¹⁶⁵⁵ See replies to question 42 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to question 41 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁵⁶ See replies to question 54 of Phase II Market Test Remedies Questionnaire Q11 to customers and to question 53 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁵⁷ See replies to question 54 of Phase II Market Test Remedies Questionnaire Q11 to customers and to question 53 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁵⁸ See replies to question 57 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to question 56 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

¹⁶⁵⁹ See replies to questions 58 and 59 of Phase II Market Test Remedies Questionnaire Q11 to customers and replies to questions 57 and 58 of Phase II Market Test Remedies Questionnaire Q12 to competitors.

installed base of GT26 2006 (30-35 units) and that the transfer mechanism would need to be strengthened.

- (1918) As regards the claims of a competitor that the transferred installed base should include the entire overlap of the Parties' installed bases in view of the competitive harm resulting from the enlargement of GE's installed base, it should be noted that in Section 8.4.4.1 above the Commission has concluded that it could not find sufficient evidence supporting the theory of harm based on the increase in GE's installed base.
- (1919) The Commission found that the market test supported the concerns that the field of use restrictions on transferred technology as regards the possibility to service and offer upgrades to the pre-2006 GT26 fleet should be lifted.
- (1920) In addition, the Commission considered that the scope of the license back on technology and know-how used in relation to the Retained Business and on Pipeline Projects was still too widely defined.
- (1921) As regards manufacturing facilities, Ansaldo may not require them as it already has some assets of its own in Genoa. The access to tooling related to servicing of GT26 2006 could still be necessary for Ansaldo to start operations in a timely manner. These issues will however be evaluated before the approval of the SPA.
- (1922) As regards additional assets related to generators and LSTs coupled with HDGTs, the Commission considered that, also in the light of the market test outcome, the Third Commitments would need to be strengthened.
- (1923) As regards the transfer to Ansaldo [design tools].
- (1924) [details of remedy package]. The Commission therefore considers that [details of remedy package] could be important for the competitiveness and viability of Ansaldo.
- (1925) [details of remedy package].
- (1926) On the basis of its assessment and taking account of the results of the market test and of its investigation, the Commission concluded that the Third Commitments was insufficient to remove the significant impediment to effective competition identified, in particular, in the markets for 50 Hz HDGTs, the market for generators bundled with 50 Hz HDGTs and the market for LSTs bundled with 50 Hz HDGTs.

12.5. Final Commitments

12.5.1. Description of the Final Commitments

- (1927) In light of the issues described in Section 12.4.3, the Notifying Party submitted the Final Commitments on 6 August 2015 which improve the Third Commitments as regards the Commission's concerns that remained in the light of its evaluation of the market test.
- (1928) The Notifying Party committed to transfer the contracts relating to 30 units of the GT26 2006 fleet instead of the initial [10-20] units. The total amount of installed fleet transferred to Ansaldo would thus be of 34 units of GT26.
- (1929) In order to ensure the effective transfer of service contracts to Ansaldo, GE committed to carve out of Alstom Power O&M (that is to say the company

holding the large majority of Alstom's servicing contracts) the servicing agreements retained by GE and then transfer the shares of this company to Ansaldo.

- (1930) As regards the license back to GE of technology and know-how shared between the Divestment Business and the Retained Business, GE reduced the scope of the technology licensed to that used by the date of the Decision in the Retained Business. In the particular case of Pipeline Projects to be licensed back to GE for the provision of parts, upgrades and servicing of the Retained Business, GE proposed to include all the projects (i) specifically planned for use in servicing (as opposed to new units development), and (ii) projected to reach commercialization or the ability to be used in manufacturing or in the commercial provision of parts, upgrades or servicing specifically for the Retained Business within [timeframe] from the date of the Decision. The precise list of Pipeline Projects to be licensed back on the basis of these criteria will be agreed with the Commission prior to the signing of the SPA.
- (1931) [details of remedy package]. As regards the field of use restriction [details of remedy package], GE proposed to lift it after a period of [timeframe] from sale of the Divestment Business to Ansaldo.
- (1932) As regards STs and generators, GE agreed to offer Ansaldo the possibility to source ST and generators from the Retained Business to be able to sell them with new units of the GT26 2006, GT26 2011 or GT36. This would be valid for a transitional period, initially up to [duration of transitional period].
- (1933) As regards the [design tools].
- (1934) [details of remedy package].
- (1935) [details of remedy package].

12.5.2. Assessment of the Final Commitments

- (1936) The Commission considers that the Final Commitments, once implemented, fully and unambiguously address the competition concerns raised and are adequate and sufficient to eliminate the significant impediment to effective competition in the market for (i) 50 Hz HDGTs, (ii) servicing of GE's 9FA frame, (iii) generators bundled with 50 HDGTs and (iv) LST bundled with 50 Hz HDGTs.

12.5.2.1. Ansaldo appears, *prima facie*, to be a suitable buyer¹⁶⁶⁰

- (1937) Ansaldo appears to be, *prima facie*, well positioned to maintain and develop the Divestment Business in a viable and competitive way, given its expertise as a HDGT OEM, its current production and manufacturing assets and sales organisation and the range of complementary products it is able to manufacture. Ansaldo already competes in HDGTs, with an installed base of its own, and is capable of providing products including HDGTs, STs and generators, up to, and including, a complete turnkey power plant. Ansaldo's installed base of HDGTs is in excess of 105 units. It appears also to dispose of

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As indicated in Recital (1852), the Commission only provides its final decision on the suitability of the purchaser when it examines the compatibility of the SPA.

sufficient financial resources and ready access to the market in China through one of its shareholders, Shanghai Electric. This was confirmed by the respondents to the market test questionnaires, as described in Section 12.4.2.1.

- (1938) Ansaldo appears, *prima facie*, to have the incentive and ability to maintain and develop the Divestment Business as a viable and active force in competition with the merged entity, MHPS and Siemens, conditional on the final composition of the assets that it will acquire through the SPA.
- (1939) The Divestment Business broadly includes the resources (namely engineers, Alstom's technology and know-how, and access to testing facilities) which are *prima facie* necessary for Ansaldo to operate an advanced HDGT organisation and to conduct ongoing innovation. As Ansaldo is already active in HDGTs it has indicated the number of personnel and level of assets that it will require post divestiture to run the Divestment Business on a viable and competitive basis.
- (1940) Therefore, the scope of the business to be divested is *prima facie* responsive to Ansaldo's requirements and its plans to integrate the Divestment Business in its current operations (specifically with regard to the manufacturing facilities, key personnel, data and transitional services arrangements). The resulting structure, conditional on the final composition of the assets that it will acquire through the SPA, ensures *prima facie* that Ansaldo obtains what is necessary for it to compete effectively in advanced HDGTs on a competitive cost-basis, and to pursue innovation in markets for HDGTs.

12.5.2.2. The Final Commitments would allow Ansaldo to replicate Alstom's competitive pressure in the market for 50 Hz HDGT

- (1941) Ansaldo, by acquiring the Divestment Business, including its tangible and intangible assets, will have the resources it needs to become a viable and effective competitor and to replicate Alstom's current competitive pressure in the market for 50 Hz HDGTs.
- (1942) In fact, the combination of the Divestment Business assets, including the GT26 2006, the GT26 2011, the GT36 programmes and other Alstom development programmes, with Ansaldo's existing assets should enable Ansaldo to become a close and significant competitor of the merged entity, Siemens, and MHPS in the market for 50 Hz HDGT, and in particular in the Large and Very Large segments, thereby replacing Alstom's competitive constraints.
- (1943) Ansaldo will also have access to the products which Alstom is currently bidding in current Large and Very Large HDGTs tenders, enabling Ansaldo to immediately replicate Alstom's bidding ability both now and in the future.
- (1944) GE will divest to Ansaldo all the assets, personnel and technology of Alstom necessary for Ansaldo to further strengthen its position as an OEM in advanced HDGTs. As Ansaldo will have the exclusive right (including vis-à-vis GE) to sell new units of Alstom's Large and Very Large HDGTs, the Transaction will not strengthen GE's position in the Large and Very Large segment of the market for 50 Hz HDGTs. Additionally, the Final Commitments ensure that Ansaldo will have access to the customers, capabilities and information it requires to carry out servicing and innovation on an ongoing basis.

- (1945) The Divestment Business also includes all available Alstom's manufacturing know-how necessary to support Ansaldo in making its facility in Genoa the primary centre of manufacturing for the Divestment Business, in order to operate the Divestment Business viably and competitively when combined with the specific assets and capabilities of Ansaldo.
- (1946) The Divestment Business includes the transfer to Ansaldo of the current servicing agreements for 30 GT26 2006 units located predominantly in the EEA and four GT26 2011 units. The solution proposed by the Notifying Party for the transfer of these service contracts, through the transfer of shares of Alstom Power O&M, addresses the concerns of market participants as regards timeliness and effectiveness of the transfer. The majority of the GT26 servicing contracts do not include "change-of-control" clauses, hence can be transferred without the need of customers' approval through the transfer of shares of Alstom Power O&M to Ansaldo.
- (1947) The transfer of such agreements, which constitutes around half of the installed base of GT26 2006 and 2011, addresses the concerns with respect to Ansaldo's position and viability as the standalone GT26 2006 and 2011 OEM. Specifically, such transfer will provide Ansaldo with immediate servicing presence for the GT26 2006 and 2011, facilitate it to develop customer relationships, to access inputs at favourable conditions and provide it with additional revenues to enhance its financial condition.
- (1948) The 34 units for which the servicing is transferred to Ansaldo are more than the minimum level mentioned in the market test questionnaires by those concerned with the size of the installed base transferred to Ansaldo (respondents referred to at least 30 machines). It also allows symmetry between GE and Ansaldo, in the sense that each will serve half of the combined GT26 2006/2011 installed base. This precludes any of the two GT26 2006/2011 installed bases, that is to say, the GE and Ansaldo installed bases, to directly suffer from a low level of servicing or upgrades.
- (1949) In addition, GE will (i) transfer to Ansaldo all service personnel and tangible assets (including data centers) necessary for Ansaldo to replicate Alstom as a competitive force, (ii) make available to Ansaldo for purchase at least a set of tooling for servicing of the GT26 2006, and (iii) provide information to Ansaldo concerning material technical issues relating to the GT26 2006 fleet. Ansaldo will thus obtain the assets, personnel and expertise necessary to service the GT26 2006 fleet and will be in similar conditions as the merged entity to effectively service the GT26 2006 fleet. As a consequence, customers will benefit from competition from at least these two companies at the end of their servicing contract.
- (1950) Moreover, according to Ansaldo, Ansaldo *"would be able to service Alstom generators and steam turbines when coupled with the GT26. Ansaldo technology comes from former Alstom technology (ABB) so there would be no major barriers to service Alstom components. Ansaldo would be capable of servicing customers that have Alstom generators and steam turbines. Even in the case of a further development of Alstom generators technology, Ansaldo*

believes that its ability to service these generators would be adequate to provide the service that customers require."¹⁶⁶¹ Even if this were not the case, according to clause 18 of Schedule I of the Final Commitments, the Commission can require the addition of any assets related to ST and generators at the time of the signing of the SPA in order to allow Ansaldo to be able to replicate Alstom's competitive constraint.

- (1951) These elements would address the concerns of market participants as regards the incentives to transfer a part of the servicing contracts to Ansaldo as described in Section 12.4.2.2.
- (1952) GE will also transfer to Ansaldo all relevant IP, engineers and test facilities. It will transfer both full scale engine test facilities at Birr 3 and Birr 4 and [details of remedy package] to enable Ansaldo to continue the GT36 programme or conduct other advanced HDGT developments. Ansaldo will therefore have the same ability and incentive as Alstom to pursue the GT36 programme or other advanced HDGT developments to expand its customer offering, thereby replicating Alstom as a viable and competitive force.
- (1953) The Final Commitments will strengthen Ansaldo's position as regards the development of upgrades, thereby increasing the product choice available to customers. Ansaldo will be able to use the relevant IP, engineers, testing facilities and other assets included in the Divestment Business to identify and carry out future innovative HDGT programmes, including the development and offering of upgrades to the entire GT26 installed base. This will allow customers to benefit from upgrades developed by Ansaldo in addition to those developed and offered by the merged entity. In sum, the Commission concludes that the Final Commitments facilitate and enhance the incentive to innovate, as well as to intensify competition in this area.
- (1954) The Final Commitments also address the concerns of the Commission regarding the effective transfer to Ansaldo of the economic benefits which Alstom derives from [details of remedy package].
- (1955) This commitment allows the Commission to ensure that, if necessary, Ansaldo will be able to use [details of remedy package]. Clause 14 of the Final Commitments will allow the Commission to verify these elements at the time of the signing of the SPA.
- (1956) [details of remedy package].
- (1957) The Final Commitments therefore address any concerns relating to the reduction of alternatives as well as to a potential increase in price. Moreover, Ansaldo will have all the incentives and ability to continue offering and developing the GT26 and GT36. The concerns related to the likely discontinuation of these machines are also addressed as a result.
- (1958) If the Commission considers that any other asset or personnel used in Alstom's Gas Business is necessary for the continued viability and competitiveness of the Divestment Business, GE in clause 18 of Schedule 1 commits that this asset or personnel will be offered to Ansaldo.

¹⁶⁶¹

See minutes of a conference call held with Ansaldo on 6 August 2015.

12.5.2.3. The Final Commitments would allow Ansaldo to replicate Alstom as an innovator

- (1959) The Final Commitments also take account of the long-term effects of the Transaction on competition and replicate Alstom in terms of innovation on a viable and competitive basis.
- (1960) GE will transfer to Ansaldo R&D personnel with an appropriate mix of skills and experience from Alstom's team in Baden, Alstom's entire advanced gas turbine technology including but not limited to the one relating to the GT26 2006, GT26 2011 and GT36 and rights and access to testing facilities. The Final Commitments will therefore ensure that Ansaldo will have the ability and incentives to maintain Alstom's current level of innovation and competitive pressure on the remaining HDGT OEMs.
- (1961) In particular, Ansaldo will be able to offer HDGTs with the same technological characteristics as Alstom. Ansaldo will be able in the near future to develop upgrades for such HDGTs as a result of the information it will receive from *inter alia* the GT26 2011 and, once available, the GT36 installed base, as well as the relevant technology being transferred from Alstom.
- (1962) The Final Commitments provide additional incentive for Ansaldo to develop upgrades as part of its portfolio because it will be able to sell upgrades, including the MXL2, [name of pipeline project] and any further upgrades it develops, into the entire GT26 installed base, and after a period of [duration of restriction], also to the remaining fleet of Alstom.
- (1963) The Commission considers that the criteria for what will be included in the licence granted back to GE as regards Pipeline Projects ensure that the license back covers only what is strictly necessary for GE to be able to service the retained GT26 fleet. Moreover, at the time of the signing of the SPA the Commission will have the power to agree on what projects are licensed back to GE.
- (1964) The Final Commitments transfer to Ansaldo the lease of Birr testing facilities for the GT26 series and GT36, as well as [details of remedy package], which will allow Ansaldo to bridge the gap with other, more established OEMs in terms of testing facilities.
- (1965) Additionally, Ansaldo will have a wider 50Hz HDGT portfolio thanks to the addition of the GT26 2006, GT26 2011, as well as the GT36 programme to its existing offering. Based on the transferred platforms and assets, Ansaldo will have the same ability and incentive as Alstom to pursue the development of pipeline products. The Final Commitments ensure Ansaldo will have the same incentives as Alstom with respect to the technology development plans, thereby preventing any significant and lasting harm to innovation.
- (1966) Ansaldo will thus have the ability and incentive to develop upgrades to the GT26 2006 and 2011. Further, were Ansaldo to develop an upgrade to the GT26 2011 that could be retrofitted to the GT26, it will be able to offer such upgrade to all GT26 customers, giving it access to a much larger addressable market.

12.5.2.4. The Final Commitments would allow Ansaldo to replicate PSM's competitive constraint in the market for servicing GE's 9FA HDGTs.

- (1967) The Final Commitments address the concerns raised by the Commission in relation to the servicing of GE 9FA HDGTs, where Alstom's indirect wholly-owned subsidiary, PSM, is active.
- (1968) The Divestment Business includes the entire equity interest in PSM, thus encompassing, but not limited to, PSM's technology and know-how, including IP, personnel and its manufacturing and repair facility at its headquarters in Jupiter and Houston, subject to limited carve-outs related to the servicing of Siemens and MHPS' HDGTs. Ansaldo will therefore be able to maintain the competitive constraint that PSM has exerted on GE in relation to the servicing of GE 9FA HDGTs.
- (1969) Further, the transfer of PSM to Ansaldo will address the Commission's concerns relating to the potential relevance of other-OEM servicing to the viability of Ansaldo in operating the Divestment Business, as well as strengthening Ansaldo overall by the inclusion of an additional, standalone, business unit.
- (1970) Finally, the inclusion of PSM in the divestment package allows Ansaldo to continue the practice of Alstom of using innovative technologies developed by PSM in its servicing business in new gas turbine models such as the GT36 or the previously planned GT12, GT14 or GT16.

12.5.2.5. The Final Commitments would allow Ansaldo to replicate Alstom's competitive constraint in the markets for servicing LST bundled with 50 Hz HDGTs and generators bundled with 50 Hz HDGTs

- (1971) By allowing Ansaldo to replicate Alstom's position in the market for 50 Hz HDGTs, the Final Commitments would also allow Ansaldo to exert a similar pressure in the markets for LSTs bundled with 50 Hz HDGTs and generators bundled with 50 Hz HDGTs.
- (1972) In fact, Ansaldo claims that it is currently already able to manufacture LSTs and generators that can be coupled with the GT26 and GT36. In case of any need, the Final Commitments also include the possibility of Ansaldo buying from GE the LSTs and generators necessary to be coupled with these machines.
- (1973) If the Commission considers that any other asset or personnel is needed by Ansaldo to replicate Alstom's competitive constraint in these markets, clause 18 of Schedule I of the Final Commitments would allow the Commission to require the addition of these elements at the time of the signing of the SPA.

12.6. Conclusion on the modifications to the Transaction

- (1974) In light of the considerations mentioned in Section 12.5.2, including the scope of the Divestment Business, the identity of the purchaser, and the specific assets and capabilities that Ansaldo already possesses, the Commission considers that the Final Commitments are likely to create a viable business capable of competing effectively on a lasting basis in the relevant markets. These commitments therefore ensure that the Transaction will not result in any adverse effect on competition in any relevant markets.

- (1975) The Commission thus concludes that the Final Commitments are adequate and sufficient to eliminate the significant impediment to effective competition in the market for (i) 50 Hz HDGTs, (ii) servicing of GE's 9FA frame, (iii) generators bundled with 50 HDGTs and (iv) LST bundled with 50 Hz HDGTs.

13. CONDITIONS AND OBLIGATIONS

- (1976) Pursuant to the second subparagraph of Article 8(2) of the Merger Regulation, the Commission may attach to its decision conditions and obligations intended to ensure that the undertakings concerned comply with the commitments they have entered into vis-à-vis the Commission with a view to rendering the concentration compatible with the internal market.
- (1977) The fulfilment of the measure that gives rise to the structural change of the market is a condition, whereas the implementing steps which are necessary to achieve this result are generally obligations on the parties.
- (1978) Where a condition is not fulfilled, the Commission's decision declaring the concentration compatible with the internal market is no longer applicable. Where the undertakings concerned commit a breach of an obligation, the Commission may revoke the clearance decision in accordance with Article 8(6) of the Merger Regulation. The undertakings concerned may also be subject to fines and periodic penalty payments under Articles 14(2) and 15(1) of the Merger Regulation.
- (1979) In accordance with the basic distinction described in Recitals (1974) to (1975) as regards conditions and obligations, this Decision should be made conditional on the full compliance by the Notifying Party with the Section B (including Schedule I) of the Final Commitments submitted by the Notifying Party on 06 August 2015 and all other Sections of the Final Commitments should be obligations within the meaning of Article 8(2) of the Merger Regulation. The full text of the Final Commitments is set out as an Annex III,

HAS ADOPTED THIS DECISION:

Article 1

The notified operation whereby General Electric Company acquires sole control of the Thermal Power, Renewable Power and Grid businesses of ALSTOM (Société Anonyme) within the meaning of Article 3(1)(b) of Regulation (EC) No 139/2004 is hereby declared compatible with the internal market and the EEA Agreement.

Article 2

Article 1 is subject to compliance by General Electric Company with the conditions set out in Section B (including Schedule I) of Annex III.

Article 3

General Electric Company shall comply with the obligations set out in Sections A, C, D, E, F and G of Annex III.

Article 4

This Decision is addressed to:

General Electric Company
3135 Easton Turnpike, Fairfield
Connecticut, 06828-0001
United States of America

Done at Strasbourg, 8.9.2015

For the Commission

(Signed)

Margrethe VESTAGER
Member of the Commission

ANNEX I

The Commission's Economic Analysis of Bidding Data

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1. INTRODUCTION AND OUTLINE

- (1) This Annex to the Commission's Decision presents an economic analysis of bidding data for Large HDGTs.
- (2) The Annex is structured as follows:
 - a. Section 2 presents general considerations on the nature of non-coordinated merger effects in so-called "bidding markets", drawing a distinction between potential effects in "sealed-bid" (or "first-price") auctions, and potential effects in "descending" auctions (or "second-price" auctions);
 - b. Section 3 considers the evidence on how bidding processes for HDGTs are typically organised in particular, and on what type of information is normally available to bidders when making offers to buyers. This section also draws implications on whether the bidding format for HDGTs auction is better characterised as a first-price or second-price auction;
 - c. Section 4 presents the Commission's quantitative analysis of bidding data for Large HDGTs.
- (3) Throughout this Annex, reference is made to submissions of an economic nature made by the Notifying Party. These include the following submissions made before the Statement of Objections (SO):
 - a. *"GE/Alstom: An Economic Analysis of Gas Turbine 50 Hz Bidding Data"*, dated 14 January 2015¹ ("RBB Submission 1");
 - b. *"GE/Alstom: An Economic Analysis of the 270-330MW Gas Turbine Output Range"*, dated 02 February 2015 ("RBB Submission 2");
 - c. RBB Annex to the Notifying Party's Response to the Article 6(1)(c) Decision ("RBB Submission 3");
 - d. *"GE/Alstom: An Analysis of Competition for High-Flexibility Gas Turbine Projects"*, dated 30 April 2015 ("RBB Submission 4");²
 - e. *"GE/Alstom: Highlighting the Inconsistency of the Commission's 'Segment' Analysis"*, dated 04 May 2015 ("RBB Submission 5");
 - f. *"GE/Alstom: Net Benefits to Heavy-Duty Gas Turbine Customers"*, CRA, [Professors], dated 14 April 2015 ("CRA Submission 1");
 - g. *"On the relevance of runner-up data"*, [Professor A], dated 7 May 2015 ("[Professor A] Submission").

¹ This submission is similar to the slide presentation *"M.7278 GE / ALSTOM: Analysis of GT Bidding Data"*, submitted to the Commission by RBB on 07 January 2015.

² This submission is primarily discussed in the main body of the Decision.

- (4) The Notifying Party replied to the Commission's assessment of bidding data in the Response to the SO primarily in three economic annexes (Annex 1, Annex 4, and Annex 5).
- (5) The main topics raised by the Notifying Party in the Response to the SO are summarised as follows:
 - a. As regards Annex 1 of the Response to the SO, *"GE/Alstom: Updated Bidding Analysis in response to Annex 1"*, [Professors], dated 25 June 2015 ("CRA Submission 2"), the Notifying Party essentially argues that the competitive assessment of the merger should focus on the tenders where the merging parties are both the winner and the number 2-ranked bidder irrespective of the format of the auction used by customers. This argument is assessed below in Section 3.4. Next, the Notifying Party provides an updated analysis of runner-up data, in line with the CRA Submission 1. This is assessed in Section 4.5.3;
 - b. As regards Annex 4 of the Response to the SO, *"Critique of SO Annex 1 framework and evidence of competitive constraints"*, dated 26 June 2015 ("RBB Submission 6"), the Notifying Party essentially argues that: (i) shortlist and runner-up data are reliable for EEA tenders, and (ii) the econometric framework used by the Commission in the Annex to the SO is not robust to changes in the specification of the models used. The first argument is assessed in Section 3.4, and the second argument is assessed in Section 4.4.11;
 - c. As regards Annex 5 of the Response to the SO, *"GE/Alstom: The Commission's assessment of historical GT bidding data ignores important competitive dynamics"*, dated 26 June 2015 ("RBB Submission 7"), the Notifying Party essentially argues that the Commission's analysis does not take into account recent changes that have happened in the market. This submission is assessed in Sections 4.1, 4.3.1.2, and 4.4.11 of the Annex.
- (6) In the Response to the SO, the Notifying Party did not comment on several parts of the Commission's economic analysis. This concerns: the theory of harm for non-coordinated merger effects in bidding markets set out in Section 2, most of the evidence presented in Section 3 showing that a first price sealed bid auction is a more appropriate framework to interpret evidence on HDGT tenders than a second price auction, and most of the evidence in Section 4 which shows significant competitive interactions between the merging parties. The Notifying Party did not comment as well on the bidding analysis for the Very Large segment in Section 8.5.3.3 of the Decision.

2. NON-COORDINATED MERGER EFFECTS IN “BIDDING MARKETS”

2.1. Characteristics of “bidding markets”

- (7) A merger between competing firms can affect competitive outcomes in markets characterised by tendering (so-called “bidding markets”). The general mechanism through which mergers in bidding markets can influence competitive outcomes is similar to the ones that are at work in mergers in ordinary differentiated product industries, where firms also compete on price. That is, a merger internalises the competitive pressure that two firms exercised on each other prior to the merger, and

can lead each firm to bid less aggressively post-merger (that is, submit higher bids). The precise mechanism through which a merger can influence bids and the indicia of potential unilateral effects, depend on how the tendering process is set up and on the information available to bidders (as is explained further below).

- (8) There is no presumption in bidding markets that very few bidders (e.g. even as low as two bidders) are sufficient to generate a competitive outcome. The textbook result where two firms selling homogenous products with no capacity constraints offer their output at cost depends on some specific features that are not related to whether or not competition takes place via tenders. In particular, this extreme result holds when firms sell identical products, have identical costs, have sufficient capacity to serve the entire market and have reliable information on the cost of the rival bidders. In such a case, as regards non-coordinated effects, the presence of two firms alone would be sufficient to ensure competitive pricing. As regards non-coordinated effects, a merger would therefore have no impact on market outcomes as long as two firms remain in the market. This result no longer holds if firms offer differentiated products, and as a result earn a margin over cost. A bidding market where firms offer differentiated products will therefore not be characterised by the stylised perfectly competitive outcome and can generate non-coordinated effects if two competing firms merge.³
- (9) Similarly, the fact that competition is organised via tenders has no direct bearing on whether an industry is characterised by high or low barriers to entry. High barriers to entry are compatible with the existence of bidding markets and can increase the risk of significant non-coordinated effects from merger as in any other type of market, as noted in the Commission's Horizontal Merger Guidelines at Recital 70.⁴
- (10) A feature that does characterise bidding markets relative to other types of markets is that prices are individually negotiated with each customer, and therefore suppliers can typically engage in extensive price discrimination across customers.⁵ This means that a given price (or bid) can be offered to a customer in a specific tender with no need to offer the same price or a similar price to other customers in other tenders. This relies on the standard assumption of no arbitrage by customers, meaning that customers are not able to avoid a price increase by indirectly purchasing via other customers. This assumption is satisfied in the markets concerned by the Transaction. The existence of individualised pricing means that the price effects of a merger may be targeted at a particular subset of customers, e.g. those that are more likely to substitute between the

³ As noted by J. Baker and C. Shapiro "[...] in a bidding market, mergers typically cause price to rise, unless one of the merging firms is generally known to be an ineffective competitor, in the sense that it has no real chance of being the first or second choice of any buyer" (J. Baker and C. Shapiro (2008), "Reinvigorating Merger Enforcement that Has Declined as a result of Conservative Economic Analysis" in *The Effect of Conservative Economic Analysis on U.S. Antitrust*, page 253).

⁴ As noted by P. Klemperer, "using the term bidding market, as it is now widely used, to mean either "Bertrand market" [...] or "contestable market" (if the easy entry assumption is added), seems at best unnecessary, since the terms "Bertrand markets and "contestable market" are perfectly adequate. [...] auctions and bidding processes are beset by the same range of competitive problems as ordinary markets." (P. Klemperer (2005), "Bidding Markets", Competition Commission discussion paper, page 9).

⁵ The link between bidding markets and price discrimination is noted by C. Shapiro (2010), "The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years", *Antitrust Law Journal*, Vol. 77, pages 733-734.

merging parties absent the merger. This follows from the fact that even though a price increase across all customers may not be profitable (given that too many customers would be able to substitute away from the merging parties), a price increase for a specific subset of customers may well be profitable. More generally, the existence of price discrimination can support the definition of relatively narrow product and/or geographic markets, which focus on the set of customers that are most likely to be adversely affected by a particular transaction.⁶ Given that bidding markets are typically characterised by extensive price discrimination, they are also typically associated with relatively narrow market definitions (e.g. with markets being defined around a subset of bids with relatively homogenous demand and supply conditions).

- (11) The precise mechanism by which a merger can lead to less competitive outcomes in a tender depends on the type of tender process at work. There are two leading alternative auction processes: the first-price (or sealed-bid) auction and the second-price (or ascending/descending) auction.⁷ In what follows, the nature of horizontal merger effects is described for each type of auction format.

2.2. Merger effects in first-price (sealed-bid) auctions

- (12) In a first-price or sealed-bid auction, firms compete with each other in a given tender by submitting sealed bids. The customer selects the firm which provides it with the highest surplus, defined as the difference between the value of the product offered by each firm and its bid. The winner of the tender is then paid its bid (i.e. the pricing mechanism is “paid as bid”). This auction mechanism provides a good approximation of tenders where firms are paid their bid (if they are ultimately selected as the winner) and when they face uncertainty on the conditions offered by competing bidders (including the quality of competing products, and the bids at which they are offered), and on how the buyer will evaluate different characteristics of each bid.⁸ Auctions are best characterised as sealed-bid environments when competing sellers do not know the number of chances they will have to improve their offer, and/or when there is uncertainty over competing bids (e.g. because buyers do not reveal such information or cannot credibly provide it).⁹
- (13) Under a sealed-bid format, the pricing incentives of competing firms closely resemble those at work in ordinary markets with differentiated products. If there is uncertainty on the required level of the winning bid, each firm will face a trade-off between the probability of winning the tender and the margin earned in case of winning the tender. A higher bid will reduce the probability of winning the tender but will increase the margin if the bid is successful. This tradeoff is equivalent to the standard tradeoff

⁶ See the Commission's Notice on the definition of relevant market for the purposes of Community Competition Law (97/C 372/03) ("Market Definition Notice"), paragraph 43.

⁷ For simplicity, the terms "first-price" auction and "sealed-bid" auction are used interchangeably in this Annex. Similarly, the terms "second-price" auction and "descending" auction are used interchangeably (based on the fact in a procurement setting a second-price auction is effectively a descending price auction).

⁸ As Klemperer puts it “*bidding is closer to sealed-bidding if bidders are differentiated and the criteria for evaluating bids are not fully transparent, so that bidders would not necessarily know whose bids would win even if they were fully informed about others’ offers*” (P. Klemperer (2005), "Bidding Markets", Competition Commission discussion paper, page 14).

⁹ See P. Klemperer (2005), "Bidding Markets", Competition Commission discussion paper.

between quantity sold and price in an ordinary differentiated goods market, with the difference being that in the case of a tender it is the expected quantity sold (i.e. the probability of winning the auction) rather than actual quantity sold which enters the tradeoff. Each bidder therefore chooses its optimal bid in order to optimise the tradeoff between expected sales and price and thereby maximises its expected profits. Pricing incentives and the related incentives to exploit market power are therefore analogous to those at work in standard pricing of differentiated products.¹⁰

- (14) The degree of closeness between the merging parties (as captured by diversion ratios), combined with the margins earned by each firm, are important determinants of non-coordinated merger effects in ordinary markets with differentiated goods.¹¹ If Firms A and B are relatively close, a significant number of customers would have switched from Firm A to Firm B in the event of a price increase by Firm A (and vice-versa).¹² Post-merger, the diversion between the two firms in case of a price rise by either of them is internalised by the merged entity, thus leading to greater incentives to raise price relatively to the pre-merger situation. The incentives to raise prices are higher if pre-merger margins are higher, since a diversion of sales from Firm A to Firm B is more valuable the higher are the margins of Firm B (and vice versa for the incentives to increase prices of Firm B).¹³ This is also mentioned in the Horizontal Merger Guidelines which specify that *"The most direct effect of the merger will be the loss of competition between the merging firms. For example, if prior to the merger one of the*

¹⁰ P. Klemperer (2005), "Bidding Markets", Competition Commission discussion paper, C. Shapiro (2010), "The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years", Antitrust Law Journal, Vol. 77, G. Werden and L. Froeb (2008), "Unilateral Competitive Effects of Horizontal Mergers", in L. Buccirossi (ed.), Handbook of Antitrust Economics, Cambridge, MA, MIT Press, and OFT (2007), "Markets with Bidding Processes", Economics discussion paper, May, all stress the close connection between sealed-bid auctions and pricing of differentiated products. For example, Klemperer states *"Note that sealed-bidding corresponds to standard Bertrand price-setting. With perfect information, the sealed-bid process corresponds to Bertrand competition in a market in which all consumers make the same choice between firms. And, as noted above, with imperfect information about rivals' costs or about the bid-taker's preferences, bidders making sealed bids face a trade-off between the price and their expected sales that is similar to the price-quantity trade-off firms face in standard differentiated products Bertrand competition"* (page 14). Similarly, Froeb and Werden state that *"the contrast between the effects of mergers in Bertrand industries and their effects in auctions is greater the more bidders know about customer-specific competitive conditions, and that contrast may be nil in sealed-bid auctions"* (page 28).

¹¹ See in particular Commission Guidelines on the assessment of horizontal mergers, OJ C 31, 5.2. 2004, paragraph 28 ("Horizontal Merger Guidelines").

¹² There is no need to have the highest diversion between the merging parties (e.g. parties are "closest competitors") for significant effects to arise, especially if margins relatively high. For example, the US Horizontal Merger Guidelines mention that *"A merger may produce significant unilateral effects for a given product even though many more sales are diverted to products sold by non-merging firms than to products previously sold by the merger partner"* (Horizontal Merger Guidelines, U.S. Department of Justice and the Federal Trade Commission, August 19, 2010, page 21).

¹³ For a detailed description of the nature of non-coordinated merger effects in Bertrand markets with differentiated products, see Commission decision of 28 May 2014 in Case M.6992 Hutchison 3G UK/Telefonica Ireland, Annex I. An extensive qualitative discussion is found in C. Shapiro (2010), "The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years", Antitrust Law Journal, Vol. 77.

merging firms had raised its price, it would have lost some sales to the other merging firm. The merger removes this particular constraint".¹⁴

- (15) The incentives to increase bids in a first-price auction following a horizontal merger are very similar to those at work in markets with differentiated products. The primary difference is that the diversion of sales between competing firms should be understood in terms of the expected sales (i.e. the probability of winning the tender) rather than actual sales.¹⁵ That is, each firm knows that if it bids less aggressively, its probability of winning the tender will decrease, and the probability of winning the tender enjoyed by each of its competitors in that tender will increase. The diversion ratio between Firm A and Firm B is therefore determined by the fraction of the reduction in Firm A's winning probability that is captured by Firm B (and vice versa for the diversion ratio from Firm B to Firm A). A merger between Firm A and Firm B will induce each firm to bid less aggressively, since a higher bid by Firm A will increase the probability of winning of Firm B, and thus increase its profits (in proportion to its pre-merger margin). Similarly, less aggressive bidding by Firm B will make it more likely that Firm A will win the tender, and thus increase its profits. The incentives to increase prices are thus determined by the level of diversion between the merging firms (evaluated in terms of winning probabilities) and by the level of pre-merger margins. As Moresi notes, the diversion ratios in bidding markets can be estimated by comparing total gains and losses across several bidding events (as opposed to being measured in terms of the probabilities associated with winning a given tender).¹⁶
- (16) The effects of mergers in sealed-bid auctions with imperfect information are likely to affect a relatively broad class of buyers, rather than being targeted on customers for whom the merging parties are the two preferred bidders. This follows from the fact that bidding incentives will change for all tenders where the merging parties consider that the winning probability of one of the merging firms would be affected by the bid of the other merging firm (and vice versa). This includes also tenders in which the two merging firms are not the two best-placed firms, if firms cannot identify these tenders ex-ante, and adapt their bidding behaviour only for those tenders.¹⁷ This is also discussed in Case M.6950 – UPS/TNT Express: *"In a context where the merging firms are the first and second choices for some customers, and suppliers are aware of that fact, price effects will be targeted to such customers. However, when there is some uncertainty about the precise rankings of the merging firms, merger effects are likely to spread across a wider group of customers"*.¹⁸ In practice, all bids where the merging parties would have met absent the merger (which can be proxied by bids

¹⁴ See Horizontal Merger Guidelines, paragraph 24.

¹⁵ The interpretation of diversion ratios in terms of "winning probability diversion ratios" is set out by S. Moresi (2010), "The use of upwards price pressure indices in Merger Analysis", *The Antitrust Source*, February.

¹⁶ See S. Moresi (2010), "The use of upwards price pressure indices in Merger Analysis", *The Antitrust Source*, February.

¹⁷ This effect is also noted in the US Horizontal Merger Guidelines: *"when the merging sellers are likely to know which buyers they are best and second best placed to serve, any anticompetitive unilateral effects are apt to be targeted at those buyers; when sellers are less well informed, such effects are more apt to be spread over a broader class of buyers"* (Horizontal Merger Guidelines, U.S. Department of Justice and the Federal Trade Commission, August 19, 2010, page 22).

¹⁸ Commission decision of 30 January 2013 in Case M.6570 – UPS/TNT Express, Recital 722.

where the parties have actually met in the recent past) are apt to be affected by merger effects.

- (17) Similar to ordinary markets with differentiated products, the non-merging firms can also benefit from the reduction of competitive pressure resulting from the merger. The Commission's Horizontal Merger Guidelines specify that "*mergers in oligopolistic markets involving the elimination of important competitive constraints that the merging parties previously exerted upon each other together with a reduction of competitive pressure on the remaining competitors may, even where there is little likelihood of coordination between the members of the oligopoly, also result in a significant impediment to competition*".¹⁹ In the present case, non-merging firms, in particular Siemens, can also benefit from the reduction of competitive pressure that results from the merger, since the merged firms' price increase may switch some demand to the rival firms, which in turn may find it profitable to increase their prices.²⁰
- (18) The discussion of merger effects in bidding markets set out above is based on the premise that both products of the Parties are continued to be offered post-merger. Merger effects tend to be of a different nature, and typically more pronounced, when one of the two Parties' products is discontinued post-merger. Product discontinuation is equivalent to set the price of one of the merging products (say, that product of Firm A) so high that no customer is buying it. This price increase is therefore well above the one typically associated with non-coordinated merger effects. An increase in the price of Firm A so large as to effectively discontinue the product would in turn increase Firm B's probability of winning, assuming a positive diversion between Firm A and Firm B (defined along the lines described above). This will also induce Firm B to increase its bid, since the pre-merger tradeoff between probability of winning and the level of the optimal bid changes in case of an exogenous increase in the probability of winning. Faced with a higher probability of winning (i.e. a higher expected output) Firm B would optimally increase its bid, so as to increase both its bid and its probability of winning relative to the pre-merger scenario. Similar pricing incentives apply to all firms whose probability of winning is positively affected by the discontinuation of the product of Firm A, and not just to those of the other merging party.²¹ The post-merger incentives to discontinue the product of Firm A are driven by the diversion between Firm A and Firm B as well as by the margins of Firm B. As such they are linked to the economic determinants of merger effects in the standard case without product discontinuation.²²
- (19) Numerical simulations of merger effects in first-price auctions suggest that large price effects can be associated to the case of product discontinuation. For example, the OFT (2007) describes the level of equilibrium bids as a function of the number of bidders in a symmetric case where each bidder draws cost from a uniform distribution between 0 and 1 and competes in a sealed-bid auction with no information on the cost of rival

¹⁹ See Horizontal Merger Guidelines, paragraph 25.

²⁰ See Horizontal Merger Guidelines paragraph 24.

²¹ In this case, the price effects of the merger are apt to spread to all buyers that considered Firm A as a significant competitive alternative absent the merger.

²² Any fixed costs associated with maintaining the product of Firm A or costs of bidding both products in tenders are also relevant to product discontinuation incentives.

bidders (except for the fact that they are drawn from the same distribution).²³ In this case, a reduction in the number of bidders from 4 to 3 increases the expected level of the winning bid by 25%.²⁴

2.3. Merger effects in second-price (descending) auctions

- (20) Second-price auctions describe auction processes where the price for an object is raised successively until only one bidder remains (e.g. as in the case of auctions for paintings). In the case of a procurement procedure, the design becomes a descending one, where the price is lowered until only one competitor is left, and wins the tender at the final price that it has bid.
- (21) The Notifying Party's submissions argue in favour of the use of a descending price auction.²⁵
- (22) The simplest case of a second-price auction (or descending auction) design is one where bidders observe the offers made by rivals, bidders only differ in the cost of supply, and bids are reduced during the course of the tender process, in small steps. In this benchmark case, the price paid by the winner is the lowest price that any other competitor was willing to offer before dropping out of the tender. The winning bid is therefore equal to the cost of production of the firm with the second-lowest cost. The only determinant of the winning bid is therefore the cost of the runner-up bidder. In such a setting, a merger between competing firms only affects the final outcome of the auction if the firms with the lowest and second-lowest costs come together.²⁶ In this case, the price is then determined by the firm with the third-lowest cost and the price increase due to the merger equals the cost difference between the firms with the second and third lowest costs.²⁷ In this setting, all bidders except for the winner offer their product at cost and hence expect to make no margin when they lose a bid.²⁸

²³ OFT (2007), "Markets with Bidding Processes", Economics discussion paper, May, pages 143-144.

²⁴ Similarly, C. Bengtsson reports the results of numerical simulation of first-price auctions with uncertainty on the value associated with the product of each bidder (and cost normalized at 0) (C. Bengtsson (2005), "Simulating the effect of Oracle's Takeover of PeopleSoft", in Peter A.G. van Bergeijk and Erik Kloosterhuis (eds), in *Modelling European Mergers: Theory, Competition Policy and Case*). In a symmetric case with 3 firms, a reduction from 3 to 2 can reduce consumer surplus by between roughly 9 and 32% (depending on the degree of differentiation between the bidders). In an asymmetric case with one market leader with 70% of the market pre-merger, and two smaller firms with 15% each, the merger between the two smaller firms leads to a reduction in surplus by between 8 and 25% (again depending on the degree of differentiation between the bidders).

²⁵ See RBB Submission 1 (Sections 4.2 and 5.2), RBB Submission 3 (footnote 20: "*Such a bidding process is better characterised as a so-called English or open bid auction*"), CRA Submission 1 (Section III, see also footnote 14: "*Here we are taking the approach that we believe is much more consistent with the evidence that bidders in HDGT tenders usually have quite good information about who the other finalists are in these very large and visible transaction*"), and [Professor A] Submission (page 11: "*the firms that are eventually short-listed also learn the customer's preferences over the remaining competing products*"; and footnote 34: "*As usual, I focus here on the only « reasonable » equilibrium, in which the second-best firm prices at cost, and the best firm secures a profit reflecting its comparative advantage*").

²⁶ This is true in the case where no product is discontinued after a merger. The case with product discontinuation is discussed later in the text.

²⁷ For a basic description of merger effects in an descending auction setting, see G. Werden and L. Froeb (2008), "Unilateral Competitive Effects of Horizontal Mergers", in L. Buccirosi (ed.), *Handbook of*

- (23) The description of optimal bidding behaviour is more complex in a second-price auction where suppliers differ both in their cost of production and in the value placed by the buyer on their respective products. In such a setting, bidding at cost remains optimal for the second-best placed firm if the bidding process approximates a bargaining situation where the “outside option” for the buyer is determined by the surplus or utility (i.e. the difference between value and costs) offered by the second-best bidder. If this is the case, a buyer can play suppliers off each other up to the point where the surplus offered by the best-placed firm cannot be matched profitably by the next-best supplier (that is, the next-best bidder is offering its product at cost, and making no margin).²⁹
- (24) The best placed bidder wins the tender at a bid that is such that the utility of the buyer equals the surplus generated by the second-best bidder. The winning bid therefore equals the cost of the second-best bidder (as in the standard case with only cost asymmetries) plus the difference in value between the best and second-best bidder. It follows that the winning margin equals the sum of the difference in value and the difference in cost between the best and second-best bidder. That is, the winning margin equals the difference in surplus generated by the two bidders.³⁰
- (25) The outcome described in paragraph (24) will arise if an auction process is characterised by multiple rounds, and if competing bidders have good information on both the bids offered by rival firms in each round and the customer's valuation of these bids (most notably, in terms of quality differences across bidders).
- (26) The outcome described in paragraph (24) is also in line with the formal economic model presented in the [Professor A] Submission. The Notifying Party has submitted the [Professor A] model as an economic framework that justifies the exclusive focus on runner-up data for the competitive assessment, in line in particular with the CRA Submission 1. The main elements of the [Professor A] Submission are:
- a. A tender is characterised by an initial stage which is not costly for OEMs to participate, by a firm stage where participating is costly, and by a shortlist stage where the customer selects two OEMs.

²⁸ Antitrust Economics, Cambridge, MA, MIT Press, and C. Shapiro (2010), "The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years", Antitrust Law Journal, Vol. 77.

Similarly, if bidders have the same cost but differ in the value they offer to customers the tender will be won by the bidder offering the highest value to the buyer, at a price that equals the difference between the value offered by the winning bidder and that of the second-placed bidder. Also in this setting, the losing bidder(s) will offer its (their) product at cost.

²⁹ For a detailed description of this environment, see N. Miller (2014), "Modelling the effects of mergers in procurement", International Journal of Industrial Organization, Vol. 37, pages 201-208.

³⁰ For the sake of exposition, consider only two firms 1 and 2 with costs $c_1 \leq c_2$ that generate gross surplus for the customer of v_1 and v_2 , respectively, where for simplicity it is assumed that $v_1 > v_2$. In a second-price auction framework, firm 2 ends up bidding at cost, i.e. $b_2 = c_2$, and firm 1 wins the tender by offering a bid that makes the customer indifferent between the two competitors. This implies a winning bid of $b_1 = (v_1 - v_2) + c_2$, and a profit of $(v_1 - v_2) + (c_2 - c_1)$. The profit of the winning bidder is therefore the difference in surplus generated by the two competing bidders.

- b. While there is uncertainty at the firm stage, there is perfect information at the shortlist stage, where *"the firms that are eventually short-listed also learn the customer's preferences over the remaining competing products"*.³¹
- (27) Therefore, the [Professor A] Submission assumes that a shortlist stage always follows a firm stage, and that firms that are shortlisted perfectly learn the customer's preferences over the remaining competing products. Under this set-up, the second-best firm prices at cost³², and the winning firm wins with a bid price that appropriates the incremental surplus that its product offers over the second-best product, as in a standard second-price auction framework.³³ The model put forward in the [Professor A] Submission also includes an assumption that the second best supplier may not submit a firm bid and hence may not be shortlisted. This probabilistic assumption does not materially affect the nature of the equilibrium bidding behaviour relative to a simpler model (e.g. as used by Miller³⁴). The [Professor A] Submission also mentions that any other shortlisted bidders other than the runner-up have no effect on the outcome of the auction.³⁵ This is a direct consequence of the second-price auction framework effectively assumed in the shortlist stage.
- (28) In a second-price auction setting, a merger will affect the winning bid if it brings together the two firms that are best placed to serve a customer. The size of the merger effect is then determined by the difference in surplus generated by the second- and third-best placed bidder (that is, the sum of the differences in their value to the customer, and in their cost of production).³⁶ No bidder other than the winner and the runner-up matter for the determination of the winning bid, and more generally for the outcome of the auction.
- (29) Non-coordinated merger effects in second-price environments are therefore a function of the probability with which the two merging parties can be expected to be winner and runner-up in tenders. This probability is often approximated by looking at the frequency with which the merging parties were winner and runner-up in past tenders. However, the OFT (2007) correctly cautions against this approach, as it presupposes that one can be certain who the strongest two bidders are in advance of a given bidding process. In practice, a bidder participating in a descending auction will do so because it considers that it has a material chance of winning the tender (especially if participation costs are significant). Removing this bidder through a merger can

³¹ See [Professor A] Submission, page 11.

³² See [Professor A] Submission, footnote 34, *"As usual, I focus here on the only « reasonable » equilibrium, in which the second-best firm prices at cost, and the best firm secures a profit reflecting its comparative advantage"*.

³³ See [Professor A] Submission, page 12, *"in the final stage the best supplier (firm i, say) wins with a bid price appropriating in expected terms the incremental surplus $S - s$ that its product offers over the second-best product"*.

³⁴ See N. Miller (2014), "Modelling the effects of mergers in procurement", International Journal of Industrial Organization, Vol. 37, pages 201-208.

³⁵ See Section 4.a of the [Professor A] Submission.

³⁶ This result is also in line with the conclusions reached in the [Professor A] Submission, for the case where more than two firms can generate a positive surplus for buyers.

therefore be expected to have some effect on the bid-taker, even if in past bids the bidder had not frequently been a runner-up to the other merging party (or vice versa).³⁷

- (30) As set out in paragraph (28), the size of the price increase from a merger in a second-price auction is determined by the difference in surplus generated by the second- and third-best placed supplier.³⁸ This can be approximated by looking at the winning margin of the second-best bidder in tenders where it wins against the third-best bidder. High winning margins of each of the merging parties when competing against non-merging parties can therefore be indicative of significant merger effects in a second-price auction setting.³⁹
- (31) Price effects from mergers in second-price auctions are more targeted than those in first-price auctions, since they are focused on those customers where the parties can be expected to be winner and runner-up, as opposed to be spread over all customers for which the parties offered a competitive bid. Overall, merger effects are, however, not expected to differ greatly between the two auction formats, implying that merger effects in second-price environment are typically sharper but more targeted, whilst those in first-price auctions are less pronounced but more diffuse.⁴⁰
- (32) The discussion of merger effects in second-price auctions has assumed so far that a merger between two firms would not lead to the discontinuation of the products of either of the Parties. If one of the products is discontinued, then adverse merger effects can be expected in a broader set of bids, namely all of those where the discontinued product could have expected to be the winner or the runner-up.⁴¹
- (33) If the discontinued product had won a tender absent the merger, then the buyer would have to instead choose the second-best supplier. The adverse change in surplus for the buyer in this case equals the difference in surplus between the second- and third-best suppliers and is therefore the same as in the case of a merger between the winner and the runner-up. The only difference with the standard case with no product

³⁷ See OFT (2007), "Markets with Bidding Processes", Economics discussion paper, May, paragraphs 7.13-7.15 and A.42-A.45.

³⁸ Using the example discussed in footnote 30, a merger involving firms 1 and 2 implies that the constraint on the winning bidder will rely on the presence of a third, less competitive, firm (firm 3), if such a firm is present. After the merger between firm 1 and firm 2, the winning bid will therefore equal $b_1 = (v_1 - v_3) + c_3$ and the increase in the winning bid will equal the difference in net surplus between the second and third best placed firms (i.e. $\Delta b_1 = (v_2 - v_3) + (c_3 - c_2)$).

³⁹ As C. Shapiro states: "*Merging firms often claim that certain non-merging firms can and will offer an equally good alternative to customers. Customer evidence can be especially valuable in assessing this claim. There can be some tension between this claim and the presence of significant supplier differentiation. We may test this claim with evidence from procurement events in which the merging firms competed as finalists against these non-merging firms. If they really do offer very close substitutes, one would expect to see relatively low margins in those bidding situations*" (C. Shapiro (2010), "The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years", Antitrust Law Journal, Vol. 77, page 735).

⁴⁰ See G. Werden and L. Froeb (2008), "Unilateral Competitive Effects of Horizontal Mergers", in L. Buccirossi (ed.), Handbook of Antitrust Economics, Cambridge, MA, MIT Press. A similar statement is contained in the CRA Submission 1, footnote 14.

⁴¹ See N. Miller (2014), "Modelling the effects of mergers in procurement", International Journal of Industrial Organization, Vol. 37, pages 201-208.

discontinuation is that with product discontinuation adverse merger effects can materialise also when the runner-up bidder is not the other merging party.

- (34) Similarly, if the discontinued product would have been runner-up in a tender, then a buyer is worse off in case that product disappears. The loss of surplus is again given by the difference in surplus between the second and third best-placed bidders. This is again the same as in the standard merger effect with the difference being that the other merging party does not need to be the winner of the tender for adverse effects to occur.
- (35) In both sets of cases (i.e. both the cases where the discontinued product would have been the winner and the cases where it would have been the runner-up), the margins of the second-best bidders when winning against third-best bidders are informative on the size of the merger effects.

3. A FIRST PRICE (SEALED-BID) AUCTION IS MORE APPROPRIATE THAN A SECOND PRICE AUCTION FRAMEWORK TO INTERPRET THE EVIDENCE ON HDGT TENDERS

- (36) This section of the Annex presents the Commission's analysis of the evidence on how bidding processes for HDGTs are typically organised. This includes an analysis of the various stages of the bidding process and of the information available to bidders. The Commission concludes on the most appropriate auction framework to assess the competitive impact of the Transaction.
- (37) In relation to the information available to bidders, the Commission considers four sources of information: (a) evidence from the market investigation; (b) evidence from bidding data submitted by each of the merging parties, by competing OEMs, and by customers on some of the key competitive parameters in bidding events (e.g. role of the shortlist stage, identity of firm bidders, and identity of runner-up bidders) in order to shed light on the strategic uncertainty faced by bidders during a tender process; (c) evidence and implications from the data on Notifying Party's margins in bidding events (based on the predictions from auction theory on the margins of losing bidders depending on the auction format); and (d) evidence from the internal documents of the Notifying Party.
- (38) Implications on whether the auction process for HDGTs is best characterised using a first-price or second-price framework are drawn at the end of this section.

3.1. The evidence indicates that OEMs exert competitive pressure on each other at the firm bid stage and that further shortlisting does not always take place

- (39) The Notifying Party alleged that the bidding process is typically carried out in three broad stages:⁴²
 - a. A budgetary stage, where customers invite selected potential bidders to submit “budgetary proposals” that outline in very broad terms the technical aspects of their proposed solutions and their pricing terms. Submitting a budgetary proposal requires relatively little work in terms of time and costs (ranging from a

⁴² See Form CO, paragraph 305.

couple of USD [cost of budgetary proposal] to a maximum of USD [cost of budgetary proposal]).

- b. A firm bid stage, where the proposals submitted by the various suppliers are significantly more complex than those submitted at the budgetary stage. The suppliers selected by the customer in the bidding process after the budgetary proposal stage engage in discussions for an extended period (typically between 12 and 18 months) to convince the customer that the proposed technical and commercial solution meets or exceeds the customers' requirements. Participating at this stage of the bidding process involves significant investment for the supplier ranging between "EUR [cost of firm bid stage] and EUR [cost of firm bid stage] or more".
 - c. A shortlist stage, where the customer shortlists typically two firms.⁴³ In this stage, since the technical proposals have been accepted in principle, shortlisted bidders compete primarily on commercial terms to win the tender. However, in some bids a formal shortlisting process does not take place and final terms are thus bilaterally negotiated with a sole supplier (with no other shortlisted bidders).
- (40) The use of a budgetary stage and a firm bid stage in a typical tender process is confirmed by the majority of the respondents of the customer questionnaire.⁴⁴ The differences between the budgetary stage and the firm bid stage in terms of duration and costs / resources involved are reflected by the customers' replies as well.⁴⁵
- (41) Siemens has also confirmed that the preparation of a bid can be very costly and time consuming (potentially taking months or even years), implying that "*Siemens carefully selects the projects it bids for*".⁴⁶ Siemens also stated that the award of a tender after the submission of a bid varies in terms of time ("*anything between one week and half a year*").⁴⁷
- (42) The evidence on the existence of a shortlist stage in a typical tender process is mixed.⁴⁸ Whilst 12 respondents from the Commission's Phase II Questionnaire indicate that a shortlist stage is part of a typical tender process, 10 respondents state they do not consider a shortlist stage as a part of a typical tender process. In three other cases, despite being mentioned as part of a tender process, the shortlist stage has been either classified as taking place before the firm bid stage (which contradicts the order above presented by the Notifying Party) or not used regularly as it is contingent on the number of bidders and the bidders' technological fit given the customer's requirements.⁴⁹ Furthermore, it should be noted that fewer respondents consider the

⁴³ For some projects, three suppliers may be shortlisted, but this is rarer.

⁴⁴ See replies to question 38 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁵ See replies to questions 39.1 and 39.2 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁶ See minutes of the conference call held with Siemens of 03 March 2015 (ID 3567).

⁴⁷ See Siemens's reply to the Commission's Request for Information, 20.03.2015, question 24 (ID 3567), and the minutes of the conference call held with Siemens of 03 March 2015 (ID 3567).

⁴⁸ See replies to question 38 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁴⁹ See replies to question 38 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

shortlist stage as being part of a typical tender process than each the budgetary stage and the firm bid stage.⁵⁰

- (43) The fact that a shortlist stage is not necessarily used in a tender process also finds support in the shortlist information included in the bidding database submitted by the Notifying Party. The Commission found that a shortlist stage has been used in only [40-50]% of competitive tenders⁵¹ (corresponding to [number of tenders]) closed between 2009 and 2014 and won by a Large HDGT at a Worldwide level 50Hz excluding China.⁵² This contrasts with [60-70]% of tenders where a shortlist was not used (which corresponds to [number of tenders]). These results are summarised in the second column of Table 1.
- (44) The Commission further notes that even if one considers only those competitive tenders where the Notifying Party was not eliminated at an "early" stage of the tender process (i.e. whenever the Notifying Party has won a competitive tender or was the runner-up OEM in a competitive tender), information on a shortlist stage is also frequently not indicated. In [40-50]% of these cases the respective customers made use of a shortlist stage, whilst in [50-60]% no information on a shortlist stage is provided.⁵³ This result is illustrated in the third column of Table 1.

Table 1: Existence of a shortlist stage in competitive tenders

Existence of shortlist stage	Competitive tenders	Competitive tenders won by Notifying Party or where Notifying Party finished runner-up
Yes	[40-50]% ([...])	[40-50]% ([...])
No	[60-70]% ([...])	[50-60]% ([...])

- (45) The Notifying Party further claimed that at the shortlist stage there are typically two firms present⁵⁴, and that in some cases "*three firms may be shortlisted, although this is more rare*".⁵⁵ However, the majority of customers indicated that it relies on three or more OEMs at the shortlist stage.⁵⁶ While 35% of the respondents stated that generally two OEMs are present at the shortlist stage, 50% of the respondents said that three OEMs are generally present. In total, 65% of the respondents indicated that they generally rely on three or more OEMs at the shortlist stage.
- (46) The Commission also found evidence that OEMs most likely exert competitive pressure on each other at the firm bid stage irrespective of whether or not being

⁵⁰ See replies to question 38 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁵¹ This relates to tenders with more than one firm participant.

⁵² Based on the Notifying Party's bidding database (See GE's reply to the Commission's Request for Information No.13, 27.01.2015, question 3, Excel file "I - Consolidated bid data - GE data with Alstom on own bids and SL_CONFIDENTIAL.xlsx"), the Commission accounts for those cases where the Notifying Party indicated that a shortlist stage has been used but mentioned that only one or none OEM has been shortlisted by reclassifying them to tenders not containing a shortlist stage (see paragraph (278) for further details).

⁵³ A shortlist stage took place in [number of tenders] competitive tenders when the Notifying Party was the winning OEM (runner-up OEM), whilst customers did not make use of a shortlist stage in [number of tenders] competitive tenders when the Notifying Party was the winning OEM (runner-up OEM).

⁵⁴ See Form CO, paragraph 305 (c).

⁵⁵ See Form CO, paragraph 305, footnote 128.

⁵⁶ See replies to question 40.4 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

shortlisted after. In the replies to question 41 of Phase II Questionnaire Q7, 14% of the respondents stated that OEMs always exert competitive pressure on each other at the firm bid stage, 39% of the respondents stated that is true in most cases, whilst 3% of the respondents and 6% of the respondents quoted that this is rarely the case and that this is never the case, respectively.⁵⁷ The latter, who amount to 9% of the respondents and do not agree that competitive pressure is exerted among the OEMs at the firm bid stage, rather confirm that competition between the OEMs usually or always takes place at the last stage of the tender.⁵⁸

- (47) In addition, the empirical analysis carried out by the Commission (see Sections 4.4.4, 4.4.5, and 4.4.7) shows that the participation of Siemens, MHPS and Alstom at the firm bid stage is associated with significantly lower margins and lower probability to win tenders for GE. This confirms the importance of the competitive pressure that OEMs exert on each other at the firm stage.
- (48) This evidence on the importance of competitive interactions at the firm stage also contradicts one of the implications of the [Professor A] Submission and of the CRA Submissions, which predict that OEMs exert competitive pressure on each other only at the last stage of the bidding process and that therefore the firm stage is not relevant for the competitive assessment.
- (49) The main competitors to the Parties also did not consistently confirm the Notifying Party's view on the use of shortlists.
- (50) MHPS seems to agree with the Notifying Party that shortlisting of bidders typically takes place one stage before the award of a contract and can result in a further narrowing down of the bidders relative to the firm bid stage (depending on customer preferences).⁵⁹
- (51) However, the main competitor to the Parties, Siemens, mentioned a broader interpretation of the shortlisting stage, stating that simply meeting the technical and commercial requirements of the firm stage is the condition for OEMs to be shortlisted in a tender.⁶⁰ In Siemens's view all bidders who make a firm bid therefore have a high chance of being subsequently shortlisted. As such, shortlisting does not result in a further narrowing down of bidders relative to the firm bid stage. Siemens stated that customers do not have incentives to further narrow down the set of bidders in order to preserve a higher number of competitors in tenders.⁶¹

⁵⁷ See replies to question 41 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁵⁸ 39% of the respondents reported that they do not know whether or not an OEM participating at the firm bid stage typically exerts competitive pressure on the other participants irrespective of being shortlisted after or not.

⁵⁹ See MHPS's reply to the Commission's Request for Information, 26.03.2015, question 30 (ID 4251).

⁶⁰ See minutes of the conference call held with Siemens of 03 March 2015 (ID 3567) and Siemens's reply to the Commission's Request for Information, 20.03.2015, question 24 (ID 3567).

⁶¹ *"It is not common for the customer before the award of the bid to further narrow down the set of bidders that have made a formal bid and meet the tender requirements, because there are few OEM suppliers in the market in the first place, and so it does not make sense to further limit the set of bidders. There is thus typically no further narrowing down of bidders after the initial selection of OEMs meeting the technical requirements of the tender, as customers prefer to keep as many OEMs as*

- (52) The evidence reported in the Section 8.6 of the Decision also confirms that customers do not face incentives to reduce the number of bidders in order to decrease their costs of evaluating tenders. This contradicts the assumption made in the CRA Submission 2 that customers allegedly rely on a shortlist stage in part to reduce the costs associated with evaluating multiple bidders.
- (53) Based on the evidence presented above and supporting the Notifying Party's own understanding⁶², the Commission concludes that the firm bid stage can be classified as an important and standard part of a typical tender process, where customers face competing OEMs who commit a significant amount of resources. OEMs that participate in a tender by submitting a firm bid can be considered as effective competitors who can thus impact the competitive process.⁶³ This is in line with the majority of the customer views from the market investigation.
- (54) Moreover, a further narrowing down of competing OEMs through an additional and separate shortlist stage cannot be confirmed by the Commission to always or typically take place. This contradicts some of the central assumptions made in the economic submissions of the Notifying Party. In particular, it is not in line with the assumption made in the [Professor A] Submission that shortlisting always takes place before the final award of the tenders, and that during the shortlist stage bidders learn perfectly about the preferences of customers and the offers of rivals.

3.2. The evidence indicates that competing OEMs face significant uncertainty on the bidding behaviour of competitors

- (55) As already stressed in Sections 2.2 and 2.3, an important determinant of whether a tender is best characterised as a first-price (sealed-bid) auction or a second-price (ascending) auction is the degree of information available to OEMs⁶⁴ when taking the decision to submit a firm bid and (if applicable) in making modifications to the bid after the firm bid stage (e.g. in a shortlist stage, if present).
- (56) The first-price auction framework assumes that relatively limited information on competing bids is available to bidders when making (or improving) their offers to customers. This implies that bidders face a trade-off between the probability of winning a tender (conditional on their expectation on the competitiveness of rival bids) and the profit margin associated with a given bid. By contrast, the second-price auction framework assumes that bidders have reliable information on the level of competing bids (including their product fit with the customer requirements) and can therefore estimate quite precisely what it takes to win a particular tender. This allows the winner of the tender to just outbid the second best placed bidder.
- (57) In order to establish the level of information available to OEMs when competing in HDGT tenders, the Commission has considered a variety of types of evidence,

possible in the competition" (Minutes of the conference call held with Siemens of 03 March 2015 (ID 3567)).

⁶² See Form CO, paragraph 305 (b).

⁶³ See RBB Submission 1, page 6.

⁶⁴ This includes both information on rival bids (i.e. the level of rival bids, and the customer evaluation of the quality of rival bids) and information on the customer evaluation of the product offered by the OEM in question.

including: (a) information from customers; (b) information from competing OEMs; (c) evidence from data on key competitive variables in bidding events (including discrepancies between the perception of competing OEMs); (d) data on the expected margins of the Notifying Party for tenders where it was not the winner; and (e) evidence from internal documents on bidding events.

3.2.1. Competing OEMs do not have detailed information on rivals' offers during the course of a tender

- (58) During its Phase II investigation, the Commission has asked customers of HDGTs about the level of information on bids conveyed to OEMs during tenders for HDGTs.
- (59) Most of the customers indicated that in a typical tender process information on the OEMs' own offers (feedback) is provided.⁶⁵ However, the majority of the customers stated that no information to the OEMs about their rivals' offers is conveyed (except the final results in some cases).⁶⁶ Only in a few cases, customers state that conveying information on rival OEMs is part of a typical tender process. In one case, it is stated that solely information on the existence of other OEMs competing in the tender is conveyed, while only in one case the customer rather alluded to a full disclosure of information on the competitors' offers.
- (60) When specifically asked whether or not they communicate information to the shortlisted OEMs on the other selected bidders, the majority of customers (68%) stated that it never does so.⁶⁷ A smaller share of respondents (18%) said that it rarely conveys information on the other shortlisted OEMs, while the remaining 14% of respondents indicated that they frequently (9%) or always (5%) communicate information to the shortlisted OEMs on other selected bidders.
- (61) Therefore this evidence shows that customers rarely provide detailed information to OEMs on rival bids.
- (62) The fact that customers rarely provide information to OEMs on rival bids is also pointed out by the two main competitors to the Parties (Siemens and MHPS).
- (63) In response to a Request for Information, Siemens stated that whilst customers typically provide information on Siemens's own bid (e.g. whether it meets the tender specification), they generally do not provide detailed feedback on competing offers. Siemens also stated that *"Customers may throughout the process challenge the competitiveness of the bids by using competitors' offers as a benchmark in their negotiations. The correctness of such statements, however, cannot be verified"*.⁶⁸ Moreover, *"Siemens does not generally use information other than (often very limited, if any) information conveyed by the customer on other bidders in the course of a tender process. Siemens may use some internal business intelligence (including experience from past projects) and information that may be in the public domain relating to competing bidders. The information is mainly used during the preparation*

⁶⁵ See replies to question 38 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁶⁶ See replies to question 38 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁶⁷ See replies to question 40.5 of Phase II Questionnaire Q7 to customers of Gas fired power plant.

⁶⁸ See Siemens's reply to the Commission's Request for Information, 20.03.2015, question 24 (ID 3567).

*phase of the bid in order for Siemens to determine the chances of success of a potential bid".*⁶⁹

- (64) MHPS provided to the Commission a similar response to that from Siemens on whether it has access to information on competing offers during tender processes. Precisely, MHPS stated that it typically does not receive information about other bidders (including information on number of bidders and their identity), nor feedback on its own bid.⁷⁰ Again, similar to Siemens "*Beyond historic data and past experience, MHPS uses information that is publicly available such as magazines (e.g. Gas Turbine World)*".⁷¹
- (65) This evidence contradicts the assumption of perfect information in a second-price auction framework and contradicts as well the perfect information assumption in the shortlist stage used in the [Professor A] Submission. It is instead more in line with uncertainty and limited information on competing suppliers in a first-price auction environment.

3.2.2. *There are different perceptions among OEMs and customers on key parameters in bidding events*

3.2.2.1. Missing information on key competitive variables (shortlist stage and runner-up stage)

- (66) The bidding data provided by the Parties reveals a significant amount of uncertainty on some of the key parameter of tenders for HDGTs.
- (67) The Commission notes that in the data provided by the Notifying Party there is a significant number of tenders with missing information on both shortlisted bidders and runner-up bidders, which also illustrates the uncertainty faced on these key competitive variables by the Notifying Party in the course of a tender process. For the [number of tenders] competitive tenders in the Large segment, [60-70]% do not have information on shortlisted bidders and [40-50]% do not have information on the runner-up bidders. For the tenders won by GE (where GE, in principle, should have better information on the shortlisted bidders or runner-up bidders), [60-70]% of observations lack data on shortlisted bidders and [30-40]% of observations lack data on runner-up bidders. For the tenders won by Alstom, [40-50]% have missing data on the runner-up bidders. The problem of missing data is less important for the tenders where GE is shortlisted ([20-30]% of missing data). This, however, represents a small proportion of tenders ([number of tenders] competitive tenders). The extent of missing information in the bidding data provided by the Notifying Party is summarised in Table 2.

⁶⁹ See Siemens's reply to the Commission's Request for Information, 20.03.2015, question 25 (ID 3567).
⁷⁰ See MHPS's reply to the Commission's Request for Information, 26.03.2015, questions 30 and 33 (ID 4251).
⁷¹ See MHPS's reply to the Commission's Request for Information, 26.03.2015, question 31 (ID 4251).

Table 2: Missing information on shortlisted bidders and runner-up bidders

Competitive tenders				
	Shortlist information		Runner-up information	
Yes	[number of tenders]	[40-50]%	[number of tenders]	[50-60]%
No	[number of tenders]	[60-70]%	[number of tenders]	[40-50]%
N. of obs.	[number of tenders]	100%	[number of tenders]	100%
Tenders won by GE				
	Shortlist information		Runner-up information	
Yes	[number of tenders]	[30-40]%	[number of tenders]	[60-70]%
No	[number of tenders]	[60-70]%	[number of tenders]	[30-40]%
N. of obs.	[number of tenders]	100%	[number of tenders]	100%
Tenders where GE is shortlisted				
	Shortlist information		Runner-up information	
Yes	-	-	[number of tenders]	[70-80]%
No	-	-	[number of tenders]	[20-30]%
N. of obs.	-	-	[number of tenders]	100%
Tenders won by Alstom				
	Shortlist information		Runner-up information	
Yes	[number of tenders]	[80-90]%	[number of tenders]	[60-70]%
No	[number of tenders]	[20-30]%	[number of tenders]	[40-50]%
N. of obs.	[number of tenders]	100%	[number of tenders]	100%
Tenders where Alstom is shortlisted				
	Shortlist information		Runner-up information	
Yes	-	-	[number of tenders]	[50-60]%
No	-	-	[number of tenders]	[50-60]%
N. of obs.	-	-	[number of tenders]	100%

- (68) The information on runner-up bidders provided by Alstom in response to a specific RFI by the Commission on this subject shows that Alstom did not have information on the runner-up OEM in [number of tenders] tenders where it participated and did not win for bids awarded to Large and to Very Large HDGTs. In the other [number of tenders] tenders, Alstom considered itself to be the runner-up in [number of tenders]

tenders, and another OEM (not specified) to be the runner-up in [number of tenders] tenders.⁷²

3.2.2.2. There are significant discrepancies between the data provided by the Parties and the data gathered from third parties

- (69) During its Phase II investigation, the Commission has analysed the discrepancies in perceptions on key competitive variables in bidding events (firm participations by OEMs⁷³, shortlist data, runner-up data) by comparing the bidding data provided by the merging parties and the best available data gathered by the Commission from competing OEMs and customers.
- (70) Under the assumption that the tenders are best described as a second-price auction, bidders should have reliable and similar information on rival offers and customers' valuations. This implies that the bidding data provided by the Notifying Party (which reflects its ex-post view on how competition took place in tenders) should be similar to the bidding data gathered by the Commission from competing OEMs and customers. A low number of discrepancies between the data provided by the Notifying Party and data provided by competing OEMs and customers would thus be consistent with a second-price auction design. Conversely, evidence of a significant number of discrepancies between the data provided by the Notifying Party and data provided by competitors and customers would be more consistent with a first-price auction design, where firms make bids under conditions of imperfect information. The Commission has focused its analysis of discrepancies across OEMs on the Large segment.
- (71) The Commission has gathered data from competitors on their bidding behaviours by asking to report all tenders where they participated since 2006, which includes inter alia the customer name, the models used when they participate in tenders, and information of the winner and runner-up bidder (if available).⁷⁴
- (72) The Commission has also contacted customers⁷⁵ in order to gather information on these key competitive variables in tenders (firm participations by OEMs, shortlisted OEMs, runner-up OEMs). The Commission asked customers for information on all tenders included in the bidding data provided by the Notifying Party under the condition that they satisfy the following requirements: a winning HDGT model with a unit capacity higher than 200MW, for Worldwide 50Hz excluding China, with two or more bidders. The Commission has removed tenders from this sample that did not have a McCoy ID and which therefore may not be in the public domain. Using the contact details provided by the Notifying Party, the Commission obtained a list of 45 customers involved in these tenders. 14 customers replied to the Commission, corresponding to 25 tenders for Worldwide 50Hz excluding China.⁷⁶

⁷² See Alstom's reply to the Commission's Request for Information No. 28, 21.04.2015, question 1.

⁷³ This refers to the number and identity of OEMs who have submitted a firm bid in a tender.

⁷⁴ This data was made available through a data room within the framework of access to the Commission's file granted to the Notifying Party.

⁷⁵ See replies to Phase II Questionnaire Q6 to customers of HDGTs (runner-up and shortlist).

⁷⁶ This data was made available through a data room within the framework of access to the Commission's file granted to the Notifying Party.

(73) The following paragraphs present the analysis of discrepancies between the data provided by the Notifying Party and the data gathered from competitors and customers.

(a) Competing OEMs and customers have different perceptions on the nature of the shortlist stage

(74) First, as regards the shortlist stage, the Commission recalls that Siemens has a significantly different understanding of the nature of the shortlist stage compared to the Notifying Party. While the Notifying Party argued that customers narrow down the number of bidders at the shortlist stage, Siemens mentioned that there is no further narrowing down of bidders after the firm stage.⁷⁷ The information provided by customers also confirmed a different understanding on the nature and relevance of a shortlist stage relative to that put forward by the Notifying Party.

(75) As regards data collected with customers, among the 25 tenders for which the Commission was able to collect data, 9 tenders (36%) have no shortlist stage, 8 tenders (32%) have a shortlist stage which is identical to the firm stage (i.e. same participants without a narrowing-down of the number of bidders), and only 7 tenders (28%) seem to have an effective shortlist stage with a narrowing-down of the number of participants.⁷⁸

(76) Therefore, there seems to be a degree of subjectivity among OEMs on the shortlist stage due to different understanding among OEMs and the shortlist stage does not seem to happen in the majority of tenders (effective shortlisting takes place only in 40% of competitive tenders in the data provided by the Notifying Party, only in 28% of tenders in data collected with customers). The Commission does not consider it meaningful to compare information on shortlisted bidders across OEMs, in light of the different interpretations given to this stage of the bidding process.

(b) Competing OEMs have different perceptions on the bidders who participate at the firm stage

(77) The Commission has compared data on firm participations of competing OEMs (Siemens, MHPS, Ansaldo) between the dataset provided by the Notifying Party and the datasets provided by competitors. The Commission has identified 96 common projects between the Notifying Party's dataset and the competitors' datasets.

(78) For these 96 projects, 41 projects (43%) have at least one discrepancy in terms of firm participations. That is, the Notifying Party has either considered that one competitor participated, whilst this competitor did not participate, or the Notifying Party was not aware that a competitor has participated in a tender.

⁷⁷ According to Siemens, "it is not common for the customer before the award of the bid to further narrow down the set of bidders that have made a formal bid and meet the tender requirements, because there are few OEM suppliers in the market in the first place, and so it does not make sense to further limit the set of bidders. There is thus typically no further narrowing down of bidders after the initial selection of OEMs meeting the technical requirements of the tender, as customers prefer to keep as many OEMs as possible in the competition" (Minutes of the conference call held with Siemens of 03 March 2015 (ID 3567)).

⁷⁸ See replies to Phase II Questionnaire Q6 to customers of HDGTs (runner-up and shortlist).

- (79) If we consider smaller OEMs like MHPS and Ansaldo, among the [number of tenders] aggregate firm participations of MHPS and of Ansaldo (taken together) indicated by the Notifying Party, [number of tenders] ([30-40]%) are not confirmed by MHPS or Ansaldo. Moreover, GE was not aware of [number of tenders] firm participations by MHPS or Ansaldo.
- (80) These important discrepancies on this key competitive variable illustrate the significant uncertainty in the bidding process, which is more consistent with a first-price auction environment than with a second price auction framework.
- (c) Competing OEMs and customers have different perceptions on the identity of the runner-up bidder in tenders
- (81) The Commission has analysed runner-up information provided by the merging parties, by competitors and by customers.
- (82) First, the Commission has analysed the discrepancies on runner-up data between the bidding data provided by each of the merging parties. Among the [number of tenders] tenders where GE reported Alstom as being the runner-up, [number of tenders] of these tenders are not confirmed by Alstom. Among the [number of tenders] tenders where GE reported itself as being the runner-up, Alstom provided runner-up information on [number of tenders] tenders and Alstom considers itself to be the runner-up in [number of tenders] of these tenders (instead of GE). Among the [number of tenders] tenders where Alstom reported itself as being the runner-up, GE is not aware of this for [number of tenders] tenders.
- (83) The Commission considers that the discrepancies in runner-up information between the Parties in themselves illustrate the fact that runner-up information is characterised by an important degree of uncertainty.
- (84) Second, the Commission analysed the discrepancies between the best available information on runner-up data collected from competing OEMs and runner-up data provided by the Parties. Competitors have provided runner-up data on 31 tenders which were ultimately won by them.⁷⁹
- (85) The Commission has considered discrepancies on runner-up information for three relevant categories of tenders among the 31 tenders for which information has been provided by both the Parties and competing OEMs⁸⁰: (a) tenders for which the Notifying Party reported itself to be the runner-up; (b) tenders for which the Parties have not reported any runner-up information; and (c) tenders for which competitors list Alstom to be the runner-up. The Commission considers that discrepancies of perceptions on runner-up information across each of these three categories are relevant to determine the extent of asymmetric information between competing bidders.

⁷⁹ For example, Siemens mentioned to the Commission that it usually has information on the runner-up bidder when it wins a tender: *"Siemens is usually aware of the runner-up bidder in those cases where Siemens wins the bid. This information is not available in those cases where Siemens is not the winning bidder."* (Minutes of the conference call held with Siemens of 03 March 2015 (ID 3567)).

⁸⁰ These are not mutually exclusive categories.

- (86) The evidence of discrepancies in the three categories described in the previous paragraph is as follows:
- a. Among the [number of tenders] tenders for which information is available, the Notifying Party reported itself as being the runner-up for [number of tenders] tenders. [number of tenders] of those tenders are confirmed by competitors. However, the other [number of tenders] tenders are not fully confirmed by the information provided by competing OEMs. In particular, the data provided by competing OEMs indicate that the runner-up bidder was an OEM other than the Notifying Party in [number of tenders] tenders. In [number of tenders] other tenders, competing OEMs indicate the presence of another runner-up in addition to the Notifying Party.
 - b. Among the [number of tenders] tenders, the Parties do not report runner-up information for [number of tenders] tenders. Competitors reported one of the Parties as being the runner-up for [number of tenders] of these [number of tenders] tenders. The Commission considers this to be a significant discrepancy which invalidates in particular the assumption made in some of the submissions of the Notifying Party that the Parties are able to identify all situations where they are the runner-up bidders.⁸¹
 - c. Among the [number of tenders] tenders, competitors listed Alstom as being the runner-up for [number of tenders] tenders. Alstom's runner-up data show that it was not aware of being the runner-up in [number of tenders] of these [number of tenders] tenders. This shows again that important uncertainty on runner-up information and the difficulty for the Parties to self-identify when they are runner-up bidders.
- (87) Third, the Commission also analysed runner-up data provided by customers, for the [number of tenders] tenders for which customer information was collected. The Commission was able to match [number of tenders] tenders with the bidding data provided by the Parties.
- (88) For the [number of tenders] matched tenders, the evidence on discrepancies between the Parties' runner-up information and customers' runner-up information is as follows:
- a. The Notifying Party is the winning OEM for [number of tenders] of the [number of tenders] tenders. Customers provided runner-up information on [number of tenders] of those tenders: for [number of tenders] tender, there are two runner-up bidders (Alstom and Siemens), [number of tenders] the runner-up is MHPS. The runner-up information on MHPS is confirmed by the Notifying Party. However, in its data, Alstom was not aware that it was the runner-up bidder for the other project.
 - b. Customers mention that the Notifying Party is the runner-up in [number of tenders] of the [number of tenders] tenders. Comparing with the bidding data provided by the Notifying Party, GE was aware that it was the runner-up for

⁸¹ See in particular the assumptions made in the CRA Submission 1 and in the [Professor A] Submission.

[number of tenders] projects. For the other [number of tenders] projects, GE did not indicate that it was the runner-up.

- c. Alstom is the winning OEM for [number of tenders]. Customers list the Notifying Party as being the runner-up for [number of tenders]. However, in its bidding data, the Notifying Party was not aware that it was the runner-up.
 - d. Customers list Alstom as being the runner-up for [number of tenders] tenders. Based on the runner-up information provided by Alstom, Alstom was not aware that it was the runner-up for [number of tenders].
 - e. The Notifying Party reported information on Siemens or MHPS being the runner-up bidders in [number of tenders]. While customers confirm the runner-up information provided by the Notifying Party in [number of tenders], they did not provide runner-up information for the other [number of tenders].
- (89) As regards runner-up information provided by a competing OEM and runner-up information provided by customers, there are [number of tenders] matched projects where Alstom is mentioned as being the runner-up bidder by the competitor. For [number of tenders] of those projects, customers indicated that Alstom is the runner-up bidder but also mentioned the Notifying Party as the co-runner-up. For the third project, customers did not provide runner-up information.
- (90) This evidence indicates the presence of significant discrepancies on the identity of the runner-up between the information provided by customers and the perceptions of the Notifying Party and/or Alstom. In particular, this evidence contradicts the assumption made in the CRA Submissions and in the [Professor A] Submission that the merging parties are always able to identify when they were the runner-up bidder in a tender.⁸²
- (91) To conclude, the comparison of runner-up information provided by the Parties, competing OEMs, and customers, shows that: (i) runner-up information is characterised by a high degree of uncertainty and (ii) the Parties are not always able to self-identify when they are themselves the runner-up bidders.
- (92) The Commission considers that the uncertainty on a key competitive variable like the runner-up is more consistent with the imperfect information assumption that characterises a first-price auction framework than with the perfect information assumption that is more relevant to a second-price auction framework (and that is also assumed in the [Professor A] Submission, during the shortlist stage). Moreover, the fact that the Parties are not always able to self-identify themselves when they are the runner-up bidders contradicts the main assumption used in the CRA Submission 1 and in the [Professor A] Submission which is that the merging parties are able to identify tenders where they are the runner-up bidders.

⁸²

See [Professor A] Submission, page 3, the merging parties are "*able to identify those tenders in which they were the winner or runner-up bidders*", and page 16, "*the runner-up firm itself can be expected to have this information*". See also CRA Submission 1, page 7: "*We believe that GE and Alstom are well positioned to know if they were winner or runner-up for a particular bid, and so we believe that the bidding data are reliable for our main purpose here*".

3.2.2.3. Conclusion on differences in perceptions on key competitive variables

- (93) The Commission considers that the available evidence on different perceptions among OEMs on key competitive variables (firm stage, shortlist stage, runner-up bidders) indicates that competition takes place in a situation of imperfect information. This evidence contradicts the assumption of perfect information in a second-price auction framework and contradicts as well the complete information assumption used in the [Professor A] Submission at the shortlist stage. It is instead more in line with uncertainty and limited information on competing suppliers in a first-price auction environment.
- (94) The Commission also notes that the bidding data provided by the Notifying Party appears to be based largely on an ex-post view (that is, after the tendering process is finished). Therefore, ex-ante uncertainty (during the course of the tendering process), which is more relevant to assess information available to bidders when making their offers, is likely to be even higher than what is suggested by the analysis of the data provided by the Notifying Party.

3.2.3. The Notifying Party's margins on lost bids are high and close to winning margins

- (95) The Commission considers that another useful way to assess the information available to competing bidders, and the related question of whether tender processes for HDGTs are best characterised as second-price (descending) auctions or first-price (sealed-bid) auctions is to examine the level of margins for losing bids.
- (96) The rationale for this analysis is that under the assumption of "perfect" (or very reliable) information on rival offers (and on the customer's valuations for each of these offers) competitors who are not best-placed to win the bid should be willing to offer their products at a level that is close to their cost (and thus realise very low margins). This is a rational strategy considering that the effective probability of winning the bid is very low for these bidders, under the assumption that they have very reliable information on their prospects of winning a tender.⁸³
- (97) An observation that margins for losing bidders (including, in particular, runner-up and/or shortlisted bidders where this information is available) are very low would therefore be consistent with a second-price auction format where bidders have access to reliable and sufficient information on competing offers (and the customer's valuation). Conversely, evidence that losing bids are not accompanied by low margins and are instead in line with the level of the margin realised in winning bids would be more consistent with a first-price auction format, where firms bid under conditions of imperfect information and trade off their winning prospects against their margins.

⁸³

In the stylised economic model of second-price auctions with perfect information, the second-best bidder knows that its probability of winning the tender is zero and therefore effectively offers its product at cost (e.g. as modelled in the [Professor A] Submission). With costly participation, this outcome is still possible if bidders face uncertainty on their ranking before making a costly bid, but then learn about their ranking during the course of the tender procedure (e.g. as modelled in the [Professor A] Submission).

- (98) The Notifying Party has provided the Commission with the level of its contribution margins for most of the tenders it participated in.⁸⁴ These are extracted from the pricing database (Annex 1220) submitted by the Notifying Party and calculated by matching it with the bidding database submitted by the Notifying Party. The margin information includes tenders won and lost by GE. The margins are based on the last offer made by GE.
- (99) The Commission has analysed tenders in the Large segment where GE offered its 9F.03 HDGT or 9F.05 HDGT, which includes [number of tenders] competitive tenders with information on GE's HDGT margins and overall equipment margins for the period 2009-2014. [number of tenders] of these tenders are competitive, in the sense that two or more bidders have participated at the firm bid stage.
- (100) In the respective competitive tenders, GE expected an average margin of [GE margins]% on the HDGTs offered and an average margin of [GE margins]% on the overall equipment offered (these margins would be realised if the bid made by GE were to be accepted by the customer).
- (101) In relation to margins for bids lost by GE, the Commission notes the following:
- a. The Notifying Party's average margin on HDGTs when it participated and lost is equal to [GE margins]%
 - b. The Notifying Party's average margin on overall equipment when it participated and lost is equal to [GE margins]%
 - c. When the Notifying Party was shortlisted or runner-up and lost, its margin is equal to [GE margins]% on the HDGTs and [GE margins]% on the overall equipment;
- (102) In comparison, when the Notifying Party won a competitive tender it realised a margin of [GE margins]% on HDGTs and [GE margins]% on overall equipment. Therefore, the losing margins on the overall equipment are similar to the margins on winning bids. Whilst the losing margins expected by GE are lower than those realised in winning bids for the HDGTs, the difference is not particularly large, especially in the context of the prediction of a second-price environment (where losing margins should approach zero). Moreover, the Commission's margin regressions analysis (that is described in Section 4) finds that once other determinants of margins are controlled for, GE's winning margins are not higher than its losing margins.
- (103) The Commission also notes that the margins reported on the bids lost by the Notifying Party do not include margins on the Long Term Service Agreements ("LTSA"). The Notifying Party provided the Commission with LTSA margin data only for the bids won, with a corresponding margin of [GE margins]%. Based on financial data, the

⁸⁴ In a Request for Information, where the Commission asked to define the data provided in the Commercial database (Annex 1219) and Pricing database (Annex 1220), as regards contribution margins, the Notifying Party mentioned that "*accurate figures are included in the Finsum of each project (please see GE pricing database)*" (GE's reply to the Commission's Request for Information No.8, 14.11.2014, question 19).

Notifying Party realises a [GE margins]% gross margin on the servicing of HDGTs.⁸⁵ Based on this data, the Commission would expect that including expected LTSA margins for the bids lost by the Notifying Party would lead to even higher percentage margins and thus oppose the assumption constituting a second-price auction framework.⁸⁶

- (104) The Commission considers that the available evidence indicates that in case of losing tenders the Notifying Party's margins are not low. They are actually rather close to its winning margins. This evidence contradicts the assumptions inherent in the second-price auction framework, and appears instead to be more in line with a first-price auction assumption. The evidence that losing margins are positive and close to winning margins also directly contradicts one of the implications of a the second-price auction framework and of the [Professor A] Submission, which predicts that losing margins should be zero, as discussed above in Section 2.3.

3.2.4. The Notifying Party's internal documents on bidding events show significant uncertainty during bidding processes

- (105) The Notifying Party's contemporaneous internal bidding documents suggest that the Notifying Party most likely faced significant uncertainty as regards both its winning prospects and its key competitive constraints during bidding processes.

3.2.4.1. Evidence from GE's [information on GE internal bidding reporting] is Consistent with a First-Price auction framework

- (106) The Commission has analysed supporting evidence in the Notifying Party's [title of internal GE document] documents.⁸⁷ These documents present internal evaluations of bids, [contents of internal GE documents].⁸⁸ In the same documents, the Notifying Party also attaches a probability of winning the respective tenders, based on the information available at the time.
- (107) The following table summarises the information contained in the [Title of internal GE document] available for tenders in the EEA for which the respective tender has not been closed at or before the point in time the document was produced and including the date of the firm bid submission [Contents of internal GE document], [Title of internal GE document] the date of the document, the number of competitors indicated in the document and the probability of winning as perceived by the Notifying Party at that time. In the last column of Table 3, the winner of the respective tender is reported based on the Notifying Party's bidding database submitted to the Commission.

⁸⁵ See Annex 1224.

⁸⁶ The Commission notes that it has not seen any significant evidence suggesting that in the case where the Notifying Party lost a bid it used a pricing strategy such that LTSA margins would be significantly lower than in tenders won by the Notifying Party, leading to a ratio between LTSA margins and HDGTs margins or overall equipment margins that is significantly lower in the case of losing.

⁸⁷ See GE's reply to the Commission's Request for Information No.18, 06.03.2015, question 8.

⁸⁸ For instance, in the [title and contents of internal GE documents that contain internal evaluation of bids].

Table 3: The Notifying Party's "[Title of internal GE document]" (Summary)

[table summarizing contents of internal ge documents and including information on name of projects, date of internal document, date of firm bid submission, number of perceived competitors, perceived probability of winning and winner]

Tender / Project	Date of "[Title of internal GE document]" document	Date of firm bid submission	Number of perceived competitors	Perceived probability of winning	Winner (date tender was closed)
[...]	[...]	[...]	[...]	[...]	[...] ⁸⁹
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]
[...]	[...]	[...]	[...]	[...]	[...]

(108) The table illustrates two main points. First, the [title of internal GE document] documents are typically produced well after the Notifying Party has submitted a firm bid, when bidders should have in principle good information on rival offers. This can be seen by comparing the second column ("Date of the [title of internal GE document] document") with third column ("Date of firm bid submission [contents of internal GE document]") of Table 3. Second, the Notifying Party's perceived probability of winning reported in the [title of internal GE document] does not converge towards 0 or 1 as it would be in a standard second-price auction with reliable information. There are instead a number of "intermediate" probabilities of winning shown in column 5

⁸⁹

See discussion of Abernethy in Section 4.1, footnote 147 of this Annex.

("Perceived probability of winning") of Table 3, that are well above 0 and well below 1. Further, for the majority of tenders presented in Table 3 one can observe a negative correlation between the number of perceived competitors and the perceived probability of winning which is a relationship one would expect in a first-price auction framework. [information on GE's internal assessment of winning probabilities].

- (109) The Commission considers that the evidence from the Notifying Party's [title of internal GE document], particularly when also seen in conjunction with the margins analysed in paragraphs (101) and (102), and with the evidence of different perceptions across customers and OEMs presented in Section 3.2.2, is more consistent with a first-price auction framework than with a second-price auction framework. In particular, the evidence on the positive losing margins along with a positive probability of winning expected by the Notifying Party appear to indicate that also in case of bids that were eventually lost by the Notifying Party, it faced a tradeoff between the level of its margin and its winning prospects when bidding in tenders. The existence of such a trade-off characterises a first-price auction environment, as set out in Section 2 of this Annex.

3.2.4.2. Other documentary evidence on bidding events from the Notifying Party also supports the assumptions made in a first-price auction framework

- (110) The Commission has also reviewed internal documentary evidence of the Notifying Party on specific bidding events. The purpose of this review was to identify the type of information available to the Notifying Party both during a tender procedure, and after the award of a tender.
- (111) This evidence suggests that GE was not always aware of the presence and / or identity of all participating rival OEMs in some tenders both when submitting a firm bid and at the time after the firm bid submission and before the final award of the tender. This is shown by the fact that in some of its bid review documents the Notifying Party perceived OEMs as competing bidders that actually did not participate in the respective tenders.⁹⁰ It is also shown by the fact that the Notifying Party did not mention nor account for other participating rival OEMs⁹¹ or apparently was not aware of the identity of its rival OEMs in some tenders.⁹² This is in line with the evidence presented in paragraphs (78) and (79) where it is shown that the Notifying Party has

⁹⁰ See Annexes 1336 – 1338 ([title of internal GE document and name of project]) and Annexes 1354 – 1360 ([title of internal GE document and name of project]). In the tender [name of project], the Notifying Party considered Alstom to be a competitor after having submitted a firm bid although according to the bidding database (which relies on an ex-post view) and Alstom's own information it has not participated in that tender. Notice that the same discrepancy appears when referring to the [title of internal GE document] (GE's reply to the Commission's Request for Information No.18, 06.03.2015, question 8), as here the Notifying Party also considered Alstom to be a competitor at the firm bid stage.

⁹¹ For the tender "[name of project]" (Annexes 1354 – 1360), the Notifying Party did not mention Alstom (as well as Ansaldo) as a competitor in the respective [title of internal GE document] of that tender (which was ultimately won by the Notifying Party's GT [GT frame]) although Alstom (and Ansaldo) were participating according to both the Notifying Party's bidding database and its respective [title of internal GE document].

⁹² See Table 3, column 4 ("Number of perceived competitors"), where the Notifying Party did not mention its rival OEMs for some tenders [names of projects] although it associated these tenders with winning probabilities below 1 and in some of these instances it turned out that a rival OEM ended up winning [names of projects].

incomplete information on the participation of rival OEMs even after a tender has been awarded or closed.

- (112) Moreover, the Notifying Party's internal documents also show that even in cases where the Notifying Party was apparently aware of a respective OEM participating in a tender, it did not seem to know the exact offerings of its competitors or was not sure about its rival's competitiveness in the course of the tender process.⁹³
- (113) Whilst the presence of uncertainty at the firm bid stage is to be expected (since this stage typically precedes the final stage of negotiation of a tender), the evidence from customers reviewed in paragraphs (46) and (53) indicates that the firm bid stage is important in determining the competitive outcome of a tender. The fact that this stage is characterised by considerable uncertainty therefore supports a first-price auction interpretation of the bidding process.
- (114) The Notifying Party's information on whether or not a shortlist stage is (will be) used by the customer as part of a given tender at the point in time it decides to submit a firm bid also appears to be imperfect. Some of the documentary evidence indicates that (i) the Notifying Party did not always know with certainty whether a shortlist stage will follow when it considered to participate (i.e. before submitting firm bid)⁹⁴ and (ii) that it did not appear to know at all in some instances (both before and after having submitted a firm bid) whether a shortlist stage will be part of the tender process.⁹⁵ As for the latter, the Commission identified instances where the Notifying Party either did not mention a shortlist stage before submitting a firm bid⁹⁶ or that it incorrectly considered that a shortlist stage would be part of a tender, although a shortlist stage was actually not used by the respective customer⁹⁷ (at least, when relying on the Notifying Party's bidding database as a reference point).
- (115) The Commission also notes that detailed information on rival bids and rankings often appears to be provided to participants in a tender ex-post (in so-called "Post Mortems") rather than ex-ante. The Notifying Party's documents include post-mortem assessments of several bids, with information on the technical performance of rival bidders (e.g. for the tenders [name of project]⁹⁸, "[names of project]"⁹⁹ and [name of project]¹⁰⁰), financial information on the value offered by each bidder (e.g. for the

⁹³ See Annexes 1321 – 1329 ([title of internal GE document and name of project]) and Annexes 1336 – 1338 ([title of internal GE document and name of project]).

⁹⁴ See Annex 1339, page 2 [names of projects]), where the Notifying Party considered that a shortlist stage is "*possible*" before submitting a firm bid, and GE's reply to the Commission's Request for Information No.20, 12.03.2015, question 7, doc " GE_0001702_GE - Strictly Confidential - Contains Business Secrets msg" (ID 2646-2705).

⁹⁵ See Annex 1349 ([names of projects]), Annexes 1354 – 1360 ([names of projects]) and Annexes 1321 – 1329 ([names of projects]) where before submitting a firm bid the Notifying Party seemed not to know (as it is not mentioned explicitly) that a shortlist stage would be part of the respective tender process.

⁹⁶ See footnote 95.

⁹⁷ See Annex 1343, page 2 ([title of internal GE document and name of project]).

⁹⁸ See GE's reply to the Commission's Request for Information No.20, 12.03.2015, question 7, doc "GE_0000626_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2646-964)).

⁹⁹ See GE's reply to the Commission's Request for Information No.20, 12.03.2015, question 7, doc "GE_0005943_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-4378)).

¹⁰⁰ See GE's reply to the Commission's Request for Information No.20, 12.03.2015, question 7, doc "GE_0000150_GE - Strictly Confidential - Contains Business Secrets.msg" (ID2646-206)).

tender [name of project]¹⁰¹ and for the [name of project]¹⁰² project [name of project]) and on the ranking of various bidders (e.g. for the tender [name of project]¹⁰³). This information can be used sometimes directly or indirectly to determine the ranking of bidders and therefore the identity of the runner-up bidder.

- (116) The Commission also considers that the information provided by Alstom on when it was the runner-up in specific tenders appears to be largely of an ex-post nature.¹⁰⁴ For example, for several tenders, Alstom stated that verbal feedback was provided by the customer that Alstom was evaluated at the second place.¹⁰⁵ In the case of [name of project], Alstom provided a letter from the customer¹⁰⁶ stating that the tender has been awarded to the Notifying Party and to [name of project] (an EPC), rather than to Alstom which finished second, based on price, contractual guarantees and cost of electricity. This is a clear example of ex-post information on runner-up being provided to Alstom.
- (117) Having access to runner-up information after the award is made does not support the assumption made in a second-price auction that bidders know their ranking and relative value vis-à-vis their competitors before the final award is made, and bid accordingly. The existence of information on the ranking of various bidders (in particular on the identity of the runner-up) ex-post but not ex-ante is consistent with the auction being best understood as a first-price environment.
- (118) Moreover, detailed post-mortem information does not always seem to be available to the Notifying Party. Whilst there are cases where customers apparently convey information on how they evaluated the Notifying Party individually and vis-à-vis its rivals from an ex-post view (as noted in paragraphs (115) and (116)), there is also evidence that for some tenders the information conveyed ex-post by customers on the Notifying Party's competitors is either significantly incomplete, e.g. *"We do not have the details as the customer did not share it"*¹⁰⁷ or hardly conveyed at all, e.g. *"[name of customer] is a 'non-talking' customer. Hardly any feedback was given and if so, only qualitatively."*¹⁰⁸
- (119) Some of the detailed information provided for some bids in post-mortem feedback meeting from customers does not seem to be available to GE during the bidding

¹⁰¹ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0014138_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-20964).

¹⁰² See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0003955_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-665).

¹⁰³ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0016580_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-25547).

¹⁰⁴ See GE's reply to the Commission's Request for Information No. 28, 21.04.2015, question 1.

¹⁰⁵ See GE's reply to the Commission's Request for Information No. 28, 21.04.2015, question 1, Excel file "Albany E-F-H projects lost by Alstom_24042015 (Q1b of RFI#28)_final.xlsx".

¹⁰⁶ See GE's reply to the Commission's Request for Information No. 28, 21.04.2015, question 1, doc "10-11-26_GuD_Zuschlagsbekanntmachung_ALSTOM.pdf".

¹⁰⁷ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0004849_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-2292).

¹⁰⁸ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0013252_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-19022). See also GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0003674_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-178).

process. The Commission notes that based on the analysis of internal documents the Notifying Party often appears to largely rely on historic and publicly available data rather than on the observations of the detailed offering proposed by its competitors in tenders, when trying to assess the likely competitiveness of their offers in the course of a tender process.¹⁰⁹

- (120) The evidence indicates that the Notifying Party appears to rely on the following type of evidence when bidding in tenders, or when deciding on how to improve its bids: (i) [type of information used by GE]¹¹⁰, [type of information used by GE]¹¹¹, [type of information used by GE]¹¹² and [type of information used by GE].¹¹³ This information appears to be used by the Notifying Party's to estimate its rivals' offers and corresponding prices in order to benchmark itself against its competitors.¹¹⁴
- (121) Even for those tenders where GE receives some feedbacks from customers after the submission of a firm bid and before the award of a tender, this information does not appear to be of a detailed nature.¹¹⁵ [example from GE's internal database].¹¹⁶ Similarly, for the [name of project] project in [location of project] the Notifying Party appeared to receive information on the provisional ranking of rival bids but no details on the offer made by rivals ([example from GE's internal database]).¹¹⁷ Moreover, there are also examples of tenders for which the Notifying Party characterised the information received by customers as limited ("*Limited direct feedback*") or classified

¹⁰⁹ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "Reply to RFI #20 - listCD - GE_0002869_GE - Strictly Confidential - Contains Business Secrets" (ID 2646-4597) and doc "Reply to RFI #20 - listCD - GE_0001208_GE - Strictly Confidential - Contains Business Secrets" (ID 2646-2080).

¹¹⁰ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, where, e.g. for the tender [examples of information used by GE to evaluate bids].

¹¹¹ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "Reply to RFI #20 - listCD - GE_0001208_GE - Strictly Confidential - Contains Business Secrets" (ID 2646-2080), where it is shown that data on some parameters of the rivals' offerings, which is found by the Notifying Party on the internet accessing publicly available websites, was apparently used to calibrate and estimate competitors' prices.

¹¹² See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0014967_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-22558).

¹¹³ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0001478_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2646-2417), doc "Reply to RFI # 20 of 12/03/2015 - ListUSB - GE_0007043_GE - Strictly Confidential - Contains Business Secrets" (ID 2709-7544), doc "GE_0001702_GE - Strictly Confidential - Contains Business Secrets msg" (ID 2646-2705), and Annexes 1321 – 1329, Annex 1332 and Annex 1336 – 1338 ([information on GE reporting and name of project]).

¹¹⁴ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "Reply to RFI #20 - listCD - GE_0002869_GE - Strictly Confidential - Contains Business Secrets" (ID 2646-4597).

¹¹⁵ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "Reply to RFI # 20 of 12/03/2015 - ListUSB - GE_0007043_GE - Strictly Confidential - Contains Business Secrets" (ID 2709-7544) and doc "GE_0001478_GE - Strictly Confidential - Contains Business Secrets msg" (ID 2646-2417).

¹¹⁶ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0000642_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2646-983).

¹¹⁷ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0001702_GE - Strictly Confidential - Contains Business Secrets msg" (ID 2646-2705) and doc "GE_0003955_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-665).

the respective customer as being "*not transparent*".¹¹⁸ Therefore, whilst there appears to be no general pattern on the nature and availability of information on rival bidders during the course of a tender, the level of detail that is typically available to GE does not appear to meet the strict information assumptions that are made in a second-price auction framework. This conclusion is consistent with the rest of the evidence set out in this Section of the Annex.

- (122) In addition, as a general matter, the reliability on information for those cases where the Notifying Party received apparently more detailed information on rival OEMs is questionable, since customers may not be able to credibly commit to provide reliable feedback to competing bidders. This is in line with the evidence submitted by Siemens (paragraph (63)). The Commission concludes on balance that the Notifying Party does not have access systematically to detailed information on rival bids during the course of tender procedures. It therefore seems to often rely on information that is historic (e.g. from past tenders) and that is publicly available. This is in line with information provided by the Parties' main competitors, Siemens and MHPS (as reviewed in Section 3.2.1).

3.3. Summary and implications for the relevant auction framework

- (123) The Commission has reviewed several types of evidence in order to establish the most appropriate auction framework that should be employed to characterise tenders for HDGTs. The evidence considered by the Commission supports the following conclusions:
- a. All stages of the bidding process (including the firm bid stage) are important to determine the outcome of a bid, and that a further narrowing down of competing bidders after the initial bid does not always take place. Given the sealed-bid nature of firm bids, this evidence supports the use of a first-price auction framework.
 - b. Competing bidders appear to have significant uncertainty on the actual bidding behaviour of their rivals during tender processes, including evidence on the value attributed by customers to the product characteristics of competing offers. This follows from the fact that customers do not provide detailed information to competing bidders, as confirmed also by competing OEMs (Siemens and MHPS in particular).
 - c. There is evidence of significant uncertainty on some of the key parameters associated with any given tender (i.e. the number and identity of firm participants, the existence and nature of a shortlist stage, the identity of the runner-up bidder). In particular, evidence from competing OEMs and from customers shows that the evidence on the identity of the runner-up bidder provided by the Parties is not reliable and subject to significant errors.
 - d. The evidence of GE's margins when it loses tenders is consistent with the rest of the evidence on the fact that it faces significant uncertainty during a tender process

¹¹⁸ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "Reply to RFI # 20 of 12/03/2015 - ListUSB - GE_0007043_GE - Strictly Confidential - Contains Business Secrets" (ID 2709-7544), pages 2, 6, 7 and 10.

on its competitive position in relation to rival bidders. Under a second-price auction framework with reliable information on the offers made by rival bidders, losing margins should be very low. This prediction is not supported by the data.

- e. Finally, the Notifying Party's internal documentary evidence on individual bids reveals the presence of significant uncertainty during the bidding process and typically the lack of detailed technical and commercial information on rival bids.
- (124) The Commission concludes that a first-price auction environment where bidders compete under conditions of imperfect information provides a more appropriate description of tenders for HDGTs, relative to the alternative second-price auction environment with reliable (e.g. "perfect") information that has been put forward by the Notifying Party, most notably in the [Professor A] Submission, but also more generally in the RBB and CRA Submissions. The implications of adopting a first-price auction framework as opposed to a second-price framework are set out in Section 2 of this Annex.

3.4. The Notifying Party's criticisms in the Response to the SO do not undermine the Commission's conclusions

- (125) In the Response to the SO, the Notifying Party's comments can be summarised as follows:

- a. As regards tenders in the EEA, the Notifying Party argues that it has provided reliable information on the identity of shortlisted bidders and runner-up bidders since: (i) GE's views when Alstom is shortlisted and when Alstom is the runner-up bidder are confirmed by Alstom, (ii) when comparing to information provided by customers, GE's views on the presence of a shortlist stage and on the identity of runner-up bidders are correct almost all of the time;¹¹⁹
- b. Among the [number of tenders] competitive tenders in the Large segment, [60-70]% ([number of tenders] competitive tenders) either had a formal shortlist stage or an identified runner-up bidder according to GE and Alstom, and this figure grows to [80-90]% ([number of tenders] competitive tenders) in the EEA;¹²⁰
- c. Data on winning and runner-up bidders are the most relevant data to assess the competitive effects of the merger, irrespective of the format of the auction used by customers.¹²¹
- d. The Commission disregards data on shortlisted and runner-up bidders in its analysis.¹²²

- (126) In the following, the Commission assesses each of these points.

- (127) It should be noted that the Notifying Party did not comment on most of the evidence presented above, in Section 3. In particular, the Notifying Party did not contest the

¹¹⁹ See Response to the SO, Annex 4, Section 3.

¹²⁰ See Response to the SO, Annex 1, Section 1.

¹²¹ See Response to the SO, Annex 1.

¹²² See Response to the SO, Annex 4, Section 3.

main findings on: (i) the qualitative evidence on uncertainty during the bidding process, which is consistent with a first price auction framework, (ii) the importance of competitive interactions at the firm stage, (iii) the high level of the observed losing margins, which contradicts in particular the second-price auction framework and the implications of the [Professor A] Submission.

3.4.1.1. The claims of the Notifying Party that there is limited uncertainty on runner-up data for EEA tenders are not well substantiated

- (128) As regards the first claim on the reliability of shortlist information on EEA tenders, the Notifying Party claims that out of the [number of tenders] tenders in the EEA in which Alstom participates, there are [number of tenders] cases where GE considered that Alstom was formally shortlisted and [number of tenders] cases where GE considered that Alstom was not formally shortlisted. According to the Notifying Party, Alstom corroborated this information.
- (129) The Commission does not accept the claim made by the Notifying Party for the following reasons.
- (130) First, the Commission notes that it was not able to replicate the underlying statistics that would justify this claim made by the Notifying Party.¹²³ In the bidding data provided to the Commission,¹²⁴ Alstom participates in [number of tenders] tenders in the EEA for the period 2009-2014 ([number of tenders] participations for Large tenders, including the project [name of project] which is not yet awarded, and [number of tenders] participations for Very Large tenders), not in [number of tenders] tenders as claimed by the Notifying Party.
- (131) Second, when Alstom provided its bidding data to the Commission on 26 November 2014, it was mentioned that the EEA data provided were already harmonized between GE and Alstom.¹²⁵ Therefore, it is not possible for the Commission to determine whether GE's views on the presence of Alstom as a shortlisted bidder in EEA is corroborated by Alstom, since Alstom did not provide its own bidding data on EEA tenders. The Commission notes that Alstom did not provide any additional information on its presence as a shortlisted bidder for EEA tenders.

¹²³ The Notifying Party submitted the underlying data and codes to replicate its economic analysis on 01/07/2015 (see DOC ID 4817). While the Notifying Party provided the necessary data and codes to replicate its econometric analysis (discussed in Section 4.4.11), it did not provide the data and codes allowing the replication of its specific claim on shortlist and runner-up data for EEA tenders. According to the best practices on the submission of economic evidence ("*Best practices for the submission of economic evidence and data collection in cases concerning the application of Articles 101 and 102 TFEU and in merger cases*", European Commission, DG Competition), paragraph 32, "*Reports which do not allow for replication [...] will receive less consideration and are consequently unlikely to be given much weight*".

¹²⁴ The final dataset used by the Commission and the underlying codes were made available to the Notifying Party as part of the access-to-file procedure. See email sent by the Commission to the Notifying Party on 15/06/2015, DOC ID 4532 and DOC ID 4533.

¹²⁵ See email dated 26/11/2014 (DOC ID 546): "*Please note that the bidding information does not include EEA opportunities. Bidding information regarding the EEA opportunities is included in the "GE bidding data" and it represents the consolidated view of the parties*".

- (132) For the reasons mentioned above, the Commission considers that the claim of the Notifying Party that GE has a correct perception on the presence of Alstom as a shortlisted bidder in the EEA is not substantiated.
- (133) The Notifying Party also claims that for EEA tenders, when comparing with information provided to the Commission by customers, GE's views on the presence of a shortlist stage and on the identity of runner-up bidders are correct almost all of the time.
- (134) First, the information provided by customers to the Commission was made available to the external economists of the Notifying Party in a data room, and the Commission notes that the data room report submitted by the Notifying Party makes no reference to a comparison of runner-up information between customers' data and GE's bidding data. Therefore, the Notifying Party did not provide any underlying evidence to justify its claim.
- (135) Second, in Section 3.2.2.2(c), the Commission has compared runner-up information provided by the merging parties, competing OEMs, and customers on a worldwide basis excluding China. The evidence presented in Section 3.2.2.2(c) shows the high uncertainty characterising runner-up data. In addition, in order to assess the claim of the Notifying Party that runner-up information is accurate specifically for EEA tenders, the Commission has repeated the same exercise for EEA tenders.
- (136) Customers provided information on 8 EEA tenders and 15 non-EEA tenders. In 4 tenders in the EEA, customers mention that Alstom is the runner-up bidder. However, both GE and Alstom were not aware of this. In addition, in 4 EEA tenders, customers consider GE as being the runner-up bidder, and GE was aware of being the runner-up in only one of these tenders. Therefore, the evidence submitted by customers shows that there is significant uncertainty on the identity of the runner-up bidders also for the EEA tenders, contrary to the claim of the Notifying Party.
- (137) Third, among the 31 tenders where competing OEMs provided runner-up information (see also Section 3.2.2.2(c)), there are 5 tenders in the EEA: Alstom is mentioned as the runner-up in 3 tenders, GE is mentioned as the runner-up in 2 tenders. While GE is aware that it is the runner-up bidder for the corresponding two tenders, neither Alstom nor GE are aware that Alstom is the runner-up bidder in the three EEA tenders indicated by competing OEMs. Therefore, evidence on runner-up data provided by competing OEMs also show the uncertainty on the identity of the runner-up bidders for the EEA tenders.
- (138) This evidence confirms that, similarly to tenders at a worldwide level, runner-up data on EEA tenders is also characterised by a high uncertainty.

3.4.1.2. The approach of the Notifying Party on runner-up and shortlisted bidders does not contradict the evidence on the uncertainty of runner-up data and of the nature of the shortlist stage, and is not in line with its own economic submission

- (139) The Notifying Party claims that among the [number of tenders] competitive tenders in the Large segment, [60-70]% ([number of tenders] competitive tenders) either had a formal shortlist stage or an identified runner-up bidder according to GE and Alstom,

and this figure grows to [80-90]% ([number of tenders] competitive tenders) in the EEA.¹²⁶ On this basis, the Notifying Party suggests that the competitive assessment should exclusively focus on runner-up data, as in the CRA Submissions and Annex 1 of the Response to the SO.

(140) The Commission was able to broadly replicate these figures:

- a. Among the [number of tenders] competitive tenders in the EEA in the Large segment, [number of tenders – 60-70%]) tenders have information on the identity of at least two shortlisted bidders, and [number of tenders – 40-50%] tenders have information on runner-up bidders. By combining the two types of information, [number of tenders] tenders [80-90]% have information either on runner-up bidders or shortlisted bidders.
- b. On a worldwide level, 50 Hz, excluding China, among the [number of tenders] competitive tenders in the Large segment, [number of tenders] tenders ([40-50%]) have information on two shortlisted bidders or more, and [number of tenders] tenders ([50-60]%) have information on runner-up bidders. By combining the two measures, [number of tenders] tenders ([60-70]%) have information either on shortlisted bidders or on runner-up bidders.

(141) The Commission however disagrees with the claims made by the Notifying Party for the following reasons.

(142) First, the figures mentioned by the Notifying Party do not contradict the evidence presented above on:

- a. The high uncertainty characterising the accuracy of runner-up data (see Section 3.2.2.2(c) and paragraphs (135)-(138)), and
- b. The different understandings on the nature of the shortlist stage between the merging parties, the main competitor Siemens (which states that shortlisting does not result in a further narrowing down of the number of bidders), and customers (who state that often more than two firms are shortlisted, and whose data show also that shortlisting does not often result in a further narrowing down of the number of bidders) (see Section 3.2.2.2(a) for further details).

(143) Second, an exclusive focus on runner-up data for the competitive assessment would be justified if information on runner-up bidders was known accurately ex ante before the firms submit their final bids (see also paragraph (94)). The fact that a runner-up was identified ex-post does not mean that this information was available ex-ante at the time of bidding. As discussed in Section 3.2.2.2(c), the uncertainty characterising ex-post data on runner-up bidders suggests that OEMs do not always have accurate information ex-ante when submitting their bids.

(144) Third, in order to justify the exclusive focus on winner and runner-up bidders for measuring the merger effect, the Notifying Party has submitted only one formal economic model (the [Professor A] Submission). This model argues that focusing on

¹²⁶ See Response to the SO, Annex 1, Section 1.

runner-up bidders is justified only if there is also a shortlist stage, during which it is assumed that information is revealed on competing bidders and on the customer' valuations.¹²⁷ Even if one were to accept the validity of the [Professor A] model's assumptions (which the evidence discussed in Sections 3.1 and 3.2 contradicts), the [Professor A] model suggests that focusing on runner-up information would only be relevant for those tenders where there is also a shortlist stage. However, information on runner-up tenders with a shortlist stage concerns only a minority of tenders (less than [40-50% - number of tenders] competitive tenders at worldwide level 50Hz excluding China, and around [40-50]% of EEA tenders).¹²⁸ Therefore, even if one accepted that the assumptions made in the [Professor A] model were valid, the model would only apply to a minority of the relevant tenders. The approach of the Notifying Party to combine both the data on runner-up and shortlisted bidders (see paragraph (139)) is therefore not consistent with its own economic submission (even assuming that the assumptions of the [Professor A] model were valid).

3.4.1.3. The relevance of runner-up data for the competitive assessment depends on the auction framework

- (145) The Notifying Party also argues that data on runner-up bidders is the relevant data to assess the competitive effect of the merger, irrespective of the format of the auction used by customers.¹²⁹
- (146) The Commission disagrees with the Notifying Party for the following reasons.
- (147) First, focusing exclusively on runner-up data (as it is done in the CRA Submission 1 and in the CRA Submission 2) would be justified under a second-price auction environment, where OEMs have perfect information on the offer of competing OEMs and customers' valuations (see Section 2.3). As discussed above in Section 3.1 and 3.2, the evidence points to a situation of imperfect information during the auction process, and therefore it contradicts the second price auction environment. The Commission also notes that the Notifying Party agrees with the evidence that the level losing margins contradicts a second-price auction environment.¹³⁰ Therefore, a second-price auction environment does not seem justified. This evidence also contradicts the claim

¹²⁷ See paragraph (26) for a description of the [Professor A] Submission.

¹²⁸ As discussed in Table 1, runner-up information is available for [number of tenders – percentage of tenders] competitive tenders). Among these [number of tenders] tenders, [number of tenders] tenders have a shortlist stage with two or more shortlisted bidders: 18 tenders with two shortlisted bidders, and [number of tenders] tenders with three shortlisted bidders. In addition, in the bidding data provided by the Notifying Party, there are five tenders with no information on runner-up bidders, but with only two shortlisted bidders. For these five tenders, the shortlisted bidder that lost is therefore considered as the runner-up bidder as well. Therefore, the economic framework proposed by the Notifying Party would apply to a maximum of [number of tenders] tenders, that is only [30-40% - number of tenders] competitive tenders in the Large segment, including [number of tenders] tenders in the EEA out of [number of tenders] competitive tenders (that is [40-50]% of EEA tenders).

¹²⁹ See Response to the SO, Annex 1, Section 1: *"In fact, we made no assumption about the format of the procurement. Rather, our fundamental point was that in the majority of tenders, especially in the EEA, GE and Alstom have good information about the tenders for which they are the winning and runner-up bidders"*.

¹³⁰ See Annex 1 of the Response to the SO, page 6: *"Annex 1 establishes this in a rather convincing manner in Section 3.2.4, where Annex 1 observes that losing bidders do not place bids at cost, as would be implied by the second-price descending price auction format"*.

of the Notifying Party in the RBB Submission 3 that HDGTs tenders are best considered as open auctions.¹³¹

- (148) Second, this evidence also contradicts assumptions made in the [Professor A] model, which is the only economic model submitted by the Notifying Party to justify the exclusive focus on runner-up data. The [Professor A] submission effectively models the auction as a dynamic second-price environment (as discussed in paragraph (26)), and it assumes that bidders have perfect information on rival offers and customer valuations prior to making their final bid. Therefore the [Professor A] model also implies that losing bidder bid at cost. These assumptions are not supported by the evidence, as shown extensively in Section 3.1 and 3.2. The evidence therefore contradicts the [Professor A] model and more generally the assumptions made in the CRA submissions that bidders have good information on rival offers and on customer valuations.^{132 133}
- (149) Third, the Commission is not aware of auction models other than the second-price auction (or descending auction format) which would deliver the prediction that only the behaviours of the winner and of the runner-up bidder matter for the determination of the outcome of the auction, and that other bidders have no impact on the price formation process. The Notifying Party has not presented any such auction model, with the exception of the [Professor A] model which is a variant of the descending auction format, as has been explained in Section 2.3.

¹³¹ See RBB Submission 3, page 19, footnote 20 ("*Such a bidding process is better characterised as a so-called English or open bid auction*"), and page 20 ("*the key constraint that determines the winning price is competition from the runner-up*").

¹³² See CRA Submission 1, footnote 14: "*Here we are taking the approach that we believe is much more consistent with the evidence that bidders in HDGT tenders usually have quite good information about who the other finalists are in these very large and visible transaction*". The CRA Submission 1 also refers to the U.S. Horizontal Merger Guidelines, Section 6.2. The Commission notes that this section of the U.S. Guidelines mentions that only winner and runner-up matters for the competitive assessment when there is ex ante information on who are the first and second best bidders: "*when the merging sellers are likely to know which buyers they are best and second best placed to serve, any anticompetitive unilateral effects are apt to be targeted at those buyers; when sellers are less well informed, such effects are more apt to be spread over a broader class of buyers*". In the context of the CRA Submissions, that would imply that the bidders have good information on rivals offers and customers' valuations in order to know ex ante who are the first- and second- best bidders.

¹³³ In Annex 1 of the Response to the SO, the Notifying Party claims that it did "*not assert [...] that HDGT customers structure their procurements in the form of second-price descending auctions. Nor did the [Professor A] Submission make such an assertion*". The Commission disagrees with this statement for the following reasons. First, in the response to 6.1.c Decision, the Notifying argues that HDGTs tenders are better characterised by an open auction (see footnote 20 of the Annex of Response to the 6.1.c: "*Such a bidding process is better characterised as a so-called English or open bid auction*"), which is actually equivalent to a second-price auction (see Section 2.3). Second, the RBB Submission 3, the CRA Submission 1, and the [Professor A] Submission mention that, for the tenders where GE and Alstom are the winning and runner-up bidders, the merger is unlikely to be harmful if a third supplier provides a good alternative, namely Siemens (see pages 19 and 20 of RBB Submission 3, see page 3 of the [Professor A] Submission, and pages 6-8 of the CRA Submission 1). This is typically the result of a second price auction format (see Section 2.3). Third, the [Professor A] Submission uses a second-price auction format in the shortlist stage of tenders, where shortlisted OEMs learn perfectly about the customer's preferences over the remaining competing products. This assumption on the information available to rival OEMs is typical of a second price auction format (see Section 2.3). It implies that before submitting its final bid, the first best firm will adapt its bidding behaviour by offering a bid designed to just outbid the second-best firm (see Section 2.3).

- (150) Fourth, under an economic framework where only runner-up data would matter for the competitive assessment and given that smaller OEMs like Alstom, MHPS, and Ansaldo are not often the runner-up bidder to GE according to the data provided by GE, we would expect that their participations are not associated with a lower GE's probability to win tenders and with lower GE's margins.¹³⁴ However, in Section 4.4.4 and 4.4.6 of this Annex, the Commission's econometric analysis shows that the participations of Alstom and MHPS are associated with a lower GE's probability of winning tenders and with lower GE's margins. This evidence shows that focusing exclusively on runner-up data for the competitive assessment of the transaction is therefore not appropriate.
- (151) Fifth, as discussed in Section 2 in the review of non-coordinated effects in auction environments¹³⁵, in a situation characterised by uncertainty on the quality of rival offerings and on the customer valuation for each of the products offered, the competitive constraint faced by each bidder is determined by the ex-ante probability that any of the rival bidders may make more attractive offers to the buyer, and thus wins the auction. The fact that multiple bidders participate by paying a non-negligible cost means that ex-ante (i.e. at the time when they bid) the bidders believed that they had a positive probability of winning. Therefore, facing more than one rival bidder typically increases the ex-ante probability that the buyer will prefer a rival offer, and therefore it increases the competitive constraint on any given bidder. The fact that only one bidder is ex-post the runner-up in a tender does not mean therefore that only that bidder represented a competitive constraint on the winning bidder.
- (152) Sixth, the Notifying Party also did not explain why the competitive assessment should focus exclusively on runner-up bidders or shortlisted bidders and ignores the participations of OEMs at the firm stage (which requires significant commitment from the OEMs, as described by the Notifying Party in paragraph (39)). Besides the fact that a shortlist stage does not happen in the majority of tenders (see Section 3.1), the Notifying Party has also not explained convincingly why buyers would face incentives to shortlist only two bidders and to effectively commit not to consider offers by any other bidder in a situation where the losing bidder is making a positive margin (as the Notifying Party accepts in its Response to the SO). If the runner-up bidder (or second-ranked bidder) is making a positive margin at the losing bid, then other bidders should be in a position to undercut it and exercise additional competitive pressure on the winning bidder, over and above the competitive constraint exercised by the second ranked bidder. Buyers would in turn face incentives to consider offers by bidders other than the first and second ranked bidders, in order to benefit from additional competitive pressure. The prediction that only the constraint exercised by the second ranked bidder matters in the determination of the winning bid is therefore closely linked to the assumption that the runner up bidder is offering its product at cost, and therefore exercising the maximum possible constraint on the winning bidder. If this assumption does not hold (which it does not in the case of HDGT tenders), the

¹³⁴ Based on Table 1B of Annex 1 to the Response of the SO, Siemens is the main runner-up to GE. Indeed, Siemens is runner-up bidder to GE in [number of tenders] tenders awarded to GE. In contrast, MHPS is the runner-up bidder to GE in [number of tenders] tenders, Alstom in [number of tenders] tenders, and Ansaldo in [number of tenders] tenders.

¹³⁵ The Notifying Party has not contested or commented on the content and conclusions of this section.

prediction that only the runner-up bidder (or the other shortlisted bidders) matters also does not hold.

3.4.1.4. The Commission has still analysed data on shortlisted and runner-up bidders

- (153) The Notifying Party claims that the Commission disregards data on shortlisted and runner-up bidders.¹³⁶
- (154) The Commission disagrees with the Notifying Party for the following reasons.
- (155) First, the Commission considers information on shortlisted bidders. As discussed in the SO and in Section 4.3.4 of this Annex, the analysis of shortlisted bidders supports the findings based on the analysis of participations at the firm stage.
- (156) Second, while the Commission is concerned about the accuracy of the runner-up information (see Section 3.2.2.2(c)) and is extremely cautious about drawing any inference on this basis, it has still analysed runner-up data in Section 4.5, after correcting for methodological issues in the CRA Submission 1. Moreover, the Commission considers that its competition concerns are confirmed also if, in the alternative, one examines runner-up data (see Section 4.5).
- (157) Third, even when analysing bidding data with a first-price auction framework, the Commission does not assume that all participants have the same impact on the outcome of tenders and on GE's behaviour, as suggested by the Notifying Party in Section 2 of Annex 4 of the Response to the SO.¹³⁷ The identity of each bidder still matters and is incorporated in the analysis in Sections 4.2, 4.3 and 4.4. Therefore, the Commission's analysis takes into account that each participant may exert a different competitive constraint on GE's bidding behaviour. For example the empirical analysis looks at the average impact that a participants has on outcome, for example on GE's probability to win tenders and on GE's margins.

4. QUANTITATIVE ANALYSIS OF BIDDING DATA FOR LARGE HDGTs

4.1. Framework

- (158) In order to assess the intensity of competition between the Parties and the importance of Alstom as a competitive force in the market, the Commission conducted a series of statistical analyses based on bidding data. The bidding data cover all tenders with an output above 90 MW closed between 2009 and 2014 in countries with a 50 Hz frequency. In this section of the Annex, the Commission considers the evidence from bidding data for Large HDGTs (as defined more precisely below).
- (159) The analysis uses the bidding dataset provided by the Notifying Party on 14 January 2015. The Commission made some corrections for some variables related to Alstom (namely its participation in some tenders and its presence as a shortlisted bidder for other

¹³⁶ See Response to the SO, Annex 4, Section 3.

¹³⁷ In Section 2 of Annex 4 of the Response to the SO, the Notifying Party suggests that the analysis of the firm stage ignores that different competitors can exert different levels of competitive constraints.

tenders), by using another dataset provided by the Parties on 28 January 2015.^{138 139} Additional corrections were made for Alstom's participations and the Notifying Party's participations in tenders after the Reply to Request for Information 22 (dated 17 March 2015).¹⁴⁰ The results reported below are based on the bidding data provided by the Parties, as so corrected.

- (160) In addition to the bidding data provided by the Parties, the Commission has also collected data from competing OEMs (Siemens, MHPS and Ansaldo¹⁴¹) in order to reconstruct the participations of all OEMs in tenders. The Commission describes below how the results of this market reconstruction impact the findings based on bidding data provided by the Parties.¹⁴²
- (161) The Commission excluded China from the analysis of bidding data, in line with the definition of the relevant geographic market set out in the main body of the Decision. The Commission considers this approach to be appropriate also for the analysis of the bidding data for the following reasons:
- a. First, until recently China was not an addressable market for Alstom's GT26, due to the lack of a local partnership. In fact, Alstom entered into a cooperation arrangement with Harbin Turbine Corporation for the sales of its Medium HDGT (GT13E2) only in 2012 and since July 2014 it has a licensing agreement with Harbin for the manufacture of parts of the HDGT. As for Large HDGTs, Alstom entered into a cooperation agreement with Beijing Beizhong for the GT26 model only in [date] and at the time of notification Alstom had submitted only one joint tender for the GT26 in China and had not yet registered any order. In its internal review of the Large HDGT platform, Alstom considers Chinas as "not addressable".¹⁴³ Therefore, due to entry barriers in China, the tenders that took

¹³⁸ See GE's reply to the Commission's Request for Information No. 13, 27.01.2015, question 3, Excel file "I - Consolidated bid data - GE data with Alstom on own bids and SL_CONFIDENTIAL.xlsx".

¹³⁹ See also "Accompanying user guide: conducting the bidding analysis", RBB Economics, 27 January 2015.

¹⁴⁰ In the Request for Information No. 25, 27.03.2015, question 6, the Commission has asked the Parties to provide documents that justify the changes in the bidding data. As regards Alstom, no document was provided for the projects with [project IDs], where Alstom has changed its firm participation from "Yes" to "No firm bid". As regards the Notifying Party, for the project with [project ID], it has changed its data from "unknown" to [name of GT frame]. The Notifying Party mentioned that "*GE has limited information about this project. There is no information available on [neame of interna GE database] or any other GE database, GE has not been able to retrieve any documentation relevant to this project, and the employee involved in this bid is no longer with the company. GE estimates that it offered the [name of GT frame] GT unit.*" (GE's reply to the Commission's Request for Information No. 25, 27.03.2015, question 6). The Commission has adopted a conservative approach by considering these changes in the bidding data, even though the Parties did not provide documents as a justification.

¹⁴¹ Ansaldo did not provide data for 2009. However, this is not likely to affect the results since Ansaldo has participated only in one Large competitive tender in 2009, based on bidding data provided by the Notifying Party.

¹⁴² For some tenders, while the Notifying Party reported competitors as being the winners, this information was not confirmed by competitors. For those tenders, the Commission has first checked whether they were reported in the McCoy database and who was listed as being the winner. Tenders that were not mentioned in McCoy database were discarded by the Commission.

¹⁴³ See Annex 1586, page 54, where Alstom states that it has "*no access*" to China.

place in China are not informative on the nature of the competitive interactions between the merging parties during the relevant time period.

- b. Second, price discrimination is quite common in bidding markets (as reviewed in Section 2 of this Annex) since suppliers can adjust their bidding behaviour on the basis of information about each customer's needs and competitive options. With price discrimination, competitive harm is more likely to affect customers that consider the Parties as potential alternatives (e.g. "targeted customers"). Competition in China is therefore not informative about potential competitive harm for those customers. Excluding China is also consistent with the discussion of geographic market definition in the Decision.
 - c. Third, the Commission considers that excluding China does not affect the representativeness of the rest of the 50Hz sample since all OEMs participate and sell gas turbines outside China. Any additional credibility obtained by OEMs as a result of their track record in China should be already reflected in their performance in regions outside China.¹⁴⁴ Moreover, there are other indications that customer requirements in China are different than those in Europe, in particular in relation to operational flexibility. For example, whilst Alstom considers flexibility as the number 1 requirement in Europe, flexibility does not feature in its assessment of requirements in China.¹⁴⁵
- (162) The definition of the relevant geographic market included in the main body of the Decision also excludes Iran from the 50Hz regions (see Section 7 of the Decision for further details on Iran). There are no Large projects for combined cycle applications in Iran in the bidding data provided by the Notifying Party. As such, the bidding analysis reported below automatically excludes Iran.
- (163) The data shown in the rest of this Annex will therefore be presented for two distinct geographical segments: "Worldwide without China", and "EEA". The segment "Worldwide without China" also excludes Iran (since the bidding data does not include Iran), and is therefore in line with the definition of the relevant geographic market employed in the main body of the Decision. This segment is defined to only includes 50 Hz regions, in line with the definition of the relevant geographic market employed in the main body of the Decision. We denote this segment as "Worldwide without China" for simplicity throughout the rest of the Annex.
- (164) In its bidding analysis, the Commission also discusses the importance of tenders taking place in Japan where appropriate, given that Japan is a home-market for MHPS and Alstom did not participate for tenders in Japan in the Large segment for the period 2009-2014. In fact, according to Alstom's installed base database there is only one HDGT of Alstom operational in Japan (a GT26), which was sold in 2001.

¹⁴⁴ The Notifying Party argues that including tenders in China is important in order to assess "*the competitive constraint that MHI provides when bidding against Siemens and GE*" (see RBB Submission 1, RBB Submission 3) and that "*The fact that MHI has been able to win more 50Hz Chinese projects than either Siemens or GE is relevant to, and supports, its effectiveness as a 50Hz competitor also for European customers*" (see RBB Submission 4).

¹⁴⁵ This evidence is reviewed further in the main body of the Decision, in the discussion of demand for HDGTs.

- (165) The Commission focuses its analysis on Combined Cycle (CC) projects, which represent around 90% of the projects in the Large segment. This is also consistent with the economic submissions made by the Notifying Party.
- (166) All projects where the variable "WinningOEM" was missing, "cancelled", or "pending" were discarded. The Commission considered joint-tenders as being a single project.¹⁴⁶ However, in addition to the joint-tenders considered by the Notifying Party, the Commission has also considered the projects [number of projects] as being a joint tender. The Commission's approach is conservative since these two projects were won by Alstom. The Commission also took a conservative approach by not considering the project with [project ID], which was awarded to Alstom with its GT13 model with an output at 203 MW.
- (167) The Commission notes that the Notifying Party considers the project [name and location of project] as being awarded to MHPS. However, from public information source, it is unclear whether this project has been awarded.¹⁴⁷ The Commission included the project [name of project] in the analysis of bidding data provided by the Notifying Party to provide a conservative view of the bidding evidence (since including this project increases the presence of MHPS, in particular in the EEA where it represents its only competitive win). The Commission also notes that the award of project [name project] to MHPS reflects particular features which do not appear to be representative of other customers in the EEA (e.g. [name of customer] desire to "derisk" its position with MHPS).¹⁴⁸ As regards the market reconstruction, the project [name of project] is treated based on data provided by MHPS.
- (168) The Commission has also excluded the project [name project] won by Alstom. While this project was ultimately cancelled, Alstom was mentioned as the winner in the bidding data provided by the merging parties (that is, once the competitive process was over, Alstom was the selected OEM, before the cancellation of the project). In its Reply to Request for Information No. 32¹⁴⁹ Alstom argues that it was not able to resolve commercial and technical issues with the customer and therefore Alstom could not be considered as the winner. Alstom mentioned that MHPS would have been selected as the winner if the project was not cancelled. However, the Commission notes that the press release announcing Alstom's selection¹⁵⁰ is more recent than the press release announcing MHPS's selection¹⁵¹. In any event, given the uncertainty on this project, the Commission has adopted a conservative approach by excluding it from the bidding data (and thus decreasing the number of Alstom wins in the sample).

¹⁴⁶ See RBB Submission 1, Annex A.1. A joint tender refers to a project where multiple power blocks were tendered together and covered by a single proposal. In other words, these linked projects could not be evaluated separately by the customer and were essentially a single competition.

¹⁴⁷ See: [information on project].

¹⁴⁸ In an email sent by [name of employee and quote from internal GE document] (GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0014138_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-20964)).

¹⁴⁹ See GE's reply to the Commission's Request form Information No. 32, 05.05.2015, question 1.

¹⁵⁰ See confidential Annex 32.01.03, dated 17 May 2013.

¹⁵¹ See confidential Annex 32.01.04, dated 20 March 2013.

- (169) In an email sent to the Commission on 29 May 2015¹⁵², Alstom mentioned that, in the bidding data provided by the Notifying Party, there were two observations with an erroneous coding of Alstom's firm participation. This concerns the projects with [project ID]: "As for the project [name of project], Alstom clarified that it submitted a firm bid" and "This project was (erroneously) attributed [project ID] instead of [project ID] as in GE's bidding data". The Commission has taken into account this change in the analysis of bidding data.
- (170) Alstom sent also a letter to the Commission on 23 June 2015 (after the SO was issued) mentioning some changes in the bidding data for its participations.¹⁵³ In its analysis, the Commission has used bidding data provided by the Notifying Party based on its competitive intelligence and perception on who participated among Siemens, Alstom, MHPS, and Ansaldo. The Commission notes that these changes mentioned by Alstom were not implemented in the economic submissions made by the Notifying Party in the Response to the SO. Therefore, in order to have a comparable framework with the Notifying Party and to be able to assess its arguments, the changes mentioned in the Alstom's letter are not implemented in the analysis presented below.
- (171) In any event, the Commission considers that the changes to the bidding data mentioned by Alstom do not have a significant impact on the results presented in this Annex for the following reasons. Alstom essentially mentions three changes for tenders in the Large segment.^{154 155} First, the Commission notes that for one project, Alstom indicated in previous submissions to the Commission that it has participated.¹⁵⁶ Second, GE's internal documents also show the participation of Alstom in this project (at least from the point of view of GE).¹⁵⁷ Therefore the Commission does not consider it valid to accept the change in Alstom's participation for this project (especially for the regression analysis presented below, which is largely based on GE's perception of participation by rival OEMs). Second, after taking into account the other

¹⁵² See Alstom's reply to the Commission's Request for Information No. 35, 22.05.2015, question 5.

¹⁵³ See DOC ID 4643.

¹⁵⁴ The three changes are: projects [name of project - location and ID of project – name and ID of project] where Alstom indicates that it did not participate, and project [name and ID of project] where Alstom indicates that it participated.

¹⁵⁵ The other changes mentioned by Alstom do not concern whether Alstom participated but the exact HDGT model with which Alstom participated (projects [name and location of project] ([project ID]) and projects [name, location and ID of project]). Therefore these changes have no impact on the analysis reported below. The last change mentioned by Alstom, on the project [name, location and ID of project] in 2008, concerns a project that is not included in the Commission's analysis since it was closed in 2008.

¹⁵⁶ This concerns the project [name of project]. See bidding data provided by Alstom on 26/11/2014 ([project ID]) and reply to RFI 13 Question 3 ("*H - Alstom bid data_CONFIDENTIAL.xlsx*"), dated 23/01/2015.

¹⁵⁷ This concerns the project [name of project]. See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0001702_GE - Strictly Confidential - Contains Business Secrets.msg" ([project ID]): "MHI and Alstom submitted their bid packages yesterday in the evening", "Alstom upgraded so-called GT26B+ has now become the most efficient machine to [name of customer] eye", "Please look at the feedback below on [name of customer]) on part load efficiency and the improved GT26 from Alstom". See also GE's internal document "GE_0003955_GE - Strictly Confidential - Contains Business Secrets msg" ([project ID]) showing a post-mortem assessment of this project where the three participants are MHPS, Alstom, and GE.

two changes suggested by Alstom, the results are effectively the same as presented below.¹⁵⁸

- (172) During the data room procedure, the external economists of the Notifying Party had access to the data provided by competing OEMs and customers in order to be able to fully replicate the Commission's analysis.¹⁵⁹ The external economists have submitted a confidential report to the Commission.¹⁶⁰ A redacted version of this report was sent to the Notifying Party.¹⁶¹ In this report, the external economists of the Notifying Party essentially argue that: (i) customers' information gathered by the Commission concerns a minority of tenders in the World 50Hz excluding China and in the EEA, (ii) bidding data provided by competing OEMs is incomplete for some tenders and therefore cannot be relied on to make inference on the competitive effect of the proposed transaction.
- (173) As regards the first comment regarding data gathered with customers, the Commission has used this data to check the consistency of runner-up data provided by the merging parties (see Section 3.2.2.2(c) for further details).¹⁶² The Commission considers that customers' data are reliable for this purpose since it provides a base to assess the accuracy of runner-up data for the projects that were successfully matched with the bidding data provided by the merging parties. This concerns 23 projects at the Worldwide level and 8 projects in the EEA. Second, the data room report does not contain any comment on runner-up data provided by competing OEMs, which concerns 31 tenders. As discussed in Section 3.2.2.2(c), since these 31 tenders were successfully matched with the bidding data provided by the merging parties, the Commission considers as well that this approach is reliable for the purpose of assessing the accuracy of runner-up data provided by the merging parties.
- (174) As regards the second comment on the incompleteness of data provided by competing OEMs, the Commission has the following two observations on the comments made in the data room report.
- (175) On the one hand, a number of comments made on the incompleteness of data for some tenders are unlikely to have significant implications on the results based on the market reconstruction dataset for the following reasons: (i) most the incomplete projects identified in the data room report concern China, which is excluded from the Commission's analysis¹⁶³, (ii) other tenders identified as incomplete concern tenders that are still considered opened by some competitors or too recent and are therefore not included in the data provided by competitors, which is unlikely to concern a

¹⁵⁸ These two changes essentially add one participation of Alstom in 2010 and remove one participation of Alstom in 2014.

¹⁵⁹ See "Best Practices on the disclosure of information in data rooms in proceedings under Articles 101 and 102 TFEU and under the EU Merger Regulation", European Commission, DG Competition.

¹⁶⁰ DOC ID 4632.

¹⁶¹ DOC ID 4636.

¹⁶² Customers' data were also used as another source of information to assess the nature of the shortlist stage (see Section 3.2.2.2(a)).

¹⁶³ This is also recognised in the data room report where it is mentioned that "*these omissions do not directly affect the Commission's analysis*" (see page 2 of the redacted version of the data room report). See also page 3 of the redacted version of the data room report: "*Although none of these projects are relevant to the sample of projects used by the Commission [...]*".

significant number of tenders over the full period 2009-2014¹⁶⁴, (iii) several projects identified as incomplete are still included in the market reconstruction dataset by using other sources of information¹⁶⁵, (iv) and the fact that Ansaldo did not report data for 2009 is not likely to impact the results since, according to GE's bidding data, Ansaldo has participated only in one Large competitive tender in 2009.¹⁶⁶

- (176) On the other hand, in the sample relevant for the Commission's analysis, the confidential version of the data room report points to inconsistencies between several data sources for two projects where MHPS participated and two projects where Siemens participated. While the Commission considers that this is unlikely to have any significant implications regarding Siemens' participations (since Siemens participates almost in all projects), the Commission considers that the two inconsistencies on MHPS' participations are relevant to determine the reliability of MHPS' participation data. While the Commission considers that these inconsistencies are not sufficient to dismiss the participation data provided by MHPS in its entirety, the Commission considers that the results from the market reconstruction dataset should be interpreted carefully in light of this observation.
- (177) To conclude, for the reasons discussed above, the Commission considers that bidding data provided by competing OEMs are still informative and should be taken into account in the competitive assessment. However, the Commission also recognises that results based on the market reconstruction dataset should be interpreted carefully. Therefore, the Commission relies primarily on data provided by the merging parties for the results discussed below, and it will interpret results from the market reconstruction only to assess the robustness of its findings.
- (178) The Commission presents the results of the analysis of bidding data that corresponds to tenders in the Large segment (i.e. tenders won by a Large HDGT). As set out in the main body of the Decision, instead of using the range 200-320 MW to define a Large HDGT (which is used in internal Alstom documents¹⁶⁷), the Commission considered an upper threshold of 330 MW. This is a conservative approach for the purposes of an analysis of the competitive interaction between GE and Alstom, since it includes a gas turbine sold by MHPS (M701F4) which has an output mainly in the range of 320-330 MW. The Commission notes that using a threshold at 320MW to define the Large segment, MHPS has won only three tenders in the Large segment during the relevant period (like Ansaldo), including two non-competitive tenders and only one competitive tender.

¹⁶⁴ See confidential version of the data room report.

¹⁶⁵ The data room report recognises that the Commission still included some of these projects in the market reconstruction dataset. See page 2 of redacted data room report: *"Although the Commission did incorporate these 50 Hz wins (which were also included in the McCoy data) in the market reconstruction dataset, [...]"*. See also page 3: *"Although ultimately the Commission may have obtained some of this information from elsewhere, [...]"*. See also page 2 of the redacted data room report: *"The Commission has tried to account for these projects by using the McCoy data in the market reconstruction dataset [...]"*.

¹⁶⁶ See footnote 141.

¹⁶⁷ See Annex 1207, page 12.

- (179) GE is present in the Large segment with two models: the 9F.03 and the 9F.05 HDGTs. Based on the bidding data, for tenders won by GE, the 9F.03 HDGT has an output in the range of 256MW-265MW and the 9F.05 HDGT has an output in the range of 280MW-298MW. In its analysis, the Commission considers these two HDGTs as being part of the Large segment (see Section 7 on market definition in the Decision). Moreover, bidding data show a significant competitive interaction between the 9F.03 and other GTs with higher outputs in the Large segment (including Alstom's GT26). By contrast, the Notifying Party submitted an economic analysis by restricting attention to tenders where the winning gas turbine was at or above 270 MW (RBB submission 2). This is further discussed in Section 4.2.2 below.
- (180) To account for the dynamics in the HDGT market, the Commission considered mainly two time periods in its analysis at a worldwide level excluding China: the full period 2009-2014 and the more recent period 2011-2014.¹⁶⁸ The Commission considers that the shorter time period since 2013 (e.g. analysed in RBB Submission 1) contains too few observations for a robust analysis. At the EEA-level, the Commission used only the full period 2009-2014, due to the small EEA sample.
- (181) In its reply to the Article 6(1)(c) Decision, the Notifying Party argued that the "*Commission's assessment of Alstom's success as a competitor fails to reflect the recent introduction of new higher output and efficiency H-class GTs, which compete, increasingly successfully, against the GT26*".¹⁶⁹ The Notifying Party uses a similar argument in Annex 5 of the Response to the SO, claiming that a dynamic approach should take into account that those tenders in which Alstom participated were increasingly won by Very Large HDGTs.¹⁷⁰ On this basis, the Notifying Party then argues that Alstom's competitiveness is overstated if the competitive assessment focuses on the Large segment.
- (182) First, as regards the dynamic trend towards Very Large and more efficient HDGTs, the Commission notes that internal Alstom documents show its strategy to introduce new products to address the Very Large segment with the GT36 [potential Alstom GT frame]. This is illustrated in several Alstom's internal documents (see Exhibit B of this Annex).¹⁷¹ Therefore, the Commission considers that a forward-looking approach should take into account that Alstom would be likely to compete against Very large HDGTs using its new GT36 HDGT or [potential Alstom GT frame], instead of its GT26 HDGT.
- (183) Second, given that Alstom's GT36 HDGT was not yet commercially available during the past five years, looking at past tender data to establish Alstom's competitiveness in the Very Large HDGT segment would result in a distorted picture of the future competitive effects of the transaction.¹⁷²

¹⁶⁸ The Commission also reports results for the period 2012-2014 as a further sensitivity check.

¹⁶⁹ See RBB Submission 3.

¹⁷⁰ See Annex 5 (figure 1) of the Response to the SO.

¹⁷¹ These documents illustrate Alstom's strategy to introduce the GT36 (FKA50VL) and the [Alstom strategic plan]

¹⁷² This is particularly the case if one considers that in the future (absent the merger) Alstom would have contested for Very Large tenders using the GT36 rather than the GT26, and therefore some of the

- (184) Third, Alstom has competed in past recent years against Very Large HDGTs using its latest GT26 2011 rating, which is currently suffering from the lack of commercial operating hours.¹⁷³ However, a forward-looking assessment should take into account that the GT26 2011 rating would be more competitive once a sufficient number of operating hours in commercial operations are reached, even against Very large HDGTs. This is likely to be the case since Alstom sold two units of the GT26 2011 version in the project [name and location of project] in 2013 and two units for the project [name and location of project] in 2014. Therefore, even if Alstom were to use the GT26 2011 rating to compete against Very Large HDGTs in the future, the recent losses with the GT26 2011 rating against Very Large HDGTs would be likely to underestimate the competitive strength of Alstom's GT26 2011 rating in a forward-looking assessment.
- (185) Fourth, the argument of the Notifying Party on the increasing importance of Very Large HGHTs is actually related to the fact that there were fewer Large projects in the past few years and more Very Large projects. This argument is therefore more relevant in the discussion of the size of the demand for the Large and Very Large segments in the future. As discussed in the Section 8.2 of the Decision, significant demand will remain in the future in the Large segment.
- (186) The Commission therefore considers the analysis of tenders in the Large segment as being the representative to assess the competitive constraints of Alstom's GT26 on the market in the future, for customers whose requirements are best met by Large HDGTs.^{174 175} In particular, the argument of the Notifying Party does not have any implication on the competitiveness of Alstom's GT26 HDGT for Large tenders. The presence of extensive price discrimination in bidding markets (discussed in Section 2 of this Annex) provides further support to an analysis of the data which focuses on those customers that would be most affected by the loss of Alstom's GT26 as an independent competitor, which are customers in the Large segment.
- (187) Without prejudice to the considerations provided above, in order to assess the Notifying Party's argument on the GT26 being increasingly less successful due to the introduction of H-class HDGTs (and therefore being a weakening competitive constraint on GE), the Commission also reports the results of a sensitivity analysis, which takes into account competitive interactions between the Large and Very Large segments. In this sensitivity analysis, the Commission considers tenders where at least

current interaction between the GT26 and Very Large offerings from other OEMs would not be observed.

¹⁷³ See Annex 1079, page 107: the GT26 2011 version "*is till lacking the critical 8000 OH experience required by certain markets customers, insurers*".

¹⁷⁴ The main body of the Decision reviews the evidence on demand forecasts by segment, showing that the Large segment is still projected by Alstom to be the main demand segment at a 50Hz Worldwide level (excluding China) (see Section 8.2 of the Decision). In the EEA, the Very Large segment is projected to overtake the Large segment, but nonetheless there is continued demand for Large HDGTs also in Europe.

¹⁷⁵ The Commission also notes that the Notifying Party has also presented analysis of the bidding data focused only on the "F" (or Large segment), and in addition an analysis of a combined "F and H" (Large and Very Large) segment (see RBB submission 1).

one supplier (or where the relevant merging party, depending on the analysis¹⁷⁶) proposed a Large HDGT to customers, without a restriction on the output of the winning HDGT. This approach therefore takes into account all tenders where Alstom's GT26 has competed against Very Large HDGTs, including those where it was not successful.

- (188) Last, internal documents of GE show that GE is likely to discontinue the GT26 post-merger (see Section 8.8 of the Decision). Moreover, there is also evidence that given the significant costs of offering two different HDGTs in parallel in any given tender, de facto post-merger GE would not face incentives to also offer and actively promote the GT26 (see Section 8.8 of the Decision).¹⁷⁷ Product discontinuation leads to less product choice and can therefore be expected to lead to additional negative effects on consumer welfare relative to the standard case where two products come under the same ownership, but both remain in the market. As discussed in Section 2 of this Annex, in a first price sealed bid auction, upward pricing incentives apply to all firms whose probability of winning is positively affected by the discontinuation of Alstom's GT26, and not just to those of the other merging party. In this case, the price effects of the merger spread to all customers that considered Alstom's GT26 as a significant competitive alternative absent the merger. In a second price auction, the discontinuation of Alstom's GT26 can be expected to affect a broader set of bids, namely all of those where the discontinued product could have expected to be the winner or the runner-up. Therefore, the Commission also reports the results of the bidding analysis by analysing the competitive interactions between Alstom and other OEMs, most notably Siemens (since Siemens is the main competitor to the two Merging Parties in the relevant market).

4.2. Wins by OEMs

- (189) In industries where orders are infrequent (i.e. demand is lumpy), market shares tend to be more volatile. Therefore market shares should be analyzed for several years. At the same time, as mentioned in paragraph 15 of the Horizontal Merger Guidelines, *"changes in historic market shares may provide useful information about the competitive process and the likely future importance of the various competitors, for instance by indicating whether firms have been gaining or losing market shares"*. Therefore, in order to consider these two issues, the Commission reports market shares for tenders mainly for the periods 2009-2014 and 2011-2014.

4.2.1. Evidence on competitive tenders shows that Alstom is an important player and that the merged entity would have a significant combined share of wins

- (190) In order to analyse competitive interactions between OEMs, the Commission has considered mainly the share of tenders won. Indeed looking at bidding wins/losses

¹⁷⁶ For example, when looking at OEMs who participate and/or win against GE, under this sensitivity the Commission consider all tenders where GE offered a Large HDGT, independently of the size of the winning HDGT in those tenders. This sensitivity therefore allows for Large-Very Large interaction, whilst preserving a focus on the tenders where at least one of the merging parties decided to offer a Large HDGT, presumably because it considered that it best met the customer's requirements.

¹⁷⁷ This is also confirmed by competitors (see Siemens's, MHPS' and Ansaldo's respective replies to the Commission's Request for Information, 22.05.2015 (ID 4066, 4086 and 4057, respectively)).

based on the number of projects is relevant since each project constitutes one interaction between the OEMs. However, the shares of tenders won do not capture the full extent of market power of each OEM (for example, due to the impact of mega-deals). This is better reflected in market shares in term of capacity (MW). This second approach is discussed in details in the Decision.

- (191) Table 4 reports market share figures computed with the bidding data, including both competitive and non-competitive tenders.¹⁷⁸ The merged entity accounts for approximately [40-50]% of global wins in tenders (2009-2014) with an increasing trend over time ([50-60]% of wins for 2011-2014, [60-70]% for 2012-2014). The strong combined market position results from both a strong GE position (e.g. ahead of Siemens for 2011-14), and a significant Alstom position, in particular in the period 2012-2014. The market share of Siemens is also decreasing over time. MHPS seems to play a less important role for the period 2012-2014 with a [5-10]% market share. Ansaldo is the OEM with the lowest market shares, around [0-5]%. At an EEA-level, for the period 2009-2014, the merged entity would have a market share of [50-60]% in terms of wins. Moreover, Ansaldo did not win any tenders in the EEA.
- (192) In terms of capacity (MW), for the period 2009-2014, the merged entity has a combined market share of [50-60]% (GE: [40-50]%, Alstom: [10-20]%), Siemens has a market share of [30-40]%, MHPS [10-20]%, and Ansaldo [0-5]%. These market shares are in line with market shares presented in the Decision. This confirms that high combined market share of the merged entity.
- (193) The Commission also notes that, for the [number of tenders] tenders won by MHPS, [number of tenders] of these tenders are in Japan, where Alstom is effectively not active (see also paragraph (164)). Therefore, tenders in Japan are not informative about the competitive interactions between the merging parties. In addition, only GE and MHPS have won tenders in Japan, and [number of tenders] tenders won by MHPS in Japan were non-competitive. Removing tenders in Japan would lead to a decrease in MHPS's presence, and less competitive interactions between GE and MHPS in the relevant market.
- (194) In addition, one of Alstom's internal document mentions that the sales of MHPS are in markets where Alstom has not been strongly active: "*MHI also seeing sales success in markets where Alstom has to-date not been strongly active, such as Bangladesh and Azerbaijan*".¹⁷⁹

¹⁷⁸ In the analysis of bidding data, the market shares are reported in term of projects and the Commission considered the variable "*date of closing*" from the bidding dataset provided by GE to determine the tenders to be included in the period 2009-2014. The market shares reported in the bidding analysis are broadly in line with market shares (in MW) based on McCoy data reported in the main body of the Decision.

¹⁷⁹ See Annex 1079, page 8.

**Table 4: Market shares for all tenders
(tenders where a Large HDGT has won)**

	2009-2014	2011-2014	2012-2014	2009-2014
	Worldwide (without China)			EEA level
GE	[30-40]%	[40-50]%	[40-50]%	[30-40]%
Alstom	[10-20]%	[10-20]%	[10-20]%	[10-20]%
Combined	[40-50]%	[50-60]%	[60-70]%	[50-60]%
Siemens	[30-40]%	[20-30]%	[20-30]%	[30-40]%
MHPS	[10-20]%	[10-20]%	[5-10]%	[10-20]%
Ansaldo	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

- (195) In its analysis, the Commission distinguishes competitive tenders from non-competitive tenders. The Commission considers a tender to be competitive if at least two OEMs submit a firm offer.¹⁸⁰ Given the significant commitment at the firm stage of the bidding process (in terms of cost of participation, time, and resources necessary), a supplier participates in tenders when it believes it has a reasonable chance of meeting the customer requirements and being able to win.
- (196) Analysing market shares in competitive tenders is important since it considers only tenders where there is competitive interaction between OEMs. As such, it is a useful refinement to a simpler market share analysis. Competitive tenders are the most likely to be affected by a potential loss of competition between the merging parties.
- (197)

¹⁸⁰ The Commission computed for each tender the number of OEMs that submit a firm offer. This is consistent with paragraph (53) where OEMs make significant efforts to participate at the firm stage of a tender.

- (198) Table 5 reports market shares for competitive tenders. The merged entity accounts for approximately [40-50]% of global wins in competitive tenders (2009-2014) with an increasing trend over time ([50-60]% of wins for 2011-2014, [50-60]% for 2012-2014). Similar to Table 4, the large combined market position results from both a strong GE position (e.g. ahead of Siemens for 2011-14), and a significant Alstom position (almost twice as large as MHPS for 2009-2014, and even more ahead for 2011-2014). The decrease of the market share of Siemens over time, already observed in Table 4, is also confirmed. Therefore, the position of Alstom in competitive tenders becomes closer to Siemens than to MHPS over time. At an EEA-level, for the period 2009-2014, the merged entity would have a market share of [40-50]% for competitive tenders.
- (199) The decrease of the market share of Siemens over time is largely driven by the observations that Siemens's win rate is sharply decreasing over time in tenders when it participates with its Large HDGT: while Siemens won [60-70]% of the competitive tenders for the period 2009-2010 where it participated with its 4000F HDGT, the win rate of Siemens's 4000F decreases to [30-40]% for the period 2011-2014. The decline in Siemens' win rate with its Large HDGT is particularly noticeable in tenders against GE's 9F.03 (Siemens won [number of tenders] out of [number of tenders] tenders where GE bids its 9F.03 in 2009-2010, and only [number of tenders] out of [number of tenders] tenders] in 2011-2014).
- (200) In its Reply to the Article 6(1)(c) Decision, the Notifying Party argues that the finding of the Commission's analysis in the Article 6(1)(c) Decision that "*Siemens' competitiveness is declining over time*" is flawed since it does not consider the tenders where Siemens has participated with its Very Large HDGT, and won against a Large HDGT (most notably against the GT26). Whilst it is true that if one considers Siemens success against the GT26 in particular (independently of the size of the winning turbine), then Siemens decline in performance is not significant (as it is shown in the Commission's sensitivity analysis below in Section 4.2.3), this finding does not contradict the fact that Siemens's success rate declines significantly over time for those bids when Siemens decided to offer its Large HDGT (presumably because it thought that offering a Large HDGT in those tenders best matched the customer requirements). The Commission considers that this observation is relevant to understand current competitive conditions for customers whose requirements are best met by a Large HDGT.
- (201) The comparison of market shares between all tenders and competitive tenders also shows that MHPS' presence decreases in competitive tenders while Alstom's presence is increasing. For the period 2009-14, Alstom's market share increases from [10-20]% in all tenders to [10-20]% in competitive tenders. In contrast, MHPS' market share decreases from [10-20]% to [5-10]%. This is also confirmed for the more recent period 2011-14. The decrease of MHPS is due to its lower presence in competitive tenders: almost half of the wins of MHPS ([number of tenders] tenders out of [number of tenders] wins of MHPS) are in non-competitive tenders ([number of tenders] tenders in Japan, and [number of tenders] tenders in Azerbaijan, Bangladesh, and Ireland).

- (202) Table 5 also shows the limited share of wins of Ansaldo in competitive tenders, around [0-5]%, which is in line with the results in Table 4. The data on wins in competitive tenders therefore shows that Alstom is the second most successful competitor to GE in the Large segment (after Siemens), and that its relative importance has grown over time.
- (203) In comparison to market shares for all tenders, GE's market shares decrease in competitive tenders. This is explained by the strong presence of GE in non-competitive tenders. Among the [number of tenders] non-competitive tenders, GE is present in [number of tenders] tenders ([50-60]%).

**Table 5: Market shares for competitive tenders
(tenders where a Large HDGT has won)**

	2009-2014	2011-2014	2012-2014	2009-2014
	Worldwide (without China)			EEA level
GE	[30-40]%	[40-50]%	[30-40]%	[30-40]%
Alstom	[10-20]%	[10-20]%	[10-20]%	[10-20]%
Combined	[40-50]%	[50-60]%	[50-60]%	[40-50]%
Siemens	[40-50]%	[30-40]%	[30-40]%	[40-50]%
MHPS	[5-10]%	[5-10]%	[5-10]%	[5-10]%
Ansaldo	[0-5]%	[5-10]%	[0-5]%	[0-5]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

- (204) When looking at the countries where each OEM wins competitive tenders, GE and Siemens have the widest scope by winning respectively in [number of countries] and [number of countries] countries, which include [number of countries] EEA countries for GE ([name of countries]) and [number of countries] EEA countries for Siemens ([name of countries]). Alstom wins in [number of countries] countries¹⁸¹, including [number of countries] EEA countries ([name of countries]), whilst MHPS wins in [number of countries] countries¹⁸², including [number of countries] country in the EEA ([name of countries]) and Ansaldo wins only in [number of countries] non-EEA countries ([name of countries]). Considering the competitive tenders won, Alstom has a broader reach of countries than both MHPS and (even more) than Ansaldo.¹⁸³
- (205) The Commission notes that MHPS won [number of tenders] competitive tenders in the Worldwide Large segment excluding China. Of these [number of tenders] tenders, one was a win in Japan¹⁸⁴ (MHPS's home market, where Alstom is effectively not present), and one was a win in Uzbekistan¹⁸⁵, which does not appear to have been awarded on commercial grounds based on internal documentary evidence from GE.¹⁸⁶ Of the remaining [number of tenders] appears linked to specific circumstances involving the customer's existing relationship with MHPS (and in particular the presence of MHPS in [customer name] installed base in Europe)¹⁸⁷, and [number and location of tenders]¹⁸⁸ (for the customer "[customer]") appear to be effectively related

¹⁸¹ [name of countries].

¹⁸² [name of countries]. Only three of these [number of countries] countries overlap with those where Alstom has won ([name of countries]).

¹⁸³ This is in line with Alstom's internal assessment of Ansaldo role in the market: *"Ansaldo has seen sales success in 'difficult' markets (Algeria/Syria), where the rules-of-the-game regarding the tendering and evaluation is not 'so straight forward' (to put it politely)"* (See Annex 1079, page 8).

¹⁸⁴ [name and] ID of project].

¹⁸⁵ [name and] ID of project].

¹⁸⁶ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0000924_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2646-1448).

¹⁸⁷ See discussion of [name of project] in paragraph (167) and footnote 147 of this Annex, and in the main text of the Decision.

¹⁸⁸ [name and ID of project].

to the same bidding event, relating to an unusually large project.^{189 190} There is therefore a limited number of MHPS wins in the relevant segment that appear to be driven by purely commercial considerations. Moreover, as is set out in the main body of the Decision, the MHPS wins do not appear to relate to specific advantages of MHPS with respect to operational flexibility, which is instead one of Alstom's most prominent areas of strength.

- (206) Market reconstruction data also confirm the high combined share of wins of competitive tenders for the merged entity at a worldwide level excluding China: [50-60]% for the period 2009-2014, [50-60]% for the period 2011-2014, and [60-70]% for the period 2012-2014.
- (207) The market reconstruction data also shows that among the [number of tenders] tenders in the Large segment¹⁹¹, [number of tenders] tenders are non-competitive ([10-20]%). The lower proportion of non-competitive tenders compared to data provided by the Notifying Party ([20-30]%) is consistent with the fact that the perception of the Notifying Party is not always correct regarding the participations of competitors (see discussion in Section 3 of this Annex).

4.2.2. The evidence supports a market segmentation that includes both upper-Large and lower-Large HDGTs

- (208) In one of its economic submissions, the Notifying Party makes a distinction between the upper-end and the lower-end of the Large segment, and argues that: (i) Alstom does not have a suitable product for the lower-end of the Large segment but rather for the upper-end of the Large segment, (ii) GE is successful at the lower-end of the Large segment, while it is less successful at the upper-end of the Large segment and (iii) the upper-end of the Large segment is characterized by intense competition between the five OEMs, where Siemens is the most successful while GE and Alstom have a relatively low combined share of wins.¹⁹² The Notifying Party also submits that the Commission's segment analysis is inconsistent since it does not consider interaction between Large and Very Large HDGTs because Alstom's GT26 participates and loses more against HDGTs that belong to the Very Large segment than against HDGTs that belong to the lower-end of the Large segment.¹⁹³

¹⁸⁹ The [number and location of tenders] involve HDGTs of the same size for the same customer. [information on tenders] (see GE's reply to the Commission's Request for Information No. 25, 27.03.2015, question 4, doc " GE Non-EEA Folders/[name of project] documents/RFQ" (ID 3881-1659)). In internal e-mails, GE also refers to the [customer name] opportunity as a [information on project] (See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0003955_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-665)).

¹⁹⁰ [information on tenders] (See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0016657_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-25689)).

¹⁹¹ The difference of three tenders with respect to data provided by the Notifying Party relates to: (i) [number of tenders] where competitors do not confirm information on the winning OEM provided by the Notifying Party, and (ii) [number of tenders] where the Notifying Party was not aware that it was awarded.

¹⁹² See RBB Submission 2.

¹⁹³ See RBB Submission 5.

- (209) The Notifying Party also makes this argument in the Response to the SO (page 103). However, the Commission notes that this argument was already assessed in the Statement of Objections, and the Notifying Party did not comment on the Commission's analysis and did not provide any additional evidence that could change the assessment undertaken by the Commission in the Statement of Objections.
- (210) GE competes in the Large segment with two gas turbines: the 9F.03 HDGT (whose output range is 256MW-265MW), and the 9F.05 HDGT (with an output range of 280MW-298MW). Restricting attention to tenders where the winning turbine was at or above 270 MW (as suggested by the Notifying Party) naturally reduces GE's share of competitive wins. The shares of wins of the merged entity under this sub-segment would fall below [30-40]% for 2009-2014 (but increase up to approximately [40-50]% in 2011-2014).
- (211) The Commission considers that a distinction between the lower-end and the upper-end of the Large segment is sensitive to the threshold that is utilized to distinguish the two sub-segments. In addition, the market shares reported by the Notifying Party for the upper Large segment are sensitive to time period considered. Moreover, a distinction, between the lower-end and the upper-end of the Large segment ignores significant competitive interactions between GE's 9F.03 HDGT and other HDGTs in the Large segment. This is explained below.

4.2.2.1. The sub-segment analysis is sensitive to the threshold used and to the time period considered

- (212) As regards the 270MW threshold proposed by the Notifying Party, the Commission notes that Alstom's internal documents¹⁹⁴ define the upper-end of the Large segment with a threshold of 260 MW. The Commission also notes that the output of the 9F.03 HDGT is in the range of 256MW-265MW. Therefore lowering the lower threshold contained in Alstom's internal analysis by only 5 or 10 MW (from 260 MW to 255-250 MW) effectively leads to market shares equivalent to those observed in the overall Large segment. The Commission considers that using a 255 MW lower-bound threshold for the upper-end sub-segment may be equally reasonable as considering an upper bound of 330 MW for the Large segment, as the Commission is doing in order to provide a conservative evaluation of the competitive role played by MHPS. Therefore, the finding that the merged entity would have a low market share at the upper-end of the Large segment does not appear robust to slight modifications in the threshold used.
- (213) Even using the 270MW threshold proposed by the Notifying Party, the Commission notes that the share of wins of the merged entity increases to roughly [40-50]% for 2011-2014. This is mainly related to the decrease in the market share of Siemens' 4000F HDGT in the upper-end segment defined by the Notifying Party, from [50-60]% in the period 2009-2014 to [40-50]% for the more recent period 2011-2014. Even on the basis of the upper sub-segment argued by the Notifying Party, these market shares are still significant. The Commission also notes that in the EEA, among the [number of tenders] competitive tenders awarded to GE, GE won [number of

¹⁹⁴ See Annex 1207, page 12.

tenders] with its 9F.05 HDGT and [number of tenders] with its 9F.03 HDGT, implying that the combined position of the Parties at the EEA would remain significant even if one focuses only on tenders above 270MW, with a share of wins at [40-50]% for the period 2009-2014. While Siemens represents also a high share of wins [40-50]% in the EEA for the period 2009-2014 with [number of tenders], [number of tenders] of those wins were awarded in 2009 and 2010, whilst [number of tenders] was awarded in recent years in 2012.

4.2.2.2. There are significant competitive interactions between the lower-end and the upper-end of the Large segment

- (214) Focusing solely on the sub-segment above 270 MW ignores the competitive interactions across the two sub-segments, as discussed in the following paragraphs.
- (215) According to the Notifying Party GE has bid with its 9F.03 HDGT in roughly one quarter of the tenders ultimately awarded in the upper-end of the Large segment.¹⁹⁵
- (216) Moreover, the analysis of the Commission shows that: (i) around one third of the competitive interactions between GE and Alstom involve competition with GE's 9F.03 HDGT, (ii) [40-50]% of GE's wins against Alstom concerned its 9F.03 HDGT, (iii) [30-40]% of Alstom wins against GE concern GE's 9F.03 HDGT, (iv) around [40-50]% of competitive interactions between GE and the other four OEMs involve GE's 9F.03 HDGT. An analysis that ignores the interaction between GE's HDGT in the lower-end of the Large segment (and in particular the interaction with Alstom) would understate the impact of the Transaction.
- (217) The bidding data provided by the Notifying Party show that when GE loses with its 9F.03 HDGT, the winning GT has a capacity mainly in the range of 280-295 MW (this is the case in [80-90]% of the cases). In comparison, Alstom wins with its GT26 are mainly in the range of 285-296MW ([90-100]% of Alstom's wins), and [90-100]% of Siemens' wins are in the range of 280-295MW. This data shows that Alstom's GT26 is able to win in an output range that corresponds to the output range of HDGTs against which GE's 9F.03 loses to. Moreover MHPS wins mainly in the range of 312-328MW ([80-90]% of wins, i.e. [number of tenders] out of [number of tenders] wins), which suggests that MHI is less able to compete with GE's 9F.03GT than either Alstom or Siemens.¹⁹⁶
- (218) As regards MHPS, the only win against GE's 9F.03 HDGT is in Japan, and it relates to a change in bidding data provided by GE as a reply to RFI 22 (dated 17/03/2015). In particular, GE changed its participation for a project in Japan (ID224), replacing "unknown" by the 9F.03 HDGT.¹⁹⁷

¹⁹⁵ See RBB Submission 2, footnote 12.

¹⁹⁶ Ansaldo won a limited number of projects with only [number of tenders] awarded tenders with an output of 294MW.

¹⁹⁷ In a Request for Information of 27 March 2015, the Commission asked the Notifying Party to provide documents that justify this change in the bidding data. GE replied that it has limited information on this project and added "*There is no information available on [title of internal GE document] or any other GE database, GE has not been able to retrieve any documentation relevant to this project, and the employee involved in this bid is no longer with the company. GE estimates that it offered the 9F.03 GT*

(219) The Commission notes that one GE internal document also mentions the presence of competitive interaction between GE's 9F.03HDGT and Alstom's GT26 in particular, in a recent bid won by Alstom.¹⁹⁸

(220) While the Notifying Party argues that Alstom's GT26 is positioned at the upper range of the Large segment with an output of up to 326MW, internal documents of Alstom show that Alstom has several models of its GT26 HDGT that could be offered to customers, corresponding to different output ranges. This is also consistent with what is observed from the bidding data, where Alstom wins with its GT26 mainly in the output range of 285-296MW, as reported above. Exhibit C of this Annex includes Alstom internal documents which illustrate how different models of the GT26 are used by Alstom to be present on wide output range within the Large segment.

4.2.2.3. The competitive interactions between HDGTs within the Large segment appear more significant than interactions between the Large and Very Large segments

(221) The Notifying Party argues that the Commission's segment analysis is inconsistent since it does not consider interaction between Large and Very Large HDGTs, whilst it considers interaction within the Large segment. This argument of the Notifying Party relies on the observation that Alstom's GT26 loses more often to Very Large HDGTs than to Large HDGTs in the range of 200-270MW, that the GT26 participates in "*a substantially smaller proportion of tenders won by small F-class GTs than those won by H-class GTs*", and that the GT26 also participates "*in a substantially smaller proportion of the tenders in which small F-class GTs were bid than in those where H-class GTs were bid*". The Notifying Party concludes by saying that "*there is less competitive interaction between the GT26 and small F-class GTs than between the GT26 and H-class GTs*".¹⁹⁹

(222) The Notifying Party also argues that "*the Commission could not reasonably defend its segment approach on the grounds that, despite participating in a significantly smaller number of projects won by low F-class GTs, the GT26 nevertheless provides a more important competitive constraint on them (and, specifically, on GE's 9F.03 GT, which accounts for around two thirds of all GE's F-class project wins in 50Hz excluding China in the past 5 years)*".²⁰⁰

(223) As discussed below in Section 4.4, the Commission considers that the importance of firm participation by each OEM should also be interpreted in light of its wins: a firm that participates often but is never the winner is a less significant constraint than a firm that participates and wins.²⁰¹

unit." (GE's reply to the Commission's Request for Information No. 25, 27.03.2015, question 6). See also footnote 140 of this Annex.

¹⁹⁸ [Internal communication between GE employees concerning participation of Alstom in a project].

¹⁹⁹ See RBB Submission 5.

²⁰⁰ See RBB Submission 5.

²⁰¹ The Notifying Party also mentioned this principle in the the CRA Submission 1, by mentioning that "*Despite Alstom's frequent participation as a bidder, the company's limited success in winning tenders, together with the infrequency with which it is named the runner-up, suggests that Alstom is often not an important competitive factor despite its participation in a tender*" (CRA Submission 1, page 5). This

- (224) The Commission presents in Table 6 Alstom's participations and wins against several types of GE's HDGTs, namely the 9F.03 HDGT active in the lower-end of the Large segment, the 9F.05 HDGT active in the upper-end of the Large segment, and the 9HA.01 HDGT active in the Very Large segment. The Commission focuses on GE's HDGTs since only GE has HDGTs in all these sub-segments.
- (225) While Alstom participates more in proportion against GE's 9HA.01 HDGT, Alstom almost never wins (only [number of tenders], corresponding to a win rate of [5-10]%). On the other hand, Alstom's win rate is much higher (around [20-30]%) when Alstom competes against GE's 9F.03 HDGT and 9F.05HDGT. This suggests that:
- Alstom, by participating²⁰² and winning in a significant number of tenders against each of the 9F.03 HDGT and 9F.05 HDGT, provides a more important competitive constraint on these two GE's HDGTs than on GE's H-class HDGTs.
 - Alstom provides a more important competitive constraint on HDGTs that belong to the lower-end of the Large segment than on HDGTs that belong to the Very Large segment.

Table 6: Alstom's competitive significance in the Large and Very Large segments

	GE's participations	Alstom's participations (% of GE's participations)	Alstom wins (% of Alstom's participations)
9F.03	[...]	[number of participations] [40-50]%	[number of participations] [20-30]%
9F.05	[...]	[number of participations] [60-70]%	[number of participations] [20-30]%
9HA.01	[...]	[number of participations] [70-80]%	[number of participations] [5-10]%

- (226) Moreover, since Alstom's GT36 HDGT was not yet commercially available during the past five years, looking at past tender data to establish Alstom's competitiveness in the Very Large HDGT segment would result in a distorted picture of the future competitive effects of the transaction. In the future, Alstom would have likely used its GT36 HDGT to compete against Very Large HDGTs.
- (227) The presence of extensive price discrimination in bidding markets provides further support to an analysis of the data which focuses on those customers that would be most affected by the loss of Alstom as an independent competitor, which are customers in the Large segment as suggested by Table 6.
- (228) As additional evidence, Table 7 below describes the importance of the interactions between the lower-end of the Large segment and the upper-end of the Large segment,

submission also states that "Alstom has adopted a strategy of bidding frequently, but the data show that Alstom rarely wins and is not often the runner-up", and uses the following example: "This is seen perhaps most clearly from the fact that Alstom has bid its F-class HDGT on 10 occasions in the last three years (including six occasions in 2014) where the project ultimately was won by an H-class HDGT" (CRA Submission 1, page 4).

²⁰²

Alstom participates in [40-50]% of tenders where GE participates with the 9F.03 HDGT, and in [60-70]% of tenders where GE participates with its 9F.05 HDGT.

relative to interaction with the Very Large segment. Among the [number of tenders] tenders where the Notifying Party participates with its 9F.03 HDGT, [50-60]% of these tenders are won by a HDGT that belongs to the upper-end of the large segment. In comparison, among the [number of tenders] tenders where the Notifying Party participated with its 9HA.01 HDGTs, only [20-30]% ([number of tenders]) are won by a HDGT that belongs to the upper-end of the Large segment.²⁰³ This evidence suggests that HDGTs which belong to the upper-end of the Large segment exert a more important competitive constraint on HDGTs belonging to the lower-end of the Large segment than on HDGTs belonging to the Very Large segment. This provides further support to the segment analysis used by Commission.

Table 7: Wins when GE participates with its 9F.03 HDGT, 9F.05 HDGT, 9HA.01 HDGT

Win\participations	9F.03	9F.05	9HA.01
Lower Large	[number of participations]	[number of participations]	[number of participations]
Upper Large	[number of participations]	[number of participations]	[number of participations] ²⁰⁴
Very Large	[number of participations] ²⁰⁵	[number of participations]	[number of participations]
Total	[number of participations]	[number of participations]	[number of participations] ²⁰⁶

4.2.2.4.A focus on the Large segment is relevant to assess the competitive effects of the merger

- (229) To conclude, due to significant competitive interactions between the lower-end and the upper-end of the Large segment, ignoring the competitive interactions between GE's 9F.03 and other OEMs in the upper-end of the Large segment (and in particular Alstom) would risk significantly understating the impact of the Transaction. Moreover, the Commission considers that an assessment of the competitive interactions across different HDGTs within the Large segment is consistent with an approach that focuses on tenders won by Large HDGTs, excluding wins in the Very Large segment. This is because HDGTs at the upper-end of the Large segment (including Alstom's GT26) are a more important competitive constraint to the lower-end of the Large segment than on the Very Large segment
- (230) In any event, and without prejudice to the considerations provided above, in order to assess the Notifying Party's argument that Alstom with its GT26 HDGT is increasingly less relevant as a competitor due to the introduction of Very Large HDGTs, the Commission also reports the results of a sensitivity analysis which considers tenders where at least one supplier (or where the relevant merging party, depending on the

²⁰³ This approach is conservative since for these [number of tenders] wins, GE did not participate only with its 9HA.01 HDGT but also with its 9F.05 HDGT.

²⁰⁴ [number of tenders] observations relates to tenders where GE participates with both its 9F.05 HDGT and its 9HA.01 HDGT.

²⁰⁵ [number of tenders] relates to [number of tenders] where GE participates with both its 9F.03 HDGT and 9F.05 HDGT.

²⁰⁶ [number of tenders] tenders where GE participates with both its 9F.05 HDGT and its 9HA.01 HDGT.

analysis²⁰⁷) proposed a Large HDGT to customers, without a restriction on the output of the winning HDGT. This approach therefore takes into account all tenders where Alstom's GT26 has competed against Very Large HDGTs, including those where it was not successful. This addresses the argument of the Notifying Party that the Commission disregards the projects where the GT26 lost against Very Large HDGT. The sensitivity considered by the Commission to allow for interaction between Large and Very Large HDGTs shows that the Commission's conclusions of the analysis of the share of wins do not change significantly when this interaction is taken into account.

4.2.3. The merged entity would account for a large share of wins in competitive tenders also allowing for interactions between the Large and Very Large segments

- (231) As a sensitivity analysis, the Commission reports market shares for tenders when at least one OEM participates with a Large HDGT, independently if the winning HDGT belongs to the Large or Very Large segments. Table 8 and Table 9 confirm the high share of wins of the merged entity which accounts for [40-50]-[50-60]% of wins, depending on the geographical area and time period considered. While the decline of Siemens is more nuanced under this approach, Alstom's market share in competitive tenders is still significantly above MHPS's market shares. This is also the case in the EEA. This sensitivity analysis also confirms the limited share of wins of Ansaldo.

**Table 8: Market shares for all tenders
(tenders where at least one OEM bids with a Large HDGT)**

	2009- 2014	2011- 2014	2012- 2014	2009- 2014
	Worldwide (without China)			EEA level
GE	[30- 40]%	[40- 50]%	[40- 50]%	[40-50]%
Alstom	[10- 20]%	[10- 20]%	[10- 20]%	[5-10]%
Combined	[40- 50]%	[50- 60]%	[50- 60]%	[50- 60]%
Siemens	[40- 50]%	[30- 40]%	[30- 40]%	[40-50]%
MHPS	[10- 20]%	[10- 20]%	[5-10]%	[5-10]%
Ansaldo	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

²⁰⁷

For example, when looking at OEMs who participate and/or win against GE, under this sensitivity analysis the Commission consider all tenders where GE offered a Large HDGT, independently of the size of the winning HDGT in those tenders. This sensitivity therefore allows for Large-Very Large interaction, whilst preserving a focus on the tenders where at least one of the merging parties decided to offer a Large HDGT, presumably because it considered that it best met the customer's requirements.

**Table 9: Market shares for competitive tenders
(tenders where at least one OEM bid with a Large HDGT)**

	2009-2014	2011-2014	2012-2014	2009-2014
	Worldwide (without China)			EEA level
GE	[30-40]%	[40-50]%	[30-40]%	[30-40]%
Alstom	[10-20]%	[10-20]%	[10-20]%	[10-20]%
Combined	[40-50]%	[50-60]%	[40-50]%	[40-50]%
Siemens	[40-50]%	[30-40]%	[40-50]%	[40-50]%
MHPS	[5-10]%	[5-10]%	[5-10]%	[5-10]%
Ansaldo	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Observations	number of tenders	number of tenders	number of tenders	number of tenders

- (232) Data collected with third parties confirm the high combined share of wins of the merged entity at a Worldwide level excluding China. In competitive tenders the parties would account for [50-60]% of wins during the 2009-2014 period, rising to [60-70]% during the 2011-2014 period.²⁰⁸ Third party data also confirms the importance of Alstom in competitive tenders with respect to other smaller OEMs like MHPS and Ansaldo.

4.2.4. The merged entity accounts for a large share of wins, in the range of [50-60]% or above

- (233) In merger analysis, market shares are often used as a starting point to assess market structure and, in particular, to assess the relative strength of the different suppliers and their respective market power.²⁰⁹
- (234) The market shares reported above represent actual purchasing decisions by many customers over the five year period 2009-2014 based on a variety of factors, in particular prices and product characteristics. Therefore, market shares contain important information on customers' preferences. This insight also applies to bidding markets.²¹⁰ The Commission notes that, when considering all tenders, GE has increased its market share over time (see Table 8 and Table 9 above).
- (235) In merger analysis, high combined market shares are an important initial indicator of potential competition concerns.²¹¹ As it is explained in more detail in the main body of

²⁰⁸ The corresponding share for all tenders are of [50-60]% and [60-70]%.

²⁰⁹ See Horizontal Merger Guidelines, paragraph 15.

²¹⁰ See Commission decision of 13 July 2005 in Case M.3653 – Siemens/VA Tech, paragraph 42 and Commission decision of 02 September 2003 in Case M.3083 – GE/Instrumentarium, paragraph 272. Moreover, as mentioned in Case T-210/01 General Electric v Commission, "even on a bidding market, the fact of a manufacturer maintaining, or even increasing, its market share over a number of years in succession is an indication of market strength" (paragraph 151).

²¹¹ As mentioned in J. Baker and C. Shapiro, "in the absence of entry and merger efficiencies, a merger that leads to a substantial increase in market concentration will tend to raise price, harm consumers, and reduce economic efficiency", and "the clear lesson from oligopoly theory is that market concentration matters" (J. Baker and C. Shapiro (2008), "Reinvigorating Merger Enforcement that Has Declined as a result of Conservative Economic Analysis" in *The Effect of Conservative Economic Analysis on U.S. Antitrust*, page 252).

the Decision, the Commission considers that the high market share of the merged entity (in the range of [50-60]% or above depending on the time period considered) is an important element of the competitive assessment of the Transaction.

- (236) The Commission has also carried out in the following sections an analysis of the bidding data by considering a range of measures of competitive interactions and closeness, in order to determine the degree of closeness between the merging parties and whether they exert a competitive constraint on each other. This analysis of closeness goes beyond the structural analysis of market shares.
- (237) The Commission also notes that product discontinuation effects can exacerbate standard unilateral effects, since they lead to adverse merger effects for all tenders where Alstom can influence the probability of winning of competing sellers, and represent the first or second choice of any buyer, independently of the degree of closeness to GE. The relatively significant market shares of Alstom in competitive tenders, ahead of MHPS and Ansaldo, suggest that Alstom is an important competitive force, independently of its closeness to GE. The specific implications of product discontinuation of the Alstom GT 26 are assessed in detail in the following sections.

4.3. Firm participations by OEMs

4.3.1. A participation frequency analysis indicates that the merging parties are close competitors

- (238) The Commission carried out a participation frequency analysis to analyze how often the merging parties compete against one another in tenders. As discussed in Section 3.1, since bid submission is very costly only those OEMs that meet a given tender specification and that expect to have a reasonable chance of winning would be expected to submit a firm offer. This is particularly relevant for smaller OEMs like Alstom, MHPS, and Ansaldo who are much more selective than GE or Siemens in their bid participations, and is as such indicative of their "product fit" for a given customer.
- (239) OEMs that participate in the firm stage of the bidding procedure can thus be assumed to be credible competitors for a particular tender and can generally influence the degree of competition enjoyed by customers.²¹² This is confirmed in the market investigation, as reviewed in Section 3.1.
- (240) Information on participations is also a significant refinement of an analysis based only on market shares since it allows to focus on outcomes in bids where the merging parties have actually competed against each other.
- (241) The Commission considers that participation in tenders is particularly credible if it also results in wins. The participation analysis therefore needs to be seen in

²¹² When several credible suppliers participate in a tender, a given OEM has to bid more aggressively and to improve its offer (e.g. by lowering prices and/or increasing quality) in order to achieve a given probability of winning the tender. In other words, it can be expected that suppliers submit better conditions to customers at the firm stage because of competition from credible suppliers. The Notifying Party's VP Reviews (see, e.g. Annex 1349 ([title and name of internal GE document]) and Annexes 1321 – 1329 ([title and name of internal GE document]) shows that [content of internal GE document].

conjunction with the analysis of win rates (Section 4.4), and of win rates when the merging parties have faced each other.

- (242) Participation frequency analysis has been applied in the assessment of several mergers by the Commission in the past, for example Siemens/VA Tech (M.3653), Siemens/Drägerwerk/ JV (M.2861), GE/Instrumentarium (M.3083), VNU (Nielsen)/WPP/JV (M.3512), AEE/lentjes (M.4647), and IBM/Telelogic (M.4747).
- (243) In the case at hand, a participation frequency analysis can lead to the following potential outcomes:
- If the Parties rarely participated in the same tenders, the competitive impact of the merger would be limited (absent concerns about product discontinuation) despite the large market share increment. In other words, while the merging parties would have high combined market shares, they would be relatively distant competitors.
 - Frequent interactions of the Parties, relative to other competitors, over a large number of tenders would instead be an indication that the merging parties are likely to offer close substitutes and, thus, to exert significant competitive pressure on each other, especially in light of the evidence on a high combined share of wins in tenders.

4.3.1.1.Evidence on participation indicates that the majority of bids have 3 participants or fewer, and that Alstom is the third most active bidder in both the EEA and Worldwide 50Hz without China

- (244) The Commission reports below the number of participants in tenders and the geographical presence of OEMs.
- (245) The evidence indicates that not all OEMs bid for all tenders, as is illustrated in Table 10 below. This shows at a Worldwide level excluding China there were three or fewer participants in roughly three quarters of tenders. A similar situation applies to the EEA, where [70-80]% of tenders in the Large segment had three or fewer participants.

Table 10: Number of participants in tenders in the Large segment

2009-2014	Worldwide (without China)	EEA level
1 participant	[20-30]%	[10-20]%
2 participants	[20-30]%	[10-20]%
3 participants	[20-30]%	[30-40]%
4 participants	[20-30]%	[20-30]%
5 participants	[0-5]%	[5-10]%
Observations	[number of tenders]	[number of tenders]

- (246) Moreover, in the market investigation, almost 80% of customers mention that they generally invite four or five OEMs to participate in tenders (see discussion in main body of the Decision, Section 8.6). Therefore, despite the presence of five OEMs and customers willing to invite at least four or five OEMs to participate in tenders, customers have often less than four or five available choices in practice (actually, often three choices available). The Commission considers that this evidence indicates

that OEMs (in particular Alstom, MHPS, and Ansaldo) are selective when making their offers, in light of the high cost of participation, and the need to match customer's requirements in order to have a reasonable chance of winning a tender.

- (247) As regards the geographical presence of OEMs, Table 11 compares participation rates by OEM across a number of geographical areas: Worldwide without China, Worldwide without China and EEA, EEA, and China. The Commission considers participation rates in China too in this analysis in order to compare them with those seen in other parts of the 50Hz region. This analysis shows that GE and Siemens participated in almost all tenders in the EEA, China, and at a Worldwide level 50Hz. However, the situations are different for smaller OEMs like Alstom, MHPS, and Ansaldo. First, Alstom and Ansaldo have never participated in tenders in China, while MHPS has participated in almost all tenders in China. Second, MHPS seems to focus significantly on China within the 50Hz market, with a [90-100]% participation rate. By contrast, MHPS is much less active in tenders in the EEA with a [20-30]% participation rate. Third, Alstom appears as number three in terms of participations in competitive tenders both in the EEA (with a [60-70]% participation rate, more than twice the ones of MHPS or Ansaldo), and a worldwide level excluding China (with a [60-70]% participation rate). Alstom is the clear number three in terms of participations in competitive tenders in the relevant market, and as such it appears to be an important player in competitive tenders. This evidence suggests that Alstom is more important than MHPS and much more important than Ansaldo.

**Table 11: Participation rates for competitive tenders
(tenders where at least one OEM bid with a Large HDGT)**

	Worldwide			
2009-2014	without China	without China and EEA	EEA level	China
GE	[90-100]%	[90-100]%	[90-100]%	[90-100]%
Siemens	[90-100]%	[80-90]%	[90-100]%	[90-100]%
Alstom	[60-70]%	[50-60]%	[60-70]%	[0-5]%
MHPS	[30-40]%	[40-50]%	[20-30]%	[90-100]%
Ansaldo	[30-40]%	[20-30]%	[30-40]%	[0-5]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

4.3.1.2. The merging parties participate often against one another

- (248) Table 12 and Table 13 report participation rates for competitive tenders in which each of GE or Alstom bid respectively.

**Table 12: Participation rates for tenders in which GE bids
(tenders where GE bids and a Large HDGT wins²¹³)**

	2009-2014	2011-2014	2012-2014	2009-2014
	Worldwide (without China)			EEA level
Alstom	[50-60]%	[60-70]%	[70-80]%	[60-70]%
Siemens	[80-90]%	[80-90]%	[80-90]%	[90-100]%
MHPS	[40-50]%	[50-60]%	[30-40]%	[20-30]%
Ansaldo	[20-30]%	[30-40]%	[30-40]%	[30-40]%
GE's participations	[number of participations]	[number of participations]	[number of participations]	[number of participations]

**Table 13: Participation rates for tenders in which Alstom bids
(tenders where Alstom bids and a Large HDGT wins)**

	2009-2014	2011-2014	2012-2014	2009-2014
	Worldwide (without China)			EEA level
GE	[80-90]%	[80-90]%	[80-90]%	[90-100]%
Siemens	[80-90]%	[90-100]%	[80-90]%	[90-100]%
MHPS	[30-40]%	[30-40]%	[20-30]%	[30-40]%
Ansaldo	[30-40]%	[40-50]%	[30-40]%	[40-50]%
Alstom's participations	[number of participations]	[number of participations]	[number of participations]	[number of participations]

- (249) At a worldwide level excluding China, Alstom encounters GE frequently ([50-60]% of the competitive tenders where GE participates) and is second only to Siemens. Moreover, Alstom's participation rate against GE has increased over time, to [60-70]% in 2011-2014, and [70-80]% in 2012-2014 (not significantly below the one of Siemens).
- (250) By contrast, the data shows that MHPS and Ansaldo lag behind Alstom at a worldwide level, 50Hz, excluding China. For tenders where GE is participating, Alstom participates [40-50]% more often than MHPS between 2009 and 2014. Ansaldo is further behind MHPS in terms of participations. The gap between Alstom on the one hand and MHPS and Ansaldo on the other hand remains in the period 2011-2014 (Alstom participates in [60-70]% of GE's tenders, MHPS participates in [50-60]%, and Ansaldo in [30-40]%)²¹⁴ but widens significantly in the period 2012-2014 in particular in relation to MHPS (Alstom participates in [70-80]% of GE's tenders, while MHPS participates in [30-40]% of GE's tenders).

²¹³ As regards the [number of tenders] tenders where GE participates, GE uses a Large HDGTs in [number of tenders] tenders, its Medium HDGT in [number of tenders], and a combination of a Large and Very Large HDGTs for [number of tenders] tenders ([name and ID of projects]).

²¹⁴ The Commission notes that the gap between Alstom on the one hand, and MHPS and Ansaldo on the other hand, is more pronounced when one considers data provided by each of the competing OEMs (discussed in Section 4.3.1.4). However, this result should be interpreted carefully, as discussed in paragraph (177).

- (251) For tenders where Alstom participated at a worldwide level excluding China, Alstom encountered GE and Siemens very frequently (GE and Siemens participate in [80-90]-[90-100]% of the tenders where Alstom participates). By contrast, the interactions with MHPS and Ansaldo appear relatively limited. Ansaldo and MHPS participated in [30-40]-[40-50]% of the tenders where Alstom participated, depending on the time period considered. This evidence indicates that MHPS and Alstom are not close competitors to Alstom.
- (252) In the EEA for the period 2009-2014, Alstom participates in [60-70]% of tenders where GE is participating, while MHPS and Ansaldo lag significantly behind with participation rates of [20-30]% and [30-40]%, respectively. In addition, for the 10 tenders where Alstom participates, MHPS and Ansaldo are behind GE and Siemens in terms of participations.
- (253) In Annex 5 of the Response to the SO, the Notifying Party argues that the Commission's analysis understates the competitive pressure that MHPS will impose in the future in the EEA, in particular given that MHPS has recently increased its strength in the EEA.²¹⁵ The Notifying Party supports this claim with a table showing that the overlap in MHPS' and Alstom's bidding behaviours has increased in the EEA for the period 2009-2014. In particular, the Notifying Party argues that MHPS has bid for [number of tenders] of the [number of tenders] ([60-70]%) projects for which Alstom has bid in the last 2 years, which is higher than the corresponding proportion of those projects for the period 2009-2012 ([number of tenders] out of [number of tenders] projects, that is [20-30]%).
- (254) The Commission notes that the approach of the Notifying Party pools together all Large and Very Large tenders. When focusing on Large tenders, the tendency pointing to increasing participation by MHPS in tenders in which Alstom is present is not confirmed. In particular, in the EEA, MHPS participates in [number of tenders] of the [number of tenders] ([40-50]%) Large projects for which Alstom has bid for the period 2009-2011, and [number of tenders] of the [number of tenders] ([20-30]%) projects for the period 2012-2014 (see Table 14). While EEA data should be interpreted carefully due to the small sample size, this suggests that MHPS did not increase its participations for the Large projects where Alstom participated. This is also reflected at the Worldwide level, 50Hz excluding China. Table 14 shows that, for Worldwide tenders, MHPS participated in [number of tenders] of the [number of tenders] ([40-50]%) projects for which Alstom has bid for the period 2009-2011, and only [number of tenders] of the [number of tenders] ([20-30]%) projects for the period 2012-2014.
- (255) Therefore, as regards tenders in the Large segment, the Commission considers that there is no tendency that MHPS has increased its participations against Alstom. The evidence points more to a decrease of MHPS' participations against Alstom for Large tenders at the Worldwide level (50 Hz excluding China) and at the EEA level.

²¹⁵ See Section 3 of Annex 5 of the Response to the SO,

Table 14. Overlap in MHPS' and Alstom's bidding behaviours, 2009-2014

		2009	2010	2011	2012	2013	2014	Total
EEA tenders	MHPS' presence	[...]	[...]	[...]	[...]	[...]	[...]	[...]
	Alstom's presence	[...]	[...]	[...]	[...]	[...]	[...]	[...]
World, 50 Hz, excluding China	MHPS' presence	[...]	[...]	[...]	[...]	[...]	[...]	[...]
	Alstom's presence	[...]	[...]	[...]	[...]	[...]	[...]	[...]

4.3.1.3. Allowing for interaction between Large and Very Large tenders confirms the findings of the participation frequency analysis

- (256) As a sensitivity analysis, the Commission reports the results of the participation frequency analysis with the interaction between the Large and Very Large segments. In particular, this approach takes into account all tenders where GE's 9F.05 HDGT and Alstom's GT26 HDGT have competed against Very Large HDGTs (independently of which type of HDGT won the bid).
- (257) Table 15 reports how often GE competes with other OEMs. This confirms that after Siemens ([80-90]%), Alstom ([50-60]%) is the OEM that participates the most often against GE. While the gap between Alstom ([60-70]%) and MHPS ([50-60]%) decreases for the period 2011-2014, the gap increases significantly for the period 2012-2014, with Alstom at [80-90]% and MHPS at [50-60%]²¹⁶. Ansaldo appears to have more limited interactions with GE, with the lowest participation rate (around [30-40]-[40-50]%) for tenders where GE participates. This sensitivity analysis does not affect the previous results in the EEA.

²¹⁶

The Commission notes that the gap between Alstom and MHPS and Ansaldo is more pronounced when one considers data provided by each of the competing OEMs (discussed in Section 4.3.1.4). However, this result should be interpreted carefully, as discussed in paragraph (177).

**Table 15: Participation rates for tenders in which GE bids
(tenders where GE bids with a Large HDGT²¹⁷)**

	2009-2014	2011-2014	2012-2014	2009-2014
	Worldwide (without China)			EEA level
Alstom	[50-60]%	[60-70]%	[80-90]%	[60-70]%
Siemens	[80-90]%	[80-90]%	[90-100]%	[90-100]%
MHPS	[40-50]%	[50-60]%	[50-60]%	[20-30]%
Ansaldo	[20-30]%	[30-40]%	[30-40]%	[30-40]%
GE's participations	[number of participations]	[number of participations]	[number of participations]	[number of participations]

- (258) Table 16 reports how often Alstom competes with other OEMs. While GE and Siemens often participate against Alstom (in the range of [90-100]% of tenders where Alstom participates), MHPS or Ansaldo participates in only the range of [30-40]-[40-50]%. This confirms the limited competitive interactions between Alstom and MHPS or Ansaldo.

**Table 16: Participation rates for tenders in which Alstom bids
(tenders where Alstom bids with a Large HDGT)**

	2009-2014	2011-2014	2012-2014	2009-2014
	Worldwide (without China)			EEA level
GE	[80-90]%	[80-90]%	[80-90]%	[90-100]%
Siemens	[80-90]%	[90-100]%	[90-100]%	[90-100]%
MHPS	[40-50]%	[40-50]%	[40-50]%	[40-50]%
Ansaldo	[20-30]%	[30-40]%	[20-30]%	[30-40]%
Alstom's participations	[number of participations]	[number of participations]	[number of participations]	[number of participations]

4.3.1.4.Data from competing OEMs confirm the results of the participation frequency analysis

- (259) The Commission has replicated the participation frequency analysis using data collected from competing OEMs (see Table 17). This confirms previous findings (see Table 12) that at a Worldwide level excluding China, Alstom encounters GE frequently (see Table 17, [50-60]% of the competitive tenders where GE participates for 2009-2014, rising to [50-60]% for 2012-2014).

²¹⁷

As regards the [number of tenders] tenders where GE participates, GE uses a Large HDGTs in [number of tenders] tenders and a combination of a Large and Very Large HDGT for [number of tenders] tenders. In comparison to the sample used in the baseline case, [number of tenders] is added where GE participates with both its Large and Very Large HDGT ([name of project]), [number of tenders] tenders are added where GE participates with a Large HDGT and a Very Large HDGT wins ([name of project]), and the tender where GE participates with its Medium HDGT is not included.

- (260) In Table 17, the Commission reports the Alstom participation rate using third party data, but does not report individual third party OEM data for confidentiality reasons. It instead reports the average participation of the two smaller OEMs (MHPS and Ansaldo), to illustrate the gap with Alstom. Table 17 shows the following:
- MHPS and Ansaldo lag behind Alstom in term of participations against GE, with an average participation rate that is roughly half the one of Alstom;
 - The average participation rate of MHPS and Ansaldo is also lower in absolute terms when one considers third party data instead of GE's bidding data²¹⁸, and there is a less pronounced increase in participation rates from 2009-2014 to 2011-2014 when one uses the third party data.²¹⁹
 - At the EEA level, the data from third parties broadly confirm the evidence based on GE's bidding data.
- (261) While the Commission considers that the figures mentioned in the paragraph above should be interpreted carefully (see paragraph (177)), data from competing still confirms the previous findings (see Table 12 based on GE's bidding data) that Alstom encounters GE frequently in tenders, significantly above the number of tenders where MHPS or Ansaldo encounter GE.

**Table 17: Participation rates for tenders in which GE bids (based on third party data)
(tenders where GE bids and a Large HDGT wins)**

	2009-2014	2011-2014	2012-2014	2009-2014
	Worldwide (without China)			EEA level
Alstom	[50-60]%	[50-60]%	[50-60]%	[60-70]%
MHPS / Ansaldo (average)	[20-30]%	[30-40]%	[20-30]%	[20-30]%
GE's participations	[number of participations]	[number of participations]	[number of participations]	[number of participations]

- (262) Table 18 reports the interactions between Alstom and MHPS or Ansaldo using data from competing OEMs. Table 18 shows that, for tenders where Alstom participates at a Worldwide level excluding China, MHPS and Ansaldo on average participate in slightly less than [30-40]% of those tenders in 2009-2014 (which is below the corresponding figure from the GE data in Table 13), with a similar picture for 2011-2014 and 2012-2014. The relatively limited interaction between Alstom and MHPS or Ansaldo is also confirmed in the EEA.

²¹⁸ For example, for 2009-2014, the third party data indicates an average participation rate of [20-30]%, whilst the GE data indicates [30-40]%.

²¹⁹ With the third party data, the average participation of MHPS and Ansaldo increases from [20-30]% in 2009-2014 to [30-40]% in 2011-2014, whilst with GE's data the corresponding increase is from [30-40]% to [40-50]%.

- (263) While the Commission considers that the figures mentioned in the paragraph above should be interpreted carefully (see paragraph (177)), data from competing still confirms the limited interaction between Alstom and MHPS or Ansaldo (see Table 13 with GE's bidding data).

**Table 18: Participation rates for tenders in which Alstom bids (based on third party data)
(tenders where Alstom bids and a Large HDGT won)**

	2009-2014	2011-2014	2012-2014	2009-2014
	Worldwide (without China)			EEA level
GE	[80-90]%	[80-90]%	[80-90]%	[90-100]%
MHPS/Ansaldo (average)	[20-30]%	[30-40]%	[30-40]%	[30-40]%
Alstom's participations	[number of participations]	[number of participations]	[number of participations]	[number of participations]

- (264) Allowing for interaction between Large and Very Large bids under the Commission's sensitivity analysis does not fundamentally alter the conclusions set out above. As regards the tenders where GE participates, Alstom ([50-60]% Worldwide excluding China, [60-70]% EEA) is the OEM that participates the most often against GE, after Siemens. MHPS and Ansaldo on average meet GE in less than [30-40]% of bids for Worldwide excluding China.²²⁰

4.3.2. There is a high proportion of "3-to-2" tenders when the merging parties participate against one another

- (265) The Commission has also considered participations by other OEMs for those tenders where GE and Alstom compete against one another. The Commission identifies [number of tenders] such tenders for the period 2009-2014. This represents [50-60]% of the competitive tenders. These "overlapping" tenders are the ones that would have been most likely to be affected from a potential loss of competition between GE and Alstom in a merger scenario.
- (266) Table 19 reports the number of participants for these "overlapping" tenders. A significant proportion of these tenders have three or fewer participants. That is, in addition to the Parties there is at most one participant. This is the case for [40-50]% of these tenders for the period 2009-2014, [40-50]% for the period 2011-2014, [50-60]% for the period 2012-2014, and [50-60]% in the EEA (for 2009-2014). This is broadly confirmed under the sensitivity analysis (with the number of tenders with three or fewer participants being in the range of [30-40]% to [40-50]% - see Table 20). This evidence suggests a concentrated market structure for those tenders that are the most likely to suffer from a loss of competition between the merging parties.

²²⁰

As in the baseline analysis, when using third party data, MHPS and Ansaldo participated less against GE relative to the corresponding figures obtained using GE's data. As discussed in paragraph (177) this should be interpreted with caution.

**Table 19: Number of participants in tenders where GE and Alstom compete
(tenders where both GE and Alstom bid and a Large HDGT won)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
2 participants	[5-10]%	[0-5]%	[0-5]%	[0-5]%
3 participants	[40-50]%	[40-50]%	[50-60]%	[50-60]%
4 participants	[40-50]%	[40-50]%	[40-50]%	[40-50]%
5 participants	[5-10]%	[10-20]%	[5-10]%	[10-20]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

**Table 20: Number of participants in tenders where GE and Alstom compete
(tenders where both GE and Alstom bid and at least one of them competes with a Large HDGT)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
2 participants	[0-5]%	[0-5]%	[0-5]%	[0-5]%
3 participants	[30-40]%	[30-40]%	[30-40]%	[30-40]%
4 participants	[50-60]%	[50-60]%	[50-60]%	[50-60]%
5 participants	[5-10]%	[5-10]%	[0-5]%	[5-10]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

(267) Using data from the market reconstruction, Table 21 shows that the share of tenders where the Parties face at most one competitor represents [50-60]% and [50-60]% respectively for the periods 2009-2014 and 2011-2014, instead of [40-50]% for 2009-2014 and [40-50]% for 2011-2014 based on bidding data provided by the Notifying Party (see Table 19). This is also confirmed in the sensitivity analysis in Table 22, where the proportion of tenders with three participants represents [50-60]% ([50-60]% for 2011-2014) instead of [40-50]% ([30-40]% for 2011-2014) based on the bidding data provided by the Notifying Party (see Table 20). While the Commission considers that the figures from the market reconstruction dataset should be interpreted carefully (see paragraph (177)), data from competing OEMs still confirms the concentrated market structure for the tenders where the Parties compete against one another.

**Table 21: Number of participants in tenders where GE and Alstom compete (based on third party data)
(tenders where both GE and Alstom bid and a Large HDGT won)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
2 participants	[5-10]%	[5-10]%	[5-10]%	[0-5]%
3 participants	[50-60]%	[40-50]%	[50-60]%	[50-60]%
4 participants	[30-40]%	[30-40]%	[40-50]%	[30-40]%
5 participants	[5-10]%	[5-10]%	[0-5]%	[10-20]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

**Table 22: Number of participants in tenders where GE and Alstom compete (based on third party data)
(tenders where both GE and Alstom bid and at least one of them competes with a Large HDGT)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
2 participants	[5-10]%	[10-20]%	[5-10]%	[5-10]%
3 participants	[50-60]%	[40-50]%	[40-50]%	[50-60]%
4 participants	[30-40]%	[30-40]%	[30-40]%	[20-30]%
5 participants	[5-10]%	[10-20]%	[0-5]%	[5-10]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

- (268) In conclusion, this analysis shows that: (i) the market is very concentrated (with a high proportion of “3-to-2” tenders) for those bids where GE and Alstom have met in the past; (ii) this is also confirmed with information provided by third party OEMs, and (iii) non-merging parties such as MHPS and Ansaldo would need to participate much more than they currently do to replace the role played by Alstom at present.

4.3.3. There is a significant competitive interaction between Alstom and Siemens

- (269) The previous analyses have shown that Alstom is an important competitor to the Notifying Party. In addition, the Notifying Party's likely intention to discontinue the GT26 aggravates the competition concerns as it may also lead to anti-competitive effects for tenders where Alstom is (or would have been) a significant constraint on competitors other than the Notifying Party (most notably Siemens), suggesting the existence of additional adverse effects in addition to the standard unilateral effects.

4.3.3.1. Alstom participates often against Siemens, while MHPS and Ansaldo have limited interactions with Siemens

- (270) A participation frequency analysis shows that MHPS and Ansaldo appear significantly behind Alstom in terms of participations against Siemens. For the tenders where Siemens participates in the period 2009-2014, Alstom participates in [50-60]% of those tenders, while MHPS participates only in [30-40]%. The gap between Alstom and MHPS or Ansaldo is increasing over time. In the EEA, the gap between Alstom ([60-70]%) and MHPS ([20-30]%) or Ansaldo ([20-30]%) is also significant (see Table 23).

**Table 23: Analysis of participation rates for tenders where Siemens participates
(tenders where Siemens bid and a Large HDGT won)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
GE	[90-100]%	[80-90]%	[80-90]%	[90-100]%
Alstom	[50-60]%	[60-70]%	[70-80]%	[60-70]%
MHPS	[30-40]%	[40-50]%	[20-30]%	[20-30]%
Ansaldo	[30-40]%	[40-50]%	[30-40]%	[20-30]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

- (271) As a sensitivity analysis, the Commission reports the results of the frequency analysis with the interaction between the Large and Very Large segments (Table 24). This confirms that after GE ([90-100]%), Alstom ([50-60]%) is the OEM that participates the most often against Siemens. The gap between Alstom and MHPS or Ansaldo is also increasing over time. The gap between Alstom ([60-70]%) and MHPS ([30-40]%) or Ansaldo ([10-20]%) remains significant in the EEA. This sensitivity analysis confirms that MHPS and Ansaldo have lower interactions with Siemens than Alstom.

**Table 24: Analysis of participation rates for tenders where Siemens participated
(tenders where Siemens bid with its Large HDGT)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
GE	[90-100]%	[80-90]%	[80-90]%	[90-100]%
Alstom	[50-60]%	[70-80]%	[80-90]%	[60-70]%
MHPS	[30-40]%	[40-50]%	[30-40]%	[30-40]%
Ansaldo	[20-30]%	[30-40]%	[30-40]%	[10-20]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

- (272) Market reconstruction data also confirms that: (i) after GE, Alstom is most frequent bidder against Siemens (meeting in [50-60]% of bids for Worldwide without China, and [50-60]% of bids in the EEA), and (ii) MHPS and Ansaldo have lower interactions with Siemens than Alstom (with an average participation rate around [20-30]% for both Worldwide without China and EEA).

4.3.3.2. There is a high proportion of “3-to-2” tenders for those tenders where Alstom participates against Siemens

- (273) The likely discontinuation of Alstom's GT26 would lead to a potential loss of competition for all tenders where Alstom competes against Siemens. This concerns [number of tenders] tenders in the Large segment ([50-60]% of the competitive tenders). A significant proportion of these tenders have three participants or fewer, that is at most another participant in addition to Siemens and Alstom: [40-50]% for the period 2009-2014, [40-50]% for the period 2011-2014, [50-60]% for the period 2012-2014, and [40-50]% in the EEA (see

(274) Table 25). This evidence suggests a concentrated market structure for the tenders that are the most likely to suffer from a potential loss of competition vis-à-vis Siemens due to the likely discontinuation of Alstom's GT26. The sensitivity analysis confirms the significant proportion of overlapping tenders with three participants or fewer (see Table 26).

**Table 25: Number of participants in tenders where Siemens and Alstom compete
(tenders where both Siemens and Alstom bid and a Large HDGT won)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
2 participants	[5-10]%	[10-20]%	[10-20]%	[0-5]%
3 participants	[30-40]%	[30-40]%	[30-40]%	[40-50]%
4 participants	[40-50]%	[40-50]%	[40-50]%	[40-50]%
5 participants	[5-10]%	[10-20]%	[5-10]%	[10-20]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

**Table 26: Number of participants in tenders where Siemens and Alstom compete
(tenders where both Siemens and Alstom bid and at least one of them competes with a Large HDGT)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
2 participants	[5-10]%	[10-20]%	[10-20]%	[0-5]%
3 participants	[30-40]%	[20-30]%	[20-30]%	[30-40]%
4 participants	[50-60]%	[50-60]%	[50-60]%	[60-70]%
5 participants	[5-10]%	[5-10]%	[0-5]%	[5-10]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

Using data from the market reconstruction, Table 27 shows that the share of tenders where Siemens and Alstom face only another competitor represents [50-60]% and [50-60]% respectively for the periods 2009-2014 and 2011-2014 (instead of [40-50]% for 2009-2014 and [40-50]% for 2011-2014 in

- (275) Table 25 based on bidding data provided by the Notifying Party). This is also confirmed in the sensitivity analysis in Table 28, where the proportion of tenders with three participants or less represents [50-60]% ([50-60]% for 2011-2014) instead of [30-40]% ([30-40]% for 2011-2014) based on bidding data provided by the Notifying Party in Table 26. While the Commission considers that the figures from the market reconstruction dataset should be interpreted carefully (see paragraph (177)), data from competing still confirms the concentrated market structure for the tenders where Alstom and Siemens compete against one another.

**Table 27: Number of participants in tenders where Siemens and Alstom compete
(based on third party data)
(tenders where both Siemens and Alstom bid and a Large HDGT won)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
2 participants	[10-20]%	[10-20]%	[10-20]%	[40-50]%
3 participants	[40-50]%	[40-50]%	[40-50]%	[40-50]%
4 participants	[30-40]%	[30-40]%	[40-50]%	[10-20]%
5 participants	[5-10]%	[5-10]%	[0-5]%	[0-5]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

**Table 28: Number of participants in tenders where Siemens and Alstom compete
(based on third party data)
(tenders where both Siemens and Alstom bid and at least one of them competes with a Large HDGT)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
2 participants	[10-20]%	[10-20]%	[10-20]%	[40-50]%
3 participants	[40-50]%	[30-40]%	[30-40]%	[40-50]%
4 participants	[40-50]%	[30-40]%	[40-50]%	[10-20]%
5 participants	[5-10]%	[10-20]%	[5-10]%	[0-5]%
Observations	[number of tenders]	[number of tenders]	[number of tenders]	[number of tenders]

4.3.4. The analysis of shortlist information suggests that Alstom is a close constraint on GE and Siemens, well ahead of MHPS and Ansaldo

- (276) As a complement to its participation frequency analysis, the Commission has also considered information on shortlisted bidders. As described in Section 3.2.2, the Commission notes that OEMs have different perceptions of the shortlist stage, that a shortlist stage is not available for all tenders (see Table 29 below, see also discussion on Questionnaire Q6 in Section 3.2.2), and that customers mentioned in the market investigation that they usually do not disclose information on shortlisted bidders to OEMs.

- (277) Therefore, while the Notifying Party assumes that the Parties always know when they are shortlisted²²¹, the Commission was not in a position to verify the information on shortlisted bidders provided by the Notifying Party. Information on shortlist therefore needs to be treated with caution.
- (278) Moreover, while the Notifying Party has provided information on shortlisted firms for some tenders, it was necessary for the Commission to correct the data in order to ensure consistency.²²²
- (279) The variable "shortlist" is recorded as "Yes" if at least one OEM is shortlisted. After the corrections on shortlist data provided by the Notifying Party, among the [number of tenders] tenders in the Large segment, [number of tenders] tenders have information on shortlisted bidders ([40-50]% of the competitive tenders in the Large segment, see Table 29). In the sensitivity analysis, data on shortlisted bidders is similarly available only for [40-50]% of the competitive tenders (see Table 30). Because of these data limitations, the Commission considers that the analysis of the shortlisted bidders cannot capture all competitive interactions since it includes only [40-50]% of the competitive tenders in the Large segment. In comparison, the previous analysis on firm participations by OEMs included all [number of tenders] competitive tenders in the Large segment.
- (280) The Commission reports below the analysis of shortlisted bidders based on the bidding data provided by the Notifying Party. As regards data collected with competing OEMs, undertaking this analysis is difficult given that one of the main OEMs (Siemens) has a significantly different understanding of the shortlist stage (see Section 3 for further details).

**Table 29: Distribution of tenders per number of shortlisted bidders
(tenders where a Large HDGT won)**

	Number of tenders	%
No information on shortlist stage or No shortlist	[...]	[60-70]%
Shortlist stage:		
2 shortlisted bidders	[...]	[30-40]%
3 shortlisted bidders	[...]	[5-10]%
4 shortlisted bidders	[...]	[0-5]%
5 shortlisted bidders	[...]	[0-5]%
Total	[...]	100%

²²¹ See CRA Submission 1 and [Professor A] Submission.

²²² The following correction have been carried out:

- [Information on specific tenders]
- [Information on specific tenders].
- [Information on specific tenders].
- [Information on specific tenders].
- [Information on specific tenders].
- [Information on specific tenders].

**Table 30: Distribution of tenders per number of shortlisted bidders
(tenders where an OEM participates with a Large HDGT)**

	Number of tenders	%
No information on shortlist stage or No shortlist	[...]	[50-60]%
Shortlist stage:		
2 shortlisted bidders	[...]	[30-40]%
3 shortlisted bidders	[...]	[10-20]%
4 shortlisted bidders	[...]	[0-5]%
5 shortlisted bidders	[...]	[0-5]%
Total	[...]	100%

- (281) Table 31 reports the number of tenders where each OEM was shortlisted. Based on the data provided by the merging parties, GE, Alstom, and Siemens are the OEMs who are shortlisted the most often. Alstom is only slightly below or at a similar level compared to GE or Siemens. In comparison, MHPS and Ansaldo appear as being rarely shortlisted. This data confirms the importance of Alstom as a competitive force in the Large segment.

**Table 31: Number of shortlist events by OEM
(tenders where a Large HDGT won)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
GE	[...]	[...]	[...]	[...]
Alstom	[...]	[...]	[...]	[...]
Siemens	[...]	[...]	[...]	[...]
MHPS	[...]	[...]	[...]	[...]
Ansaldo	[...]	[...]	[...]	[...]

- (282) This is also confirmed in the sensitivity analysis (see Table 32). While GE and Siemens appear the most often shortlisted OEMs, Alstom appears in the third position, even above MHPS despite the fact that MHPS is currently offering two Very Large HDGTs (namely, the M701F5 and the M701J). This table also confirms the limited presence of Ansaldo.

**Table 32: Number of shortlist events by OEM
(tenders where an OEM participates with a Large HDGT)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
GE	[...]	[...]	[...]	[...]
Alstom	[...]	[...]	[...]	[...]
Siemens	[...]	[...]	[...]	[...]
MHPS	[...]	[...]	[...]	[...]
Ansaldo	[...]	[...]	[...]	[...]

- (283) The Commission has also considered how often the merging parties are shortlisted against each other relative to other bidders. This is similar to the participation frequency analysis. Due to the small sample size, the Commission has considered only the period 2009-2014.
- (284) Table 33 shows that after Siemens, Alstom is the OEM which is the most often shortlisted against GE, significantly above MHPS and Ansaldo. This is also valid in the EEA, even though results should be interpreted with caution due to the limited number of tenders with shortlist information.

**Table 33: Number of tenders where GE is shortlisted against its competitors
(percentage of all tenders with shortlist information on GE)
(tenders where a Large HDGT won)**

	Worldwide (without China)	EEA
	2009-2014	2009-2014
GE and Alstom	[40-50]%	[60-70]%
GE and Siemens	[60-70]%	[50-60]%
GE and MHPS	[10-20]%	[20-30]%
GE and Ansaldo	[5-10]%	[10-20]%
Observations	[number of tenders]	[number of tenders]

- (285) This is also confirmed in Table 34 with the sensitivity analysis: while the number of tenders when MHPS is shortlisted against GE increases, Alstom remains above MHPS, despite MHPS already being present in the Very Large segment with two HDGTs. Therefore, also under the sensitivity analysis MHPS's competitive constraint on GE appears to be lower than Alstom's competitive constraint on GE on the basis of shortlist information. Moreover, Ansaldo continues to appear as a limited competitive force with the lowest number of shortlists.

**Table 34: Number of tenders where GE is shortlisted against its competitors
(percentage of all tenders with shortlist information on GE)
(tenders where an OEM participates with a Large HDGT)**

	Worldwide (without China)	EEA
	2009-2014	2009-2014
GE and Alstom	[30-40]%	[50-60]%
GE and Siemens	[60-70]%	[50-60]%
GE and MHPS	[20-30]%	[30-40]%
GE and Ansaldo	[10-20]%	[10-20]%
Observations	[number of tenders]	[number of tenders]

- (286) Therefore, the analysis of shortlist information indicates that Alstom is a close and significant competitive constraint to GE, while MHPS appears behind Alstom, with Ansaldo even further behind. The Notifying Party, in its own economic submissions

(e.g. in the [Professor A] Submission), recognises that information on participation on the last stage (i.e. the shortlist stage) provide useful evidence on the competitive effect of the merger.²²³

- (287) The shortlist information can be combined with the available runner-up data, as suggested in the [Professor A] Submission.²²⁴ Even if one were to accept the validity of the [Professor A] model's assumptions (which are not in line with the evidence discussed in Sections 3.1 and 3.2), given the significant number of tenders with missing data on runner-up bidders and shortlisted bidders, the framework set out in the [Professor A] Submission would only apply to a maximum of [number of tenders] tenders out of the [number of tenders] competitive tenders in the Large segment, that is less than [40-50]% of tenders (see discussion in paragraph (144)). These are the tenders which have both shortlist and runner-up information available.
- (288) Table 35 below reports the different configurations on winner and runner-up bidders among these [number of tenders] tenders. While it is difficult to interpret the figures for the [number of tenders] EEA tenders due to the small sample size, Table 35 supports the finding that Alstom is a close and significant competitor to GE. Indeed, after Siemens, Alstom is the closest competitor to GE: Alstom and GE are the winner and runner-up bidders in a significant number of tenders ([number of tenders] tenders), behind the number of tenders where GE and Siemens are the winner and runner-up bidders ([number of tenders] tenders), but well above the number of tenders where GE and MHPS (or Ansaldo) are the winner or runner-up bidders ([number of tenders] for GE and MHPS, [number of tenders] tenders for GE and Ansaldo).²²⁵

²²³ See [Professor A] Submission, page 10: *"the existence of the third stage, in which typically two firms are shortlisted, strongly suggests that information on the participation in this last stage, if available, will provide more useful evidence"*.

²²⁴ The relevance and reliability of runner-up information is discussed extensively in sections 3 and in 4.5.

²²⁵ In addition, Table 35 shows that Alstom is also a close and significant competitor to Siemens. After GE, Alstom is the closest competitor to Siemens. Indeed, Siemens and Alstom are the winner and runner-up bidders in a significant number of tenders ([number of tenders] tenders), behind the number of tenders where Siemens and GE are the winner and runner-up bidders ([number of tenders] tenders), but well above the number of tenders where Siemens and MHPS (or Ansaldo) are the winner or runner-up bidders ([number of tenders] for Siemens and MHPS, [number of tenders] for Siemens and Ansaldo).

Table 35. Runner-bidders under the economic framework proposed by the Notifying Party

	World, 50 Hz, excluding China	EEA
GE and Siemens ²²⁶	[...]	[...]
GE and Alstom ²²⁷	[...]	[...]
GE and Ansaldo	[...]	[...]
GE and MHPS ²²⁸	[...]	[...]
Alstom and Siemens ²²⁹	[...]	[...]
Alstom and MHPS	[...]	[...]
MHPS and Siemens ²³⁰	[...]	[...]
Number of tenders	[...]	[...]

- (289) In addition, the Commission considers how often Alstom is shortlisted against Siemens, relative to other competitors. As already discussed, this is relevant to assess the potential loss of competition vis-à-vis Siemens due to the likely discontinuation of Alstom's GT26 HDGT.
- (290) Table 36 shows that after GE, Alstom is the OEM which is the most often shortlisted against Siemens, with MHPS and Ansaldo having limited or no competitive interactions with Siemens. This is also valid in the EEA, even though results should be interpreted with caution due to the limited number of tenders with shortlist information.²³¹ This is also confirmed by the sensitivity analysis presented in Table 37.

**Table 36: Number of tenders where Siemens is shortlisted against its competitors
(percentage of all tenders with shortlist information on Siemens)
(tenders where a Large HDGT won)**

	Worldwide (without China)	EEA
	2009-2014	2009-2014
Siemens and Alstom	[50-60]%	[80-90]%
Siemens and GE	[70-80]%	[80-90]%
Siemens and MHPS	[10-20]%	[20-30]%
Siemens and Ansaldo	[0-5]%	[0-5]%
Observations	[number of tenders]	[number of tenders]

²²⁶ One tender is pro-rated (see Section 4.5 for further details on the pro-rating methodology) since there are two runner-up bidders: project [name and ID of project], where Alstom is the winning OEM and GE and Siemens are both the runner-up bidders.

²²⁷ One tender is pro-rated since there are two runner-up bidders: project [name and ID of project], where Alstom is the winning OEM and GE and Siemens are both the runner-up bidders.

²²⁸ One tender is pro-rated since there are two runner-up bidders: [name and ID of project], where MHPS is the winning OEM and GE and Siemens are both the runner-up bidders.

²²⁹ One tender is pro-rated since there are two runner-up bidders: [name and ID of project], where Alstom is the winning OEM and GE and Siemens are both the runner-up bidders.

²³⁰ One tender is pro-rated since there are two runner-up bidders: project [name and ID of project], where MHPS is the winning OEM and GE and Siemens are both the runner-up bidders.

²³¹ The importance of Alstom as a competitive constraint to Siemens is also confirmed with the analysis of runner-up data in Table 35 (see also footnote 225).

**Table 37: Number of tenders where Siemens is shortlisted against its competitors
(percentage of all tenders with shortlist information on Siemens)
(tenders where an OEM participates with a Large HDGT)**

	Worldwide (without China)	EEA
	2009-2014	2009-2014
Siemens and Alstom	[40-50]%	[60-70]%
Siemens and GE	[70-80]%	[80-90]%
Siemens and MHPS	[10-20]%	[20-30]%
Siemens and Ansaldo	[0-5]%	[10-20]%
Observations	[number of tenders]	[number of tenders]

- (291) In summary, an analysis of shortlist information shows that: (i) Alstom is an important competitive force in the Large segment, while MHPS and Ansaldo appear as being rarely shortlisted, (ii) after Siemens, Alstom is the OEM that is shortlisted the most often against GE, and therefore appears as a close and significant competitive constraint to GE; (ii) Alstom appears as well as a close and significant competitive constraint to Siemens, also at the shortlist stage; and (iii) MHPS and Ansaldo have more limited competitive interactions with GE and Siemens at the shortlist stage. This analysis broadly confirms the analysis of firm participation presented in Section 4.3.1.

4.3.5. Implications for the assessment of the Transaction: evidence from participation data indicates that (i) GE and Alstom are close competitors and that Alstom is the second most important competitive constraint on GE (after Siemens) in a highly concentrated market structure, and (ii) that Alstom and Siemens are also close competitors in a highly concentrated market structure

- (292) In summary, regarding the competitive interactions between GE and Alstom, the analysis of bidding data indicates as follows: (i) that after Siemens, Alstom is the firm that participates the most often against GE, both at the firm stage and at the shortlist stage, suggesting that Alstom is a close and significant competitive constraint to GE, (ii) that MHPS and Ansaldo have more limited competitive interactions with GE than Alstom, both at the firm stage and at the shortlist stage, (iii) that GE and Alstom compete against one another in a significant share of competitive tenders (roughly half), which are the tenders the most likely to suffer from a loss of competition between the merging parties, (iv) and that tenders where the Parties compete against one another have a concentrated market structure, with a significant proportion of tenders (at least [40-50]%²³²) with three participants or fewer.
- (293) The Commission concludes that this evidence suggests that the Parties are close competitors. In light of the high combined market share of the merged entity (above

²³²

When using data on participations submitted by competing OEMs, the percentage of tenders where the Parties met and where there was only one other participant increases to roughly [60-70]%. However, this should be interpreted with caution as an upper-bound given the limitation of MHPS' participation data (see paragraph (177)).

[50-60]%), this evidence is indicative of significant horizontal unilateral effects. Moreover, the market is highly concentrated as suggested by the high proportion of “3-to-2 bids” when the Parties compete against one another, with the third competitor being typically Siemens. This evidence also suggests the presence of significant post-merger unilateral effects.

- (294) Regarding the competitive interactions between Alstom and Siemens (which are most relevant to assess the impact of product discontinuation), the analysis of bidding data indicates as follows: (i) that after GE, Alstom is the firm that participates the most often against Siemens, both at the firm stage and at the shortlist stage, suggesting that Alstom is a significant competitive constraint to Siemens as well, (ii) that MHPS and Ansaldo participate significantly less against Siemens than Alstom, both at the firm stage and at the shortlist stage, (iii) that the market structure is highly concentrated, with a significant proportion of tenders with three participants or fewer for those tenders where Alstom and Siemens compete against one another.
- (295) The Commission concludes that this evidence suggests that the discontinuation of Alstom’s GT26 post-merger is also likely to result in a significant loss of competition vis-à-vis Siemens, with the existence of adverse effects in addition to the standard unilateral effects.
- (296) In addition, bidding data on firm participations by OEMs indicates that MHPS and Ansaldo have also limited interactions with Alstom, suggesting that these two OEMs are not close competitors to Alstom. This indicates that greater participation by other OEMs (most notably MHPS and/or Ansaldo) in tenders where the Parties interact with each other is unlikely to fully offset the merged entity's incentives to raise price post-merger (see also Section 4.3.4 for further discussion)..
- (297) In its Reply to the 6(1)(c) Decision, the Notifying Party has argued that “*GE and Alstom’s participations in many of the same tenders does not imply that they are close competitors*”, and “*another bidder may be eliminated at an early stage when there were still several rivals still in contention*”, “*The simple fact that these firms bid in the initial round in the same tenders therefore says nothing about how closely they actually competed with one another for these projects*”.²³³ The Notifying Party therefore argues that the analysis of firm participations does not take into account whether either GE or Alstom came close to winning any of these tenders or whether one or both of them was eliminated at an early stage of the bidding.
- (298) The Commission notes that “*the initial round*” described by the Notifying Party is significantly more complex than the budgetary stage since it involves discussions with the customer on the technical and commercial terms for an extended period, and significant bidding costs for the supplier. As discussed in Section 3.1 of this Annex, the importance of the firm stage has been confirmed by the Commission’s market investigation (by both customers and competitors). The Commission considers that participation at a firm stage is therefore informative on the competitive role played by each OEM, and on their product fit in relation to customer requirements. It is therefore informative also about closeness between competing OEMs.

²³³

See RBB Submission 4, page 16.

- (299) Furthermore, in order to assess the argument of the Notifying Party, the Commission has analysed also information on shortlisted bidders (the last stage of the bidding process) provided by the Notifying Party, where this information is available. This analysis confirms that GE and Alstom are close competitors. The analysis of shortlist information also confirms that Alstom is a close competitor to Siemens.
- (300) Regarding the concentrated market structure with a significant number of tenders with three firm participants or fewer, the Notifying Party has argued that *"from the perspective of customers, if they fear that the transaction would result in them receiving less competitive outcomes, they will have a strong incentive to encourage firms such as MHI to bid more often", "given the complexity of gas turbines, it may be costly for customers to evaluate bids; this means that, even if all five suppliers could submit effective offers, a customer might choose to invite only three of them to bid", and "the absence of a bid from Alstom post-merger, that customer would simply choose to invite an alternative third bidder instead, such as MHI or Ansaldo"*.²³⁴
- (301) As explained in detail in the main body of the Decision (Section 8.6.1.1), the Commission's market investigation has shown that the majority of customers invite all five OEMs to participate in tenders, that a large majority (just short of 80%) invite four or five OEMs to participate in tenders, and that customers do not face incentives to reduce the number of bidders to decrease their costs of evaluating tenders. The evidence therefore indicates that despite the presence of five OEMs and customers willingness to invite at least four to participate in tenders, customers have often less than four or five available choices in practice (actually, often three choices available). The evidence from the bidding data and the market investigation therefore contradict the argument of the Notifying Party that customers, in the absence of a firm bid from Alstom post-merger, *"would simply choose to invite an alternative third bidder instead, such as MHI or Ansaldo"*.
- (302) Moreover, the Commission considers that potential repositioning by MHPS and/or Ansaldo post-merger is unlikely to offset potential anti-competitive effects for the following reasons:
- a. First, the high proportion of 3-to-2 tenders among those tenders where the Parties compete against one another implies that rivals would need to participate much more than what they currently do to replace Alstom's presence in current 3-to-2 tenders.
 - b. Second, the evidence from the market investigation indicates that lack of participations in tenders is not due to MHPS or Ansaldo not being invited but rather to a perceived lack of product or commercial fit. This factor would still affect the willingness by rival OEMs to significantly increase their participation rate post-merger.
 - c. Third, the qualitative evidence set out in the main body of the Decision shows that MHPS/Ansaldo and Alstom are not close in product space, in particular in relation to operational flexibility and other technological features (see also Section 8.5 in

²³⁴

See RBB Submission 3.

the Decision for further analysis). In relation to MHPS in particular (which is the 4th OEM in terms of win rates in Worldwide excluding China 50Hz Large segment), its past wins in the competitive tenders does not appear to be linked to product features related to operational flexibility, whilst this is a particular strength of Alstom (in particular for turn-down and part-load efficiency).

- d. Fourth, assuming that MHPS or Ansaldo did not face any impediment to participate more actively in tenders as suggested by the Notifying Party, it follows that they would have already faced an incentive to participate more actively before the merger, particularly in light of Alstom's greater success rate compared to MHPS or Ansaldo in the Large segment (for Worldwide excluding China in particular) and the high value of HDGT tenders. The fact that instead MHPS and Ansaldo participated in tenders less frequently than Alstom pre-merger therefore suggests that they considered their probability of being successful in tenders to be lower than the one of Alstom. This in turn implies that post-merger they would be a weaker competitive constraint to other OEMs than Alstom was pre-merger, even if they were to participate more frequently post-merger.
- e. Last, the analysis of margins below in Section 4.4 also indicates that there could be a significant price increase for 4-to-3 tenders, in particular for HDGTs, and therefore even if MHPS were to participate more in tenders where currently only the merging parties and Siemens are present.

(303) The Commission therefore considers that greater participation by other OEMs (most notably MHPS and/or Ansaldo) in tenders where GE and Alstom interact with each other is unlikely to offset the potential anti-competitive effects of the Transaction.

(304) The analysis summarised above suggests that Alstom's participation is likely to affect significantly GE's probability of winning, and vice versa. Prior to the merger, this two-way competitive constraint induces each party to bid more aggressively in order to increase their chances of winning a tender. Post-merger, this competitive constraint will be lost. This implies that in tenders where GE (respectively Alstom) would have otherwise faced Alstom (respectively GE) as an independent competitor, GE (respectively Alstom) will now face less intense competition. This will induce GE and Alstom to be less aggressive in their bidding behaviour. This effect is further analysed below in Section 4.4. Product discontinuation would further accentuate these effects, by increasing the probability of Siemens winning a bid, and leading also Siemens to bid less aggressively (over and above the incentive to bid less aggressively resulting from the elimination of competition between GE and Alstom). This effect is also further analysed below in Section 4.4.

4.4. Evidence on wins and on margins indicates that Alstom provides a significant competitive constraint on GE

(305) In this Section, the Commission presents several quantitative analyses to determine whether Alstom is a significant competitive constraint on GE. This includes evidence on Alstom's impact on GE's wins and losses, and also considers the impact of Alstom on GE's margins. This evidence is particularly pertinent in a first price auction environment since it does not rely exclusively on tenders when the Parties are the winner and runner-up bidder, but instead examines the competitive interactions

between bidders in a broader setting. On the other hand, the evidence is general in the sense that it aims to directly measure the competitive constraint posed by Alstom on GE. Evidence of Alstom being a competitive constraint on other bidders (most notably Siemens) is also assessed in this section, as this evidence is particularly relevant in the context of (effective) discontinuation of the GT26 HDGT.

- (306) While the information on participations and shortlisted bidders that is presented in Section 4.3 of the Annex is a necessary step to assess the extent of competition between the merging parties in bidding market, participations and number of shortlists should also be interpreted in light of wins. In other words, a firm with frequent participations, but which is infrequently the winner, suggest that this firm is not a significant competitive force.²³⁵ Conversely, a firm with a significant number of participations and with a commensurate number of wins is likely to exercise a significant competitive constraint on its rivals.
- (307) Bidders with low winning probabilities have a limited ability to affect the outcome of a bidding process. Their low probability of winning would be indicative of their weak position and their inability to constrain stronger competitors. Differences in winning probabilities are also an indicator of the relative competitive strength of each bidder.²³⁶ As discussed in Section 2.2, this is also in line with the concept of "winning probability diversion ratio" mentioned by Moresi.²³⁷
- (308) The purpose of this section is therefore to determine the impact of each firm on the winning probability of other bidders, in particular in relation to the competitive constraint exercised by each of the merging parties on the other. The Commission has analysed:
 - a. Win rates by OEM when each of the merging parties participate in tenders;
 - b. Win rates by OEM when one of the merging parties is shortlisted or the runner-up; and
 - c. The win rate for tenders when the merging parties compete directly
- (309) Similar analyses are carried out in order to assess the loss of competitive constraint on Siemens due to the discontinuation of Alstom's GT26.
- (310) In order to further supplement the descriptive analyses on competitive interactions between the different OEMs, the Commission has also carried out a regression analysis. The purpose of the regression analysis is to provide additional and complementary evidence on the findings of the descriptive analysis of the bidding data (within the limits of the available data). The Commission relies on the econometric analysis to test the following issues:

²³⁵ This is also mentioned in the CRA submission 1.

²³⁶ See also OFT (2007), "Markets with Bidding Processes", Economics discussion paper, May.

²³⁷ See S. Moresi (2009), "Bidding Competition and the UPP Test", November 9, 2009, HMG Review Project-Comment, Project No. P092900, and S. Moresi (2010), "The use of upwards price pressure indices in Merger Analysis", The Antitrust Source, February.

- a. whether GE's probability of winning tenders is lower depending on the identity of the OEMs that participate in tenders, in particular focusing on the impact of participation by Alstom;
- b. if participation by competing OEMs is associated (or correlated) with lower GE's margins, in particular focusing on the impact of participation by Alstom; and
- c. whether more generally a higher number of competitors is associated with lower GE's margins.

4.4.1. The evidence indicates that there is a two-way competitive interaction between the merging parties, with each party winning a significant number of tenders against the other

- (311) Bidding data can be used to determine to which firms any given bidder loses to when it participates in a tender. The share of losses accounted by each rival supplier is informative about the impact that a particular rival supplier may have on the probability of winning of the bidder in question.^{238 239}
- (312) As it has been reviewed in Section 3, internal documents of the Notifying Party also show that GE carries out post-mortem analyses in order to understand for which reasons a project was lost and who is the winning OEM. [Contents of GE internal document].
- (313)

²³⁸ For example, if bidder A loses 50% of its bids to bidder B, it can be inferred that bidder B has a significant impact on the probability of winning of bidder A. This inference can also be tested econometrically, as is done later in this Section of the Annex.

²³⁹ Similar win-loss analyses have been carried out in the COMP/M.6851 – Baxter International/Gambro, and case COMP/M.4747 – IBM/Telelogic. In these two cases, the analyses consider instances where each party lost a potential contract (for example, renewal of an already existing contract, extension of an already existing contract, new potential business opportunity) in order to assess the closeness of competition between the merging parties (see Commission decision of 22 July 2013 in Case M.6851 - Baxter International/Gambro and Commission decision of 08 March 2008 in Case M.4747 - IBM/Telelogic).

- (314) Table 38 reports the wins for the tenders where GE participates. At a worldwide level, 50Hz, excluding China, in the 2009-2014 period, GE loses first to Siemens ([number of bids] bids), followed by Alstom ([number of bids] bids). MHPS is behind Alstom with [number of bids] wins, and Ansaldo wins very few times against GE (only [number of bids] wins). In other words, Alstom accounts for [20-30]% of GE's losses.²⁴⁰ For the more recent periods (2011/2012-2014) Alstom accounts for a higher share of GE's losses ([30-40]%), twice bigger than MHPS. This evidence indicates that Alstom, by accounting for a significant share of GE's losses, is likely to affect the GE's probability of winning tenders.²⁴¹ At the EEA level, Alstom accounts for [number of bids] losses during the 2009-2014 period. This is below Siemens, but ahead of MHPS.
- (315) The bidding data also shows that GE accounts for [30-40]-[40-50]% of Alstom's losses, depending on the time period considered (see Table 39). This also illustrates the importance of GE on the Alstom's probability of winning a tender, and therefore the constraint imposed by GE on Alstom. In the EEA, for the period 2009-2014, bidding data shows that GE accounts for a higher share of Alstom's losses than at the Worldwide level ([50-60]% vs. [20-30]%, respectively). This suggests in particular a significant competitive constraint of GE on Alstom for EEA customers.

²⁴⁰ GE has lost [number of bids] of the tenders in which it participated during the 2009-2014 period. [number of bids] of these losses have been to Alstom, which implies that Alstom accounts for [20-30]% of GE's losses. Including Alstom's win in [name of project] would increase the share of GE's losses accounted for by Alstom to [20-30]%.

²⁴¹ The [Professor A] Submission mentions that "*The above numbers refer to tenders actually lost by the parties, not to tenders that would be lost following a price increase*" ([Professor A] Submission, page 14), and therefore the figures based on win/loss analysis cannot be interpreted as diversion ratios. The Commission notes that the [Professor A] Submission adopts a framework of second-price auction, which is analysed by the Commission in Section 4.5. In a first-price auction framework, the Commission considers that even if the win/loss figures presented in the main text are not direct measures of "probability diversion ratios" (see S. Moresi (2009), "Bidding Competition and the UPP Test", November 9, 2009, HMG Review Project-Comment, Project No. P092900, and S. Moresi (2010), "The use of upwards price pressure indices in Merger Analysis", The Antitrust Source, February), they are still informative about the underlying diversion ratios. For example, a firm that accounts for 20% of GE's losses is more likely to affect GE's probability of winning than a firm that never wins against GE. The Commission's econometric evidence on the determinants of GE's probability of winning (reported later in this Section) is also supportive of this evidence.

**Table 38: Number of wins by OEM in tenders in which GE participates
(tenders where GE bids and a Large HDGT won)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
GE	[...]	[...]	[...]	[...]
Alstom	[...]	[...]	[...]	[...]
Siemens	[...]	[...]	[...]	[...]
MHPS	[...]	[...]	[...]	[...]
Ansaldo	[...]	[...]	[...]	[...]
Observations	[...]	[...]	[...]	[...]

**Table 39: Number of wins by OEM in tenders in which Alstom participates
(tenders where Alstom bids and a Large HDGT won)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
GE	[...]	[...]	[...]	[...]
Alstom	[...]	[...]	[...]	[...]
Siemens	[...]	[...]	[...]	[...]
MHPS	[...]	[...]	[...]	[...]
Ansaldo	² [...]	[...]	[...]	[...]
Observations	[...]	[...]	[...]	[...]

**Table 40: Shares of losses for GE and Alstom
(based on**

Table 38 and Table 39)

2009-2014, Worldwide (without China)					
Losing OEM / Winning OEM	GE	Alstom	Siemens	MHPS	Ansaldo
GE	-	[20-30]%	[60-70]%	[10-20]%	[0-5]%
Alstom	[20-30]%	-	[40-50]%	[10-20]%	[5-10]%
2011-2014, Worldwide (without China)					
Losing OEM / Winning OEM	GE	Alstom	Siemens	MHPS	Ansaldo
GE	-	[30-40]%	[50-60]%	[10-20]%	[5-10]%
Alstom	[30-40]%	-	[40-50]%	[5-10]%	[5-10]%
2012-2014, Worldwide (without China)					
Losing OEM / Winning OEM	GE	Alstom	Siemens	MHPS	Ansaldo
GE	-	[30-40]%	[50-60]%	[10-20]%	[0-5]%
Alstom	[30-40]%	-	[40-50]%	[10-20]%	[5-10]%
2009-2014, EEA					
Losing OEM / Winning OEM	GE	Alstom	Siemens	MHPS	Ansaldo
GE	-	[20-30]%	[70-80]%	[10-20]%	[0-5]%
Alstom	[50-60]%	-	[30-40]%	[10-20]%	[0-5]%

- (316) Using third parties data confirms this result, where Alstom accounts for [20-30]% of GE's losses for the period 2009-2014, and slightly above [30-40]% for the more recent periods 2011-2014 and 2012-2014. In the EEA for the period 2009-2014, Alstom accounts for [20-30]% of GE's losses.
- (317) The Commission reports the results of the sensitivity analysis for interaction between Large and Very Large tenders in Table 41 to Table 43. This confirms that after Siemens, Alstom is the OEM that accounts for the highest share of GE's losses. The analysis of data collected with competing OEMs confirms this result.

**Table 41: Number of wins by OEM in tenders in which GE participates
(tenders where GE bids with a Large HDGT)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
GE	[...]	[...]	[...]	[...]
Alstom	[...]	[...]	[...]	[...]
Siemens	[...]	[...]	[...]	[...]
MHPS	[...]	[...]	[...]	[...]
Ansaldo	[...]	[...]	[...]	[...]
Observations	[...]	[...]	[...]	[...]

**Table 42: Number of wins by OEM in tenders in which Alstom participates
(tenders where Alstom bids with a Large HDGT)**

	Worldwide (without China)			EEA level
	2009-2014	2011-2014	2012-2014	2009-2014
GE	[...]	[...]	[...]	[...]
Alstom	[...]	[...]	[...]	[...]

Siemens	[...]	[...]	[...]	[...]
MHPS	[...]	[...]	[...]	[...]
Ansaldo	[...]	[...]	[...]	[...]
Observations	[...]	[...]	[...]	[...]

**Table 43: Shares of losses for GE and Alstom
(based on Table 41 and Table 42)**

2009-2014, Worldwide (without China)					
Losing OEM / Winning OEM	GE	Alstom	Siemens	MHPS	Ansaldo
GE	-	[10-20]%	[60-70]%	[10-20]%	[0-5]%
Alstom	[30-40]%	-	[40-50]%	[10-20]%	[5-10]%
2011-2014, Worldwide (without China)					
Losing OEM / Winning OEM	GE	Alstom	Siemens	MHPS	Ansaldo
GE	-	[20-30]%	[50-60]%	[10-20]%	[5-10]%
Alstom	[30-40]%	-	[40-50]%	[5-10]%	[5-10]%
2012-2014, Worldwide (without China)					
Losing OEM / Winning OEM	GE	Alstom	Siemens	MHPS	Ansaldo
GE	-	[20-30]%	[50-60]%	[20-30]%	[0-5]%
Alstom	[30-40]%	-	[50-60]%	[5-10]%	[0-5]%
2009-2014, EEA					
Losing OEM / Winning OEM	GE	Alstom	Siemens	MHPS	Ansaldo
GE	-	[20-30]%	[70-80]%	[10-20]%	[0-5]%
Alstom	[50-60]%	-	[40-50]%	[5-10]%	[0-5]%

- (318) Therefore, the results of this analysis show that (i) after Siemens, Alstom appears as the main competitive constraint on GE's probability of winning a tender, with MHPS and Ansaldo behind, (ii) GE is a constraint on Alstom's probability of winning a tender (in particular for EEA customers), and (iii) Ansaldo wins very few times against GE at a Worldwide level and never in the EEA.
- (319) This analysis of wins against GE therefore suggests that, after Siemens, Alstom is the main competitive constraint to GE. This is in line with earlier finding that that, after Siemens, Alstom is the firm that participates the most often against GE, and also that is shortlisted most often against GE. This evidence is therefore indicative of close competition between the merging parties and of the potential for significant unilateral effects.

4.4.2. The analysis of the shortlist information confirms previous findings

- (320) The Commission has also carried out a similar analysis by considering the tenders where each party considered itself as being shortlisted or runner-up. This allows to focus on the tenders where GE (or Alstom) was “close to win”, but ultimately was not selected. The Commission combined the data on the runner-up and the shortlisted

OEMs since these two variables are not mutually exclusive.²⁴² This additional analysis addresses the criticism made by the Notifying Party that the Commission's win-loss analysis did not take into account the real degree of closeness between the merging parties: *"an analysis of who won projects the parties bid for and lost does not provide a meaningful basis on which to estimate diversion ratios, as this does not take into account whether either party came close to winning any of these tenders or whether one or both of them was eliminated at an early stage of the bidding"* (see RBB Submission 3). The evidentiary value of this additional analysis should be seen in light of the significant uncertainty on the reliability of the runner-up and shortlist information provided by the Notifying Party (and the lack of completeness of this data), as reviewed in Section 3 of the Annex. The Commission nonetheless reports the results of this additional analysis as a further robustness check to address the comments made by the Notifying Party in response to the Article 6(1)(c) Decision.

- (321) Table 44 reports the results of this additional analysis. Due to the small sample size on tenders with shortlist or runner-up information on GE, the Commission reports the analysis for the period 2009-2014.²⁴³
- (322) Table 44 confirms that after Siemens, Alstom is the main competitive constraint to GE, accounting for [20-30]% of GE's losses when GE is shortlisted or runner-up ([number of tenders] tenders). This is twice as large as the corresponding figure for MHPS ([number of tenders] tenders). Table 44 shows that Siemens is the main winner when Alstom is shortlisted or runner-up and loses. If one considers Alstom's losses, these are mostly accounted for by Siemens ([number of tenders] losses), whilst GE and MHPS account for a similar number of wins when Alstom is shortlisted/runner and loses ([number of tenders] wins respectively). However, this last point is difficult to interpret due to the small sample of Alstom's losses where there is runner-up and/or shortlist information ([number of tenders] tenders). This compounds the issues related to the quality of the shortlist and runner-up information.

²⁴² The Notifying Party builds a similar variable in the RBB Submission 1.

²⁴³ Given the different perceptions of competing OEMs on the shortlist stage (see Section 3.2.2), the Commission did not carry out this analysis using data collected with competing OEMs.

Table 44: Number of wins by OEM in tenders in which GE or Alstom are shortlisted or runner-up (tenders where GE bids and a Large HDGT won)

	Worldwide (without China)-2009-2014			
	GE shortlisted/runnerup		Alstom shortlisted/runnerup	
	Wins	Share of GE's losses	Wins	Share of Alstom's losses
GE	[...]	-	[...]	[10-20]%
Alstom	[...]	[20-30]%	[...]	-
Siemens	[...]	[50-60]%	[...]	[50-60]%
MHPS	[...]	[10-20]%	[...]	[20-30]%
Ansaldo	[...]	[5-10]%	[...]	[0-5]%
Observations	[...]	100%	[...]	100%

- (323) Table 45 reports the results of the sensitivity analysis on the interaction between Large and Very Large tenders. This confirms that after Siemens, Alstom is the firm that is main competitive constraint to GE, still ahead of MHPS ([number of tenders]). It should also be noted that among the [number of tenders] wins of MHPS when GE is shortlisted or runner-up, [number of tenders] win concerns a project where GE declares that it has bid with [GT frames] (project with [project ID]). For this specific project, GE also declares that [GT capacity]. In that case, the number of wins by MHPS against tenders where GE has offered a Large HDGT would decrease from [number of tenders] to [number of tenders] in Table 45, which would lead to similar compared to the baseline case in Table 44 above.

Table 45: Number of wins by OEM in tenders in which GE or Alstom are shortlisted or runner-up (tenders where GE or Alstom bids with a Large HDGT)

	Worldwide (without China)-2009-2014			
	GE shortlisted/runnerup		Alstom shortlisted/runnerup	
	Wins	Share of GE's losses	Wins	Share of Alstom's losses
GE	[...]	-	[...]	[20-30]%
Alstom	[...]	[20-30]%	[...]	-
Siemens	[...]2	[50-60]%	[...]	[50-60]%
MHPS	[...]	[10-20]%	[...]	[20-30]%
Ansaldo	[...]	[0-5]%	[...]	[0-5]%
Observations	[...]	100%	[...]	100%

- (324) To conclude, the analysis of wins for the tenders where GE is shortlisted or runner-up (i.e. for tenders where GE is close to win) shows that after Siemens, Alstom is the OEM that accounts for the highest number of GE's losses. This suggests again that Alstom is likely to affect GE's probability of winning tenders, and is therefore a competitive constraint on GE. While this analysis suggest that Siemens is the main constraint on Alstom's probability of winning, GE seems to be a significant constraint as well on Alstom, in particular in light of the fact that MHPS and Ansaldo account for

a limited share of Alstom's overall losses (i.e. Alstom loses mainly to Siemens and GE).

4.4.3. The analysis of the win rates for tenders where the parties meet confirms that Alstom is a significant competitive constraint to GE (above the constraint imposed by MHPS and Ansaldo)

- (325) The Commission has also analysed the win rates of GE's competitors when they compete against GE. Comparing Alstom's share of wins with the corresponding share of wins of competitors allows to benchmark the competitive constraint of Alstom on GE with the competitive constraints of other competitors on GE.
- (326) Table 46 reports the results of this analysis for Large HDGTs.²⁴⁴ Alstom wins [20-30]% of [number of tenders] tenders where GE and Alstom compete against one another for the period 2009-2014. In comparison, Siemens wins [40-50]% of the [number of tenders] tenders where it competes against GE. As regards MHPS, it wins [20-30]% of the [number of tenders] tenders where it competes against GE. Ansaldo competes with GE only in [number of tenders] tenders and wins only [10-20]% of those tenders. For the more recent period 2011-2014, the share of wins of Alstom ([20-30]%) when it competes against GE becomes closer to the share of wins of Siemens ([20-30]%), and MHPS competes against GE to a lesser extent and has a lower share of wins ([10-20]%). These comparisons suggest that, whilst Siemens is the first competitive constraint to GE, Alstom is the second competitive constraint to GE. In particular, Alstom competes against GE more often than MHPS, and it achieves a win rate that is similar (if not higher) than the corresponding MHPS's win rate. In addition, Ansaldo appears as a limited competitive constraint to GE: Ansaldo is the OEM which competes the less often against GE, and its corresponding win rate is the lowest.

²⁴⁴

The results of this analysis are confirmed when using data from competing OEMs.

**Table 46: OEMs' share of wins for tenders with competition against GE
(tenders where a Large HDGT won)**

	Number of tenders with GE as a competitor	%wins for tenders with GE as a competitor
2009-2014		
Siemens	[...]	[40-50]%
Alstom	[...]	[20-30]%
MHPS	[...]	[20-30]%
Ansaldo	[...]	[10-20]%
2011-2014		
Siemens	[...]	[20-30]%
Alstom	[...]	[20-30]%
MHPS	[...]	[10-20]%
Ansaldo	[...]	[5-10]%
2012-2014		
Siemens	[...]	[30-40]%
Alstom	[...]	[20-30]%
MHPS	[...]	[20-30]%
Ansaldo	[...]	[0-5]%

- (327) The sensitivity analysis for Large/Very Large interaction (see Table 47)²⁴⁵ shows that, while Siemens seems the first competitive constraint to GE, Alstom remains the second competitive constraint to GE.²⁴⁶ Whilst Alstom has a similar win rate to MHPS depending on the time period (lower during the 2009-2014 period, but on par during the more recent 2011-2014 period), Alstom meets GE significantly more than MHPS. This is despite the fact that MHPS already has a Very Large offering with two HDGTs (M701F5, M701J).

²⁴⁵ The results of this analysis are confirmed when using data from competing OEMs.

²⁴⁶ In this sensitivity analysis we include all tenders where at least one OEM bid with a Large HDGT, independently of the size of the winning HDGT. Restricting attention only to those bids where GE bids with a Large HDGT would yield results that are essentially identical to those presented in the baseline analysis, since when GE bids with a Large HDGT, the winning HDGT is a Large HDGT in all but four cases.

**Table 47: OEMs' share of wins for tenders with competition against GE
(tenders where an OEM participates with a Large HDGT)**

	Number of tenders with GE as a competitor	%wins for tenders with GE as a competitor
2009-2014		
Siemens	[...]	[40-50]%
Alstom	[...]	[10-20]%
MHPS	[...]	[20-30]%
Ansaldo	[...]	[10-20]%
2011-2014		
Siemens	[...]	[30-40]%
Alstom	[...]	[10-20]%
MHPS	[...]	[10-20]%
Ansaldo	[...]	[5-10]%
2012-2014		
Siemens	[...]	[40-50]%
Alstom	[...]	[10-20]%
MHPS	[...]	[20-30]%
Ansaldo	[...]	[0-5]%

4.4.4. A regression analysis indicates that Alstom is a significant constraint on GE's probability of winning a tenders

- (328) The Commission has performed an econometric analysis of the probability of GE to win a tender, depending on the presence of Alstom and the other competitors. The purpose of this analysis is to complement the implications of the win-loss analysis presented in the previous three sub-sections, by considering GE's probability of winning from a statistical and econometric perspective. The Commission considers that this econometric analysis as one element of the overall analysis and should be interpreted in light of previous analyses of the bidding data.
- (329) It is not possible to perform an econometric analysis on Alstom's probability of winning given that GE is almost always present when Alstom participates in tenders. Therefore, the necessary statistical variation in GE's participations is not present in the data to perform this analysis. However, previous analyses suggest that GE is a significant constraint on Alstom's probability of winning. Moreover, measuring the impact of Alstom on GE's bidding behavior remains relevant to the assessment of the overall impact of the transaction, given GE's significant position in the market, and also in light of the likely discontinuation of Alstom's GT26 (meaning that Alstom's GT26 would not be sold or actively promoted by GE post-merger).
- (330) Table 48 reports the winning rate of GE based on the raw data (i.e. without controlling for any other determinants of GE's probability of winning a tender). For the tenders in the Large segment GE's win rate is equal to [60-70]% for tenders where Alstom does not participate, while this win rate is equal to [20-30]% for tenders where Alstom participates. Therefore, based on the raw data, the win rate of GE is [30-40] percentage points lower when Alstom participates in tenders.

Table 48: Winning rate of GE observed in the data

When Alstom does not participate (#Obs. = [number of tenders])	[60-70]%
When Alstom participates (#Obs. = [number of tenders])	[20-30]%
Difference (in percentage points, pp)	- [30-40]pp

- (331) Factors other than Alstom's participation in tenders may affect GE's probability of winning for the tenders where Alstom participates. For example, the participation of other OEMs may also affect GE's probability of winning for the tenders where Alstom is present. Other factors related to specific tenders' characteristics may also play a role on GE's probability to win a tender (e.g. GE's cost of providing the product demanded by the customer). Therefore, the Commission has also carried out a regression analysis in order to test whether GE's probability of winning a tender remains negatively correlated with Alstom's presence once other characteristics like the presence of competitors and specific tenders characteristics (i.e. so-called control variables) are taken into account.
- (332) For consistency, the Commission uses the same sample of tenders for the econometric estimates of GE's probability of winning and of its margins (which is reported in the following sub-section of the Annex). The sample of tenders is defined using the variable "*Bid_GE_Class=F*" to select the tenders where GE participated with a Large HDGT.²⁴⁷ This excludes from the econometric analysis tenders where GE participated with its Very Large HDGTs (or a combination of its Very Large HDGT and a Large HDGT). The Commission consider that this approach is appropriate (in particular for the econometric analysis of margins) [GE margins] when GE participates with its Very Large HDGTs. This is illustrated by the margin data, with a margin of minus [GE margins] on the HDGT and minus [GE margins] on equipment for the project [project name and ID], where GE participated with a F/H combination, and a margin of minus [GE margins] on HDGTs and a margins of minus [GE margins] on equipment for the project [project name and ID], where GE also participated with a F/H combination (and its H class offering won the tender). By contrast, margins on F class bids are on average positive in the data, with the lowest margins on a F class bid being [GE margins] on the HDGTs and [GE margins] on the overall equipment. The presence of introductory pricing on H bids is further illustrated by an internal GE document concerning the recent project [project name and location] where it is mentioned that [quote in internal GE document on margins].²⁴⁸
- (333) As control variables, the Commission has used the following tender-specific variables: the presence of competitors in tenders (Siemens, MHPS, Ansaldo), the cost of GE to provide the HDGTs (*GE_GT_Cost_In*), the cost of GE to provide any additional related equipment (*GE_Equip_Only_In*), the model that GE used in the tenders (*model9F03*²⁴⁹), whether the tender took place in the EEA, and time dummies to

²⁴⁷ The sample used in the regressions includes [number of tenders] tenders where pricing information is available from GE (including also non-competitive tenders).

²⁴⁸ See GE's reply to the Commission's Request for Information No. 20, 12.03.2015, question 7, doc "GE_0014112_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-20873).

²⁴⁹ This variable is equal to one if GE has participated with its 9F.03 HDGT.

account for any possible time trends.²⁵⁰ The Commission considers all tenders in the Large segment where GE participates with a Large HDGT and has used the same sample for all its model specifications in order to ensure that each specification has the same number of observations.

- (334) Table 66 (see Exhibit A) reports the results for the combined cycle tenders in the Large segment, excluding China. GE's probability of winning tender remains negatively correlated with Alstom's participation, even after controlling for the presence of competitors and tenders' characteristics. This is shown by the negative and statistically significant coefficient on Alstom. This confirms previous analyses that Alstom exercises a strong competitive constraint on GE. The results also indicate that Ansaldo's participation is not associated with a lower probability of winning by GE. This is consistent with previous analyses that Ansaldo exerts a limited competitive constraint to GE.^{251 252}
- (335) As an illustration, the Commission used the models with time effects (Models 7-12) in Table 66 to compute the marginal effect of each of the OEMs on GE's probability of winning a tender. The regression analysis shows that GE's probability of winning a tender is lower by at least 26 percentage points for tenders where Alstom participates.²⁵³
- (336) The econometric evidence on GE's probability of winning is consistent with the previous descriptive analyses. In particular, it suggests that Alstom is a close and significant competitive constraint to GE, by affecting negatively GE's probability of winning a tender. As described in Section 2.2, this effect of a competing bidder on the probability of winning of any given bidder is one of the main channel determining competitive outcomes in a first-price auction environment. As such, this analysis suggests a significant lessening of competition between the merging parties post-merger.

4.4.5. GE's margins in the tendering process decrease more in tenders where Alstom participates

- (337) The Commission has also examined the relationship between Alstom's participation in tenders against GE, and GE's margins.
- (338) GE provided to the Commission margin data for all tenders where it participated with a Large HDGT, including both wins and losses by GE (see GE's pricing database, Annex 1220). This data includes [number of tenders] observations related to GE's participations in the Large segment.

²⁵⁰ The two cost variables control both for the costs of providing the product (including the impact of the number of HDGT sold), and for the scope of the offer made by GE.

²⁵¹ The same analysis on the data collected with competing OEM confirms the results of this probit analysis.

²⁵² The regression analysis includes non-competitive tenders in order to better identify Siemens' effect. The results are still robust if one considers only competitive tenders.

²⁵³ Data collected with competing OEM confirm these results.

- (339) GE's margins distinguish between the price of the HDGTs and the prices of the overall equipment sold by GE, which includes the HDGTs offered by GE and additional equipment sold with the HDGTs, for example the steam turbines, the generators.
- (340) The first margin analysis presented by the Commission relates to the evolution of GE's margins over time. The data available (i.e. variation of GE's prices at different stages of the bidding process) allowed the Commission to run this exercise for 31 observations related to GE's participations in the Large segment.
- (341) First, Table 49 shows that GE's percentage margins are constant between the initial and final stages of the bidding process for tenders where Alstom does not participate. By contrast, the margins of GE are decreasing from the initial to the final stage for tenders where Alstom participates (with a reduction of [GE margins] percentage points on GTs and on overall equipment). Second, Table 49 also suggests that GE's margins are lower when Alstom is present at the initial stage of the bidding process, and even more so at the final stage. This is the case for GE's margins on HDGTs (which, if Alstom is present, are [GE margins] percentage points lower at the initial stage, and [GE margins] percentage points lower at the final stage), and for equipment (where the corresponding difference associated with Alstom is of [GE margins] percentage points at the initial stage, and [GE margins] points at the final stage).
- (342) This analysis suggests that even if one controls for tender characteristics that are not related to Alstom's presence, Alstom's participation is associated with lower margins during the course of the tender process. For example, even if one were to consider conservatively that Alstom has no impact on the margins associated with bids at the initial stage of the bidding process (and that any difference at the stage is entirely due to tender characteristics), the presence of Alstom is still associated with a further reduction of margins during the course of the tendering process.
- (343) While the low sample size for tenders where sufficient data on margins over time does not allow for a systematic regression analysis, the Commission has run a statistical test to determine whether GE's margins are significantly higher when Alstom is not present. The last row of Table 49 shows that this is the case at the final stage of the bidding process for both the HDGTs' and the equipment' margins. At the initial stage of the bidding process, while this is not the case for GE's margins on equipment, it is close to be the case²⁵⁴ for GE's margins on HDGTs. Therefore, the analysis of margins illustrated in Table 49 shows that GE's margins are lower for tenders where Alstom participates.

²⁵⁴

Even with a small sample size, the T-test is close to be significant at 10%.

Table 49: Evolution of GE's margins in the tender procedure

	GE's %margin on HDGTs		GE's %margin on equipment	
	Initial stage	Final stage	Initial stage	Final stage
Alstom not present ([number of tenders] observations)	[GE margins]%	[GE margins]%	[GE margins]%	[GE margins]%
Alstom present ([number of tenders] observations)	[GE margins]%	[GE margins]%	[GE margins]%	[GE margins]%
Difference (in % points)	[GE margins]pp	[GE margins]pp	[GE margins]pp	[GE margins]pp
T-test (p-value) ²⁵⁵	0.1063	0.0064	0.1956	0.0121

- (344) The Commission considers that this margin analysis is consistent with previous analyses and suggests as well that Alstom is a close and significant competitive constraint to GE.

4.4.6. A regression analysis indicates that GE's margins are significantly lower in tenders where Alstom participates

- (345) The Commission has also carried out a further analysis of the final margin data provided by the Notifying Party in order to test whether Alstom's presence is associated with lower margins by GE.²⁵⁶
- (346) Among the [number of tenders] tenders where margin data are available when GE participates with a Large HDGT in the Large segment, GE realizes an average margin of [GE margins]% on the overall equipment offered and an average margin of [GE margins]% on the HDGTs offered.²⁵⁷
- (347) Alstom provided margin data only for the bids won, and this data include the overall product offering of Alstom to the customers (i.e. GT, with ST, generators, other equipment). It is not possible to distinguish between the different components of Alstom's offerings.²⁵⁸ Since Alstom won [number of tenders] projects in the Large segment, it is not possible to carry out a meaningful regression analysis because of the limited number of observations. The Commission therefore focuses its margins analysis only on GE's margins.

²⁵⁵ The alternative hypothesis is as follows: the difference between GE's margin when Alstom does not participate and GE's margin when Alstom participates is strictly positive. That is, GE's margin when Alstom does not participate is strictly higher than GE's margin when Alstom participates. A p-value below 10% means that we accept this alternative hypothesis.

²⁵⁶ Similar analyses have been carried out for example in Commission decision of 30 January 2013 in Case M.6570 – UPS/TNT Express, Commission decision of 30/01/2013 in Case M. 4662 - Syniverse/BSG, Commission decision of 04/12/2007 in Case M.3216 – Oracle/Peoplesoft and Commission decision of 26/10/2004 in Case M. 3083 – GE/Instrumentarium.

²⁵⁷ As described above, the Commission uses the variable "*Bid_GE_Class=F*" to select the tenders where GE participated with a Large HDGT.

²⁵⁸ See data submitted by Alstom to the Commission on 05 December 2014 (279251v1-M.7278_ALSTOMs prices and margins for orders from 2009_5 December 2014-BRULIB01.XLSX).

- (348) As regards the LTSA that are typically sold together with the HDGT, GE provided margin data for the bids won.²⁵⁹ The Commission asked GE to provide margins in present value (i.e. discounted value of the LTSA at the date of where the tender was awarded) in order to take into account the length of the LTSA, which can last for more than 10 years. GE was able to provide this data for only [number of tenders] observations.²⁶⁰ Therefore, the Commission was not in a position to include GE's data on LTSA in its regression analysis. On the other hand, the Commission has not seen evidence to suggest that a regression analysis of margins would be systematically biased by the inability to consider LTSA margins.
- (349) Table 50 illustrates GE's margins depending on the participation of Alstom, based on the raw data (without controlling for any other possible determinants of margins). Table 50 shows that, when Alstom participates in tenders, GE's margins are lower by [GE margins] percentage points on the HDGTs and by [GE margins] percentage points on the equipment. The difference in GE's margins due to Alstom's participation is even higher when considering only tenders won by GE.

**Table 50: GE's margins and participations of Alstom
(tenders where a Large HDGT won)**

	Based on GE's participations		Based on GE's wins	
	GE's margin on HDGTs	GE's margin on equipment	GE's margin on HDGTs	GE's margin on equipment
Alstom's participation				
No	[GE margins]%	[GE margins]%	[GE margins]%	[GE margins]%
Yes	[GE margins]%	[GE margins]%	[GE margins]%	[GE margins]%
Difference	[GE margins]pp	[GE margins]pp	[GE margins]pp	[GE margins]pp

- (350) The Commission carried out an econometric analysis in order to further analyse the relation between the presence of Alstom and GE's margins. The purpose of the regression analysis is to determine whether the negative relationship observed in the raw data is still present and is statistically significant after controlling for the presence of competitors and characteristics of the tenders. Other variables (so-called "omitted" variables), different from Alstom's participation in tenders, may also affect GE's probability of winning for the tenders where Alstom participates. In order to mitigate the omitted variable issue, the Commission used several control variables, as discussed above in Section 4.4.4. In addition, the Commission has also controlled whether the observed margins are related to a tender won or lost by GE (*GEwin*²⁶¹). Controlling for

²⁵⁹ See GE's reply to the Commission's Request for Information No. 13, 23.01.2015, question 4 (submitted as Annex 2569).

²⁶⁰ The Notifying Party replied to the Commission indicating that "*GE does not systematically record or calculate for each CSA prices and margins in present values (discounted to the date when the bid award was made) in ordinary course of business*" (GE's reply to the Commission's Request for Information No. 28, 21.04.2015, question 3 b). The Notifying Party further mentioned that "*For those projects in which GE made NPV calculations at the time of the bid award, the available CSA NPV price and margin data are provided in columns H-J*" (GE's reply to the Commission's Request for Information No. 28, 21.04.2015, question 3 b).

²⁶¹ This variable is equal to 1 if GE has won a tender.

the impact of GE wins in this way is justified by the relatively small number of observations when GE wins available in the data (implying that undertaking a regression on the GE's margins when it wins would lead to too few observations for a robust analysis).²⁶² Therefore the Commission has relied on all GE's participations to increase the sample size.

- (351) The Commission also notes however that, even when considering all of GE's participations, this leads to only [number of tenders] observations in the regression analysis, therefore statistical significance may be difficult to obtain, in particular when the number of control variables increases. The regression results presented below therefore need to be interpreted in light of these data limitations.
- (352) Last, the Commission notes that even the GE's margins when it loses are informative about the relation between competitive conditions and GE's pricing behaviour. This is due to the fact that these margins are the result of commercially binding offers (made after a costly and time-consuming bidding process), and are also further adjusted during the bidding process, often as a response to competitive conditions.
- (353) Table 67 (see Exhibit A) reports results from the regression analysis on GE's HDGTs margins. The results show that GE's margins are significantly negatively correlated with Alstom's participation (i.e. Alstom's participation is associated with lower GE's margins) in all specifications, even after controlling for the presence of competitors and tenders' characteristics. This is again consistent with previous evidence that Alstom is a close and significant competitive constraint to GE. Using the specifications with time dummies, GE's margins seems to be around [GE margins] percentage points lower in average when Alstom participates in tenders.²⁶³ Combining this information with an average margin of around [GE margins]% for GE's HDGTs for tenders where Alstom does not participate, this corresponds to higher GE's prices for HDGTs on average in the range of [GE prices]% for tenders where Alstom does not participate.²⁶⁴
- (354) The results on HDGT margins also indicate that participation by Siemens and by MHPS are negatively correlated with GE's margins (and are typically statistically significant), whilst Ansaldo's participation is not correlated with GE's margins (as shown by the very large standard errors). The latter result is consistent with previous analyses that Ansaldo does not exert a significant competitive constraint on GE.
- (355) Table 68 (see Exhibit A) reports results from the regression analysis on GEs' equipment margins. The results indicate that GE's margins remain significantly negatively correlated with Alstom's participation (i.e. Alstom's participation is associated with lower GE's margins) in all specifications. This is consistent with the previous analysis indicating that Alstom is a close and significant competitive constraint to GE. Using the specifications with time dummies, GE's margins are

²⁶² Only [number of tenders] observations are available based on GE's wins.

²⁶³ Using the specification without time effects, GE's margins are around [GE margins] percentage points lower when Alstom participates in tenders.

²⁶⁴ The price increase corresponding to a margin increase can be calculated by dividing the increase in margins in percentage points by one minus the percentage margins of GE for tenders where Alstom does not participate.

around [GE margins] percentage points higher for tenders where Alstom does not participate.²⁶⁵ Combining this information with an average margin of around [GE margins]% for GE's equipment for tenders where Alstom does not participate, this corresponds to higher GE's equipment price on average in the range of [GE prices]% for tenders where Alstom does not participate.

- (356) The results on equipment margins also indicate that participation by Siemens and by MHPS are negatively correlated with GE's margins (and are typically statistically significant), whilst Ansaldo's participation is not correlated with GE's margins (as shown by the very large standard errors). The latter result is consistent with previous analyses that Ansaldo does not exert a significant competitive constraint on GE.
- (357) The Commission notes that the fact that regression on overall equipment lead to slightly less statistically significant effects (i.e. higher p-values in Table 68 compared to Table 67) than regressions focusing on HDGT margins can be explained by the fact that (i) the main source of market power and product differentiation in tenders relies primarily on the ability to provide the HDGTs, (ii) and there is more heterogeneity in the regression on overall equipment since the scope of the equipment varies between different projects.
- (358) It is also notable that, in particular for the regressions on GE's equipment margins, introducing the EEA dummy variable leads to a lower statistical significance of Alstom's coefficient and that the EEA dummy variable is not statistically significant. It is likely that the decrease in statistical significance of Alstom's coefficient is related to the importance of Alstom for EEA customers. Therefore, the EEA dummy is likely to captures some variations associated with Alstom's strength as a competitor (that is, the two variables are collinear).
- (359) Using data on firm participations provided by competing OEMs leads to econometric models which are in general less statistically significant than the regressions based on GE's perception of who is competing in any given tender.²⁶⁶ As regards the regressions on GE's margins for HDGTs, Alstom's coefficient is either statistically significant or close to be significant at 10%, whilst MHPS's coefficient is close to zero and non-significant. Moreover, Siemens's presence is not negatively correlated with GE's margins, whilst the coefficient of Ansaldo is statistically significant and negatively correlated with GE's margins. Some of these results are counter-intuitive, and not in line with the rest of the evidence from the bidding data. Therefore, the Commission puts more weight on the regressions using the data provided by the Notifying Party. The lack of statistical significance using data from competing OEMs can also be explained by the important number of discrepancies on firm participations between the data provided by the Notifying Party and data collected with competing OEMs (see Section 3.2.2). These results suggest that GE's perceptions on competitors affect its bidding behaviour, at least at the firm bid stage (when there is more uncertainty on which firm is going to submit a firm bid). Similar observations apply to the

²⁶⁵ Based on specifications 7 to 12. Using the specification without time effects, GE's margins are around [GE margins] percentage points higher when Alstom does not participate in tenders (based on specifications 1 to 6).

²⁶⁶ These additional regressions were made available to the Notifying Party's economists in the Data Room.

regressions on GE's equipment margins: participation by each of Siemens, MHPS, and Ansaldo is not correlated with GE's margins, while Alstom's participations is negatively correlated and is either statistically significant or close to be significant at 10%.²⁶⁷

- (360) To conclude, the margin regression analysis is consistent with previous descriptive analyses in Sections 4.4.1-4.4.3, suggesting that Alstom is a close and significant competitive constraint to GE, both on its margins on HDGTs and on equipment offerings. This analysis suggests that, when Alstom does not participate in tenders, GE's prices for HDGTs are on average higher by [GE prices]% and GE's prices for equipment are on average higher by [GE prices]%.²⁶⁸

4.4.7. *GE's margins are lower when the number of participants increases*

- (361) The Commission has also examined the relationship between the number of participants making a firm bid in a tender and GE's margins. This analysis provides an additional complementary measure of the possible loss of competition associated with the transaction, given that the merger will lead to a reduction in the number of independent bidders in a significant number of tenders.²⁶⁸
- (362) Table 51 reports the margins of GE depending on the number of participants. The data shows that GE's margins decrease when the number of participants increases, in particular in the situations from 2 to 3 participants and from 3 to 4 participants. While the margins on tenders with five participants appear counter-intuitive (margins increase from 4 to 5 participants), it should be noted that this relies only on 3 observations.²⁶⁹

²⁶⁷ Statistical significance is lower in these regressions. This is also consistent with previous results discussed in the same paragraph.

²⁶⁸ As discussed before in Section 4.4.4, the Commission is aware that "*omitted variables*" can lead to bias in the results of the regression analysis carried out. In order to mitigate any "*omitted variable*" bias, the Commission used several control variables, mainly the cost of GE to provide the HDGTs and/or equipment, the model used by GE in tenders, and time dummies. However, any remaining "*omitted variable*" bias is likely to be more severe in the regressions that include the number of participants than in the regressions that include the dummy variable for Alstom. This is because unobservable (or "*omitted*") variables, such as the state of demand, which are likely to play a more important role in the specification with the number of bidders, are likely to be not as well proxied by the control variables that were available in the dataset.

²⁶⁹ Considering instead tenders with four participants or more would lead to a decrease in margins between tenders with 3 participants and tenders with four participants or more.

Table 51: GE's participations margins and Number of participants²⁷⁰

	Nb. Obs.	GE's margin on HDGTs	GE's margin on equipment
1 participant	[number of tenders]	[GE margins]%	[GE margins]%
2 participants	[number of tenders]	[GE margins]%	[GE margins]%
3 participants	[number of tenders]	[GE margins]%	[GE margins]%
4 participants	[number of tenders]	[GE margins]%	[GE margins]%
5 participants	[number of tenders]	[GE margins]%	[GE margins]%
Total	[number of tenders]		

- (363) Based on the raw data, a higher number of participants is negatively correlated with GE's margins. The Commission has carried out a regression analysis to determine whether this is robust once controlling for tenders' characteristics. As in the case of the previous margins regression, the analysis relies on a relatively small sample of observations, which makes it more difficult to establish statistically significant results. The results of this econometric analysis therefore need to be assessed in light of this data limitation.
- (364) Table 69 (see Exhibit A) presents the results of the regression analysis when GE's margins on HDGTs are considered. The sample of tenders with three participants is the reference category. This means that all coefficients on the numbers of participants should be interpreted by reference to tenders with three participants. The regression results indicate that tenders with one or two participants tend to have higher GE margins than tenders with three participants. This is consistent with a finding that the significant proportion of "3-to-2" tenders where Alstom is present identified in previous analyses would suffer from a loss of competition between the merging parties. Using the specifications with time dummies, tenders with two participants tend to have GE margins which are on average [GE margins] percentage points higher than tenders with three participants.²⁷¹ The analysis also shows that tenders with four participants are associated with GE's margins which are on average around [GE margins] percentage points lower than tenders with three participants.²⁷² This suggests as well a significant loss of competition for the proportion of 4-to-3 tenders identified in previous analyses. The Commission also notes that coefficients on the two and four participants are either statistically significant or close to be statistically significant at 10%.
- (365) Table 70 (see Exhibit A) presents the results of the regression analysis when GE's margins on overall equipment are considered. This additional analysis indicates that

²⁷⁰ The number of observations is in parenthesis.

²⁷¹ Based on specifications 7-12 in Table 69. In term of prices, this would correspond to higher prices by [GE prices]% for the 3-to-2 tenders. This is computed by dividing the percentage increase in margins by one minus the percentage margin of tenders with two participants.

²⁷² Based on specifications 7-12 in Table 69. In term of prices, this would correspond to higher prices by [GE prices]% for the 4-to-3 tenders.

tenders with two participants are associated with higher GE's margins (between [GE margins] percentage points higher in average using specifications with time dummies²⁷³) than tenders with three participants.²⁷⁴ The corresponding coefficients are also statistically significant, except for one specification. This analysis also indicates that, while the coefficient corresponding to tender with four participants is not always statistically significant, tenders with four participants are generally associated with lower GE's margins than tenders with three participants (for example between [GE margins] percentage points higher in average using specifications 7 and 10 in Table 70, when this coefficient is either statistically significant or close to be statistically significant at 10%).²⁷⁵

- (366) Using data on participation provided by competing OEMs, the regression analysis shows that tenders with two participants tend to have GE's margins which are on average [GE margins] percentage points higher than tenders with three participants (compared to [GE margins] percentage points higher using data provided by the Notifying Party), while there is no significant differences for tenders with three or four participants. Similar observations apply to the regressions on GE's equipment margins, with GE's margins which are on average [GE margins] percentage points higher in tenders with two participants compared to tenders with three participants (compared to [GE margins] percentage points higher using data provided by the Notifying Party). This result can be explained by the significant higher proportion of tenders with two participants with data from competing OEMs.²⁷⁶ More generally, the reduction in statistical significance observed in the regressions with third party data can be explained by the fact that there are significant differences between GE's perceptions on the presence of competitors, and their actual presence.
- (367) To conclude, while the Commission recognises that it is not possible to control for all possible tender characteristics in this type of regression (in particular given that some characteristics may be unobserved), after controlling for the observed characteristics, the presence of negative correlation between GE's margins and the number of participants is consistent with a concern that post-merger significant price effects would apply to the high proportion of tenders that had three participants and four participants (including Alstom) pre-merger. These results are also consistent with the additional regression analysis presented by the Commission, which consider the impact of individual OEMs on GE's margins (see Section 4.4.6).
- (368) The Commission also notes that, in the framework of second price auction proposed by the Notifying Party²⁷⁷, where only the winner and the runner-up matter to determine the competitive outcome in tenders, the number of participants should not be typically strongly associated with lower GE's margins. Under this framework, GE's margins should depend largely on the constraint from the runner-up bidder and

²⁷³ Based on specifications 7-12 in Table 70.

²⁷⁴ This would correspond to higher prices around [GE prices]% for the 3-to-2 tenders.

²⁷⁵ This would correspond to higher prices around [GE prices]% for the 4-to-3 tenders.

²⁷⁶ When considering the sample used for the estimation, around [GE prices]% of tenders have two participants using data from competing OEMs, compared to [GE prices]% using data from the Notifying Party.

²⁷⁷ See in particular the CRA submission 1 and the [Professor A] submission.

therefore should not depend significantly on the number of participants.²⁷⁸ However, the data indicates that GE's margins decrease with the number of participants, which therefore casts further doubt on the second price auction framework proposed by the Notifying Party.

4.4.8. The evidence on participation by OEMs in GE's wins does not contradict the finding that Alstom is the second most important constraint on GE after Siemens

- (369) The previous analyses show that under several economic measures Alstom is a close and significant competitive constraint to GE (after Siemens), that it Alstom exerts more of a competitive constraint on GE than MHPS, and that Ansaldo exerts a limited competitive constraint on GE.
- (370) The Notifying Party has argued that Alstom, MHPS and Ansaldo exert a similar competitive constraint on GE on the basis of the fact that, if one focuses only on the wins of GE in competitive tenders, they have a similar participation rate (see Table 52 below). Moreover, Alstom, MHPS and Ansaldo are shortlisted or runner-up to GE also in roughly equal proportions.²⁷⁹ The results of the analysis put forward by the Notifying Party are reported in Table 52.

**Table 52: Participating and shortlisted/runner-up OEMs when GE wins, 2009-2014
(tenders where GE wins with a Large HDGT)**

	Number of tenders where each competitor participates ([GE's wins] GE's wins)	Number of tenders where each competitor is shortlisted or runner-up ([GE's wins] GE's wins)
Siemens	[...]	[...]
Alstom	[...]	[...]
MHPS	[...]	[...]
Ansaldo	[...]	[...]

- (371) In relation to the Notifying Party's analysis of participation when GE wins, the Commission notes that the number of participations in tenders by competing OEMs should also be interpreted in light of their ability to win tenders against GE.²⁸⁰ For example if two firms participates an equal number of times in tenders won by GE, with the first firm often winning against GE in other tenders while the second firm never wins against GE, then the first firm should be seen as a more effective competitive constraint than then second firm also for the tenders where GE is the winner.

²⁷⁸ In a second price auction, assuming that bidders observe signals on bid features prior to the bidding contest implies that the second best bidder should always participate. Therefore, in this setting (under an assumption that bidders have access to reliable information prior to making their firm bid), adding one more bidder beyond the runner-up should not significantly affect the price.

²⁷⁹ The Commission assess the evidence presented by the Notifying Party on runner-up and shortlist data more generally in Section 4.5 of this Annex.

²⁸⁰ This is also suggested in the CRA submission 1.

- (372) As discussed previously, Alstom is more likely to win against GE than either MHPS or Ansaldo. Therefore, as regards Table 52, the Commission considers that the [number of tenders] participations of Alstom should be given more weight than the [number of tenders] participations of Ansaldo and the [number of tenders] participations of MHPS. The same reasoning applies to the second column on shortlisted/runner-up bidders in Table 52, which shows that Alstom, MHPS, and Ansaldo are on-par in terms of number of shortlists/runner-up for the tenders won by GE. Therefore, Table 52 does not invalidate the finding that, after Siemens, Alstom is the main competitive constraint to GE.
- (373) In addition, the Commission also notes that a similar analysis based on Alstom's wins shows that GE participated as much as Siemens in the tenders won by Alstom (and significantly ahead of MHPS and Ansaldo), and GE is the most frequent bidder shortlisted or runner-up in those tenders (this is shown in more detail in Section 4.5.2 of the Annex). This evidence, in combination with previous evidence that GE accounts for a significant share of Alstom's losses and is therefore likely to constrain Alstom's probability of winning tenders, suggests that there would be significant upwards pressure on Alstom bids post-merger.

4.4.9. Summary of anti-competitive effects and indication of order of magnitude of potential price effects

- (374) As regards the additional analysis of closeness of competition between the merging parties conducted by the Commission (beyond the analysis of participation and shortlists), the bidding data shows as follows:
- a. Alstom appears as second most important competitive constraint on GE's probability of winning a tender (after Siemens), whilst this is less the case for MHPS, and even less the case for Ansaldo;
 - b. Alstom has a significant negative effect on GE's probability of winning: Alstom wins a significant number of tenders when GE loses, both at the firm stage and at the shortlist stage. This effect is also confirmed by a regression analysis, with Alstom's participation implying a significant decrease in GE's probability of winning. These results suggest a significant “probability diversion ratio” between Alstom and GE;²⁸¹
 - c. GE's margins are negatively correlated with Alstom's participations, confirming the importance of Alstom as a close and significant competitive constraint to GE; and
 - d. In addition to Siemens, GE participates in many tenders against Alstom, and GE's accounts for a significant share of Alstom's losses, suggesting that GE is competitive constraint to Alstom.

²⁸¹

The other competitor that would benefit from diversion from Alstom is Siemens. The evidence shows that, whilst there is close competitive interaction also between Siemens and Alstom, the latter appears to have a more significant impact on GE's probability of winning rather than on Siemens's (see Section 4.4.10.3). This indicates a significant probability diversion ratio from Alstom to GE.

- (375) Therefore, the Commission concludes that the high share of competitive wins accounted for by the merged entity (in the range of [50-60]% or above), is also accompanied by significant competitive interactions between the merging parties. Moreover, Alstom is a close and significant competitive constraint to GE, and likewise GE is a close and significant competitive constraint to Alstom (implying that the Parties exert a significant two-way competitive constraint on each other). The evidence also suggests that MHPS and Ansaldo are less significant competitive constraints on GE than Alstom. Alstom and MHPS/Ansaldo are also not close competitors due to limited interactions both in term of participations and wins against each other.
- (376) In a first price auction, the tenders that are likely to suffer from a potential loss of competition between the merging parties are those where GE and Alstom both participated.²⁸² This amounts to [number of tenders] tenders in the Large segment, representing slightly more than [50-60]% of the competitive tenders, and [40-50]% of all tenders.
- (377) In these tenders, post-merger, Alstom would bid less aggressively (by proposing higher prices or lower quality responses to tenders) in order to increase GE's probability of winning.²⁸³ Faced with a higher probability of winning, GE would optimally increase its bids. This prediction is consistent with the descriptive and econometric analysis of the correlations between Alstom's participation and GE's margins. This analysis suggests that GE's margins are higher when Alstom is not present (by around [GE margins] percentage points higher on average for HDGTs and around [GE margins] percentage points higher on average for the overall equipment). This corresponds to higher GE's prices around [5-10]%-[10-20]% for HDGTs and around [0-5]%-[5-10]% for equipment. This analysis therefore is consistent with a finding of significant price effect post-merger. Moreover, the analysis of the relation between GE's margins and the number of participants in tenders is also consistent with significant price effect post-merger for the high proportion of tenders with three participants and four participants, where Alstom is also present.
- (378) The fact the GE is earning high margins on HDGT (including related equipment and LTSA) is an important determinant of the incentives of Alstom to increase its bids post-merger. GE's contribution margins on HDGTs (including equipment) are of roughly [GE margins]% in competitive tenders when Alstom is not present. This margin would apply to an average HDGT and equipment price of [GE average GT price] for tenders where Alstom meets GE, yielding a margin of [GE margins] per tender. It is also necessary to add the discounted LTSA margins to the HDGT and equipment margin, in order to get a measure of GE's overall margins in HDGT tenders.²⁸⁴ The Commission has carried out an illustrative computation of the discounted LTSA margin, in order to obtain an approximate measure of the overall margin associated with HDGT tenders. The percentage contribution margins on LTSA

²⁸² See also Commission decision of 30 January 2013 in Case M.6570 – UPS/TNT Express, Recital 722.
²⁸³ Similar incentives would apply to GE's bids, assuming that the Alstom product would not be discontinued, and would be continued to be offered actively in bids.
²⁸⁴ [GE pricing strategies].

on GE's wins are of [GE margins]% in competitive tenders.²⁸⁵ Discounting the absolute value of the LTSA margins using information provided by GE and adding to the HDGT and equipment margins yield an estimate of GE's overall margin including LTSA in the order of [GE margins]%.²⁸⁶ Coupled with the indications of significant probability diversion from Alstom to GE, the level of margins earned by GE suggest the presence of a significant upwards pressure on Alstom's bids as a result of the merger. This is consistent with the evidence that GE intends to discontinue the Alstom's product, or that effectively it would not offer it in parallel with its own product (as this is economically equivalent to a significant worsening in the commercial offers made by Alstom).

- (379) The analysis of the bidding data therefore suggests that the merger could lead to significant harm to consumers. The Commission has performed an illustrative computation of the order of magnitude of consumer harm associated with the possible impact of the merger on prices, based on the following methodology:
- a. As reported in the previous paragraph the average equipment price of GE for the tenders where it competes against Alstom is around USD [GE price].²⁸⁷ The Commission has applied an illustrative average price increase of [0-5]%-[5-10]% (based on the margins' regressions for equipment);²⁸⁸
 - b. The average GE price for the LTSA in competitive tenders is around [average GE price]. Discounting this price (see footnote 286) yields a discounted value of the

²⁸⁵ This applies to [number of tenders] competitive tenders for Large HDGTs for which the Notifying Party has provided information on LTSA margins. GE's high margins for servicing are also confirmed by its financial data: the data in Annex 1224 indicates that GE earns a [GE margins]% contribution margin on servicing of HDGTs.

²⁸⁶ In order to discount the LTSA prices and margins, the Commission has used a discount factor of [discount rate]%, based on data provided by the Notifying Party (see GE's reply to the Commission's Request for Information No. 28, 21.04.2015, question 3 b). GE has provided discounted LTSA margin data for 7 LTSAs, with an average duration of [duration of GE LTSAs] years. The average discount factor for these contracts is slightly above [discount rate]%. The average LTSA length observed in bidding data for GE's wins in competitive tenders is of [duration of LTSA]. The Commission therefore considers it reasonable (and if anything conservative) to apply a [discount rate]% discount factor to the value of the LTSA revenues for GE wins in competitive tenders. Applying this discount factor to the average value of the LTSA for GE wins in competitive tenders ([average GE value]) results in a discounted LTSA revenue of [average GE value]. Applying a [GE margins]% margin to this discounted price yields a discounted LTSA margin of [GE margins].

The average overall margin reported in the main text is the sum of the HDGT and equipment margin ([GE margins], as reported in the main text), and the discounted LTSA margin ([GE margins]), divided by the overall discounted price ([average GE price] for HDGT/equipment, and [average GE price] for the LTSA).

²⁸⁷ The Commission notes that the projects prices are significantly higher than the GE's equipment prices. For example, in the CRA submission 1, the project price for the tender [name of project] is around [GE price] (CRA Submission 1, page 12). Computing the harm on the project prices would increase the level of harm significantly.

²⁸⁸ This illustrative price increase assumes that bidders other than GE (most notably Siemens) would increase the level of their bids by a similar magnitude to GE if Alstom was not present. The Commission considers this assumption to be reasonable for illustrative purposes, particularly in light of the fact that Alstom appears to be an important constraint also on Siemens (as discussed in the next section of the Annex), and also taking into account the fact that higher bids by GE would also result in less competitive pressure on rival bidders.

LTSA of [average GE price]. The Commission has applied an average price increase in the range of [5-10]%-[10-20]% to this value (based on the margin regressions for HDGTs, which are closely linked to the LTSAs); and

- c. The sum of the two price effects (on HDGT/equipment and on LTSAs) results in an average harm per bid in the range of [GE price range]. Based on bidding data, the average number of projects per year in the Large segment where GE and Alstom have met during the 2009-2014 period is of around [number of tenders] projects. This implies a total illustrative estimate of consumer harm in the range of USD 73-142 million per year, at a Worldwide level excluding China. This estimate of effects on consumer harm is significantly higher than the corresponding measure presented in the CRA Submissions. The Commission also notes that this illustrative estimate of consumer harm does not include the potential impact of the merger on non-price parameters (e.g. the loss of choice and/or innovation).
- (380) To conclude, the economic analysis of bidding data suggests that Alstom is a close and significant competitor to GE, and that the merger between GE and Alstom is likely to lead to significant horizontal unilateral effects.
- (381) The Commission analyses in the next section the potential additional anti-competitive effect due to the likely discontinuation of Alstom's GT26.

4.4.10. Additional anti-competitive effects from product discontinuation

- (382) The analysis of participation rates in Section 4.3, both on the firm stage and on the shortlist stage, suggest that Alstom is also an important competitive constraint to Siemens: (i) After GE, Alstom is the OEM that competes the most often against Siemens, (ii) MHPS and Ansaldo have more limited competitive interactions with Siemens, (iii) Alstom and Siemens compete against one another in almost half of competitive tenders, with a significant proportion of tenders with three or fewer participants.
- (383) The next sections complement the previous analysis by considering the competitive constraint exercised by Alstom on Siemens in more detail. This is based on the type of analysis used to assess the competitive relationship between Alstom and GE (where the data allows this analysis to be carried out).

4.4.10.1. Alstom is likely to significantly constrain Siemens' probability of winning tenders, while MHPS/Ansaldo are limited competitive constraints to Siemens

- (384) Table 53 reports the wins for the tenders where Siemens participated. At a worldwide level excluding China, in the 2009-2014 period, Siemens loses first to GE ([number of tenders] bids), followed by Alstom ([number of tenders] bids). This implies that Alstom represents [20-30]% of Siemens' losses. This suggests that Alstom is likely to affect Siemens' probability winning HDGT tenders. MHPS and Ansaldo appear significantly behind Alstom in term of wins against Siemens. This is also confirmed for the more recent periods 2011-2014 and 2012-2014. Table 54 reports the results

with the sensitivity analysis for Large/Very Large interaction, which confirms that after GE, Alstom is the firm that wins the most often against Siemens.²⁸⁹

Table 53: Number of wins by OEM in tenders in which Siemens participates (tenders where Siemens bid and a Large HDGT won)

	2009-2014	2011-2014	2012-2014
GE	[...]	[...]	[...]
Alstom	[...]	[...]	[...]
Siemens	[...]	[...]	[...]
MHPS	[...]	[...]	[...]
Ansaldo	[...]	[...]	[...]
Observations	[...]	[...]	[...]

Table 54: Number of wins by OEM in tenders in which Siemens participates (tenders where Siemens bid with a Large HDGT)

	2009-2014	2011-2014	2012-2014
GE	[...]	[...]	[...]
Alstom	[...]	[...]	[...]
Siemens	[...]	[...]	[...]
MHPS	[...]	[...]	[...]
Ansaldo	[...]	[...]	1
Observations	[...]	[...]	[...]

- (385) Table 39 in Section 4.4.1 also shows that Siemens wins significantly against Alstom, similar to GE's wins against Alstom. This suggests that Siemens has a significant effect on Alstom's probability of winning tenders.
- (386) Therefore, the results of this analysis show that after GE, Alstom appears as the main competitive constraint on Siemens's probability of winning a tender, with MHPS and Ansaldo significantly behind. Moreover, Siemens, in addition to GE, is also likely to significantly affect Alstom's probability of winning tenders.

4.4.10.2. The analysis of the win rates for tenders where Alstom and Siemens compete against one another indicates that Alstom is a significant constraint on Siemens

- (387) The Commission has also compared Alstom's share of wins with the corresponding share of wins of competitors. This allows a benchmarking the competitive constraint of Alstom on Siemens with the competitive constraints of other competitors on Siemens.
- (388) Table 55 reports each OEM's share of wins when it competes against Siemens. Among the [number of tenders] tenders where Siemens and Alstom compete directly for the

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These results are confirmed when data provided by competing OEMs is used.

period 2009-2014, Alstom wins [20-30]% of those tenders. In comparison, among the [number of tenders] tenders where GE compete with Siemens, GE wins [30-40]% of those tenders. As regards MHPS, among the [number of tenders] tenders where it competes with Siemens, it wins only [5-10]% of those tenders. Ansaldo competes with Siemens in [number of tenders] tenders and wins [10-20]% of those tenders. For the more recent period 2011-2014, the number of Alstom's participations and the share of wins of Alstom ([20-30]%) when it competes with Siemens remains significantly above the shares of wins of MHPS ([5-10]%) and Ansaldo ([10-20]%). These comparisons suggest that, while GE is the first competitive constraint to Siemens, Alstom is the second competitive constraint to Siemens, with MHPS and Ansaldo lagging behind in term of both the number of participations against Siemens and in terms of win rates in those tenders.²⁹⁰

**Table 55: OEMs' share of wins for tenders with competition against Siemens
(tenders where a Large HDGT won)**

	Number of tenders with Siemens as a competitor	%wins for tenders with Siemens as a competitor
2009-2014		
GE	[...]	[30-40]%
Alstom	[...]	[20-30]%
MHPS	[...]	[5-10]%
Ansaldo	[...]	[10-20]%
2011-2014		
GE	[...]	[40-50]%
Alstom	[...]	[20-30]%
MHPS	[...]	[5-10]%
Ansaldo	[...]	[10-20]%
2012-2014		
GE	[...]	[40-50]%
Alstom	[...]	[20-30]%
MHPS	[...]	[10-20]%
Ansaldo	[...]	[10-20]%

- (389) Table 56 presents the Commission's sensitivity analysis, which includes tenders where at least one competitor participates with a Large HDGT. While GE appears as being the first competitive constraint to Siemens, Alstom remains the second competitive constraint to Siemens. Alstom meets Siemens more than MHPS and has a win rate above MHPS, despite MHPS having a Very Large offering with two HDGTs (M701F5, M701J). This sensitivity analysis confirms that Alstom is an important competitor to Siemens.²⁹¹

²⁹⁰ These results are broadly confirmed when data provided by competing OEMs is used.

²⁹¹ These results are broadly confirmed when data provided by competing OEMs is used.

**Table 56: OEMs' share of wins for tenders with competition against Siemens
(tenders where an OEM participates with a Large HDGT)**

	Number of tenders with Siemens as a competitor	%wins for tenders with Siemens as a competitor
2009-2014		
GE	[...]	[30-40]%
Alstom	[...]	[10-20]%
MHPS	[...]	[5-10]%
Ansaldo	[...]	[10-20]%
2011-2014		
GE	[...]	[40-50]%
Alstom	[...]	[10-20]%
MHPS	[...]	[5-10]%
Ansaldo	[...]	[10-20]%
2012-2014		
GE	[...]	[30-40]%
Alstom	[...]	[10-20]%
MHPS	[...]	[20-30]%
Ansaldo	[...]	[10-20]%

4.4.10.3. Data on Siemens' winning rate indicates that Alstom affects Siemens's probability of winning a tender

- (390) The Commission cannot perform a meaningful regression analysis to determine how the presence of Alstom affects the probability of Siemens to win a tender. This is because all controls variables used before were provided by the Notifying Party and are therefore related to GE's offerings and not those of its competitors.
- (391) Based on the raw data, Table 57 reports the winning probability (i.e. win rate) of Siemens. For the tenders in the Large segment, Siemens's win rate is equal to [60-70]% for tenders where Alstom does not participate, while this win rate is equal to [40-50]% for tenders where Alstom participates. Therefore, based on the raw data, the win rate of Siemens is [10-20] percentage points lower when Alstom participates in tenders.

Table 57: Siemens' winning rate observed in the data

When Alstom does not participate (#Obs. =[number of tenders])	[60-70]%
When Alstom participates (#Obs. = [number of tenders])	[40-50]%
Difference (in percentage points, pp)	- [10-20]pp

- (392) The results in Table 57, in combination with previous analysis win/loss analysis, are indicative that Alstom is a significant competitive constraint to Siemens. However, the relative importance of Alstom compared to other competitors, and a more comprehensive assessment of Alstom's impact on Siemens probability of winning a tender is not feasible, given the data limitations.

4.4.10.4. Additional anti-competitive effects are likely if Alstom's GT26 HDGT is discontinued

- (393) Previous analyses have shown that, after GE, Alstom is the firm that competes and wins the most against Siemens. Moreover, Alstom accounts for a significant proportion of Siemens' losses, suggesting that Alstom is likely to negatively affect Siemens' probability of winning tenders. Last, MHPS and Ansaldo appear to exert a limited competitive constraint on Siemens, significantly behind Alstom. This suggests that Alstom is a significant competitive constraint to Siemens as well as to GE.
- (394) The discontinuation of Alstom's GT26 would also lead to significant additional harm to customers, in addition to the horizontal unilateral effect identified previously. This is because discontinuation of the GT26 would eliminate the direct competition between Alstom and Siemens. This direct effect reinforces that more standard indirect effects resulting from the lower competitive pressure on Siemens due to the loss of competition between Alstom and GE. While the Commission cannot provide a measure of the impact of Alstom's presence on Siemens prices and margins (due to the lack of data on Siemens), the reduction on competitive pressure on Siemens arising from product discontinuation is likely to be significant in light of the fact that Alstom is the second most important competitive constraint on Siemens (after GE), and that MHPS and Ansaldo appear to be limited competitive constraints on Siemens, significantly behind Alstom.
- (395) With product discontinuity, competitive harm from price effects would spread to all tenders where Alstom participates, which represents [number of tenders] tenders, that is [60-70]% of competitive tenders ([40-50]% of all tenders in the Large segment). Adjusting the measure of illustrative harm computed in Section 4.4.9 to this larger number of affected tenders (from [number of tenders]) yields an order of magnitude for total impact on consumers in the range of USD 82-160 million. This estimate of consumer harm ignores the additional harm that would result from the fact that some customers ([number of tenders] projects in the Large segment awarded to Alstom's GT26 HDGT) would no longer have access to their preferred product. This effect would further reinforce the finding of a significant adverse impact on consumers. The Commission also notes that this illustrative estimate of consumer harm does not include the potential loss of innovation due to the merger.

4.4.11. The Notifying Party's criticisms in the Response to the SO do not undermine the reliability and robustness of the Commission's analysis

- (396) In Annex 4 of the Response to the SO, the Notifying Party's comments can be summarized as follows:
- a. The Notifying Party mentions that prices and margins change throughout a tender, and these changes are likely to reflect updated information on the source of competitive constraints faced by GE as tenders evolve. Therefore, the Commission's regression analysis should take into account that GE adapts its bids during the tender process. In addition, the Notifying Party also suggests that (i) the Commission's regression analysis includes only the identity of the participants

corresponding to initial stage of the tender, and (ii) the Commission's analysis is incorrect since it does not consider the identity of the shortlisted OEMs.²⁹²

- b. The Notifying Party also argues that the regression analysis in Section 4.4.4 on GE's probability to win tenders is not robust to changes in the specification of the model. In its econometric analysis, the Notifying Party combines both the identity of all OEMs that participate with the number of participants.²⁹³
- c. As regards the analysis of GE's margins, the Notifying Party argues that the econometric analysis in Section 4.4.6 is not robust to changes in the specification of the model. In particular, the Notifying Party proposes to combine the following variables: the identity of all OEMs that participate, the number of participants, and two dummies variables related to the existence of a shortlist stage.²⁹⁴

(397) In addition, in Annex 5 of the Response to the SO, the Notifying Party claims that historical bidding reflects mainly the performance of the 2006 rating of the GT26 HDGT, which faced little competitive pressure from Very Large HDGTs. The Notifying Party then claims that absent the merger Alstom would have discontinued the GT26 2006 rating and used instead the GT26 2011 rating to participate in tenders, which is less competitive according to the Notifying Party due to competitive pressure from Very Large HDGTs. Therefore, based on this, the Notifying Party argues that historical bidding overstates the competitiveness of Alstom.

(398) In the following, the Commission assesses each of these points in detail.

4.4.11.1. The Notifying Party's comment that prices and margins change throughout the tender is already taken into account in the Commission's analysis, and considering the firm stage is appropriate given that it is common for all tenders and it represents a significant commitment for OEMs

(399) In Annex 4 (Section 4.1) of the Response to the SO, the Notifying Party argues that the prices and margins change throughout a tender, and those changes of prices are likely to reflect updated information on the sources of competitive constraints faced by GE as the tender evolves. In other words, the Notifying Party argues that GE adapts its bids during the tender. The Notifying Party seems to suggest that the Commission's analysis does not take this element into account.

(400) The Commission considers that this comment of the Notifying Party is already taken into account in its analysis in Section 4.4. Indeed, the Commission has used margins that correspond to the last offer made by GE (see paragraph (98)). Therefore, the margins used in the Commission's analysis already reflect all the information that was available to GE during the evolution of the tender and the corresponding changes in GE's bid behaviour.

²⁹² See Section 4.1 of Annex 4 of the Response to the SO.

²⁹³ See Section 5.1 of Annex 4 of the Response to the SO.

²⁹⁴ See Section 4.2 and Section 5.2 of Annex 4 of the Response to the SO.

- (401) Moreover, in Section 4.4.5, the Commission has analysed the evolution of GE's margins during the tenders. In particular, the Commission's analysis shows that the margins of GE are decreasing from the initial stage to the final stage for tenders where Alstom participates (with a reduction of [GE margins] percentage points on HDGTs and on overall equipment). By contrast, GE's percentage margins are constant between the initial and final stages of the bidding process for tenders where Alstom does not participate (see Table 49). This analysis therefore supports previous findings that Alstom is a close and significant competitive constraint to GE.
- (402) Second, in Annex 4 (Section 4.1) of the Response to the SO, the Notifying Party suggests that the Commission's analysis has used only the identity of the participants corresponding to initial stage of the tender. The Commission disagrees with the Notifying Party for the following reason.
- (403) In its analysis, the Commission uses the identity of the OEMs that participate at the firm stage as the variable of interest, not the identity of the participants corresponding to the budgetary stage. The Commission considers that this approach is appropriate since the firm stage corresponds to a significant commitment of OEMs, with discussions with customers typically between 12 and 18 months and significant cost of participation (see paragraph (39)). Therefore the claim of the Notifying Party that the Commission considers the identity of participants at the start of the bidding process is not correct.²⁹⁵ As discussed in paragraph (39), the start of the bidding process would correspond to the budgetary stage, which does not correspond to a significant commitment of OEMs and therefore it is not included in the Commission's analysis.
- (404) Third, in Annex 4 (Section 4.1) of the Response to the SO, the Notifying Party suggests that the Commission's analysis is incorrect since it does not consider the identity of the shortlisted OEMs. The Commission disagrees for the following reasons.
- (405) As discussed in Section 3.1, information on shortlisted bidders is available only in [40-50]% of the competitive tenders (see Table 1). Therefore, the Commission consider that it is more appropriate to consider participations at the firm stage for its regression analysis, which is common for all tenders and corresponds to a significant commitment of OEMs. The analysis of margins for tenders with a shortlist stage is further discussed in Section 4.4.11.3, and it confirms the competitive concerns raised by the Commission's regression analysis.
- (406) In addition, the fact that GE's margins and probability of winning are significantly lower when Siemens, and/or Alstom, and/or MHPS participate at the firm stage shows that the Notifying Party's suggestion that only the runner-up bidder in the final stage matters for the competitive assessment is not correct. This also in line with the qualitative evidence discussed in Section 3.1, showing that OEMs exert competitive pressure on each other at the firm stage.

²⁹⁵ See page 12 of Annex 4 of the Response to the SO.

4.4.11.2. The econometric analysis proposed by the Notifying Party on GE's probability to win tenders suffers from significant technical issues

- (407) In Annex 4 (Section 5.1) of the Response to the SO, the Notifying Party argues that the regression analysis on GE's probability to win tenders (see Section 4.4.4) is not robust to changes in the specification of the model. In its econometric analysis, the Notifying Party combines both the identity of all OEMs that participate and the number of participants. The results of the econometric analysis provided by the Notifying Party show that Alstom's presence is no longer a limiting factor on the probability of GE winning tenders, and therefore that Alstom is not a close competitor to GE.
- (408) The Commission disagrees with the analysis of the Notifying Party for the following reasons.
- (409) The number of bidders and the presence of all individual bidders are collinear. In other words, these variables move (almost) perfectly together. This is illustrated in Table 58 which shows a similar increase in the average number of bidders by 1.5 when Siemens, Alstom, MHPS, or Ansaldo is present. In this case, summing up the presence of all individual bidders is clearly equal to the number of participants. A well-known concern in econometrics is that the so-called "multi-collinearity" can lead to few statistically significant results. This technical issue undermines the validity of the econometric analysis done by the Notifying Party.²⁹⁶

Table 58. Average number of participants according to whether each OEM bid
(see also Table 5 of Annex 4 of the Response to the SO)

Participation	Siemens	Alstom	MHPS	Ansaldo
Yes	[number of participants]	[number of participants]	[number of participants]	[number of participants]
No	[number of participants]	[number of participants]	[number of participants]	[number of participants]

- (410) As an illustration, the Commission has run the regression model proposed by the Notifying Party using the 12 specifications of Table 66. The technical issue due to multi-collinearity can be illustrated as follows:
- In the estimation of the 12 specifications, an error message due to multi-collinearity is reported by the statistical software.
 - For 10 specifications, it is not possible to use the [number of tenders] observations due to multi-collinearity issue. Instead, only [number of tenders] observations can be used in the estimation.
 - Several variables cannot be estimated. For 10 specifications, the dummy variable corresponding to tenders with "5 participants" cannot be estimated. For the 6 specifications with times dummies, in addition, the dummy variable corresponding to tenders with "4 participants" and the dummy variable corresponding to the

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As discussed in footnote 268, including the number of bidders in a regression also makes it more difficult to mitigate the "omitted variable" issue.

"year 2014" cannot be estimated as well (except in one specification which is the only one reported by the Notifying Party in the Response to the SO).

- d. For all 12 specifications, the dummy variable corresponding to the presence of MHPS cannot be estimated.
- (411) In the regression model provided by the Notifying Party, this technical issue of multi-collinearity also leads to the counter-intuitive result that Siemens has no impact on GE's probability of winning tenders. In other words, based on the regression model provided by the Notifying Party, Siemens would not be considered as a close competitor to GE.²⁹⁷ In contrast, the Commission's analysis does not suffer from this issue of multi-collinearity.
- (412) The Commission therefore maintains the conclusion from its econometric analysis in Section 4.4.4 that GE's probability of winning tenders is significantly lower for tenders where Alstom is present, suggesting that Alstom is a close and significant competitive constraint to GE.

4.4.11.3. The econometric analysis proposed by the Notifying Party on GE's margins suffers from significant technical issues

- (413) In its econometric analysis of GE's margins, the Notifying Party argues that the Commission's analysis in Sections 4.4.5 and 4.4.7 is not robust to changes in the specification of the model. The Notifying Party proposes to combine several variables: the identity of all OEMs that participate in tenders, the number of participants, and two additional variables related to the presence of the shortlist stage in tenders (a dummy variable for tenders where "*GE is shortlisted*" and another dummy variable for tenders where "*GE is not shortlisted but a formal shortlisting took place*").
- (414) The Commission disagrees with the analysis of the Notifying Party for the following reasons.
- (415) First, the Notifying Party's econometric analysis is also undermined by the technical issue of multi-collinearity. In addition to the high collinearity between the presence of bidders and the number of participants (as already discussed in the previous section), there is another source of collinearity between the two additional shortlist variables and the number of participants. As it is illustrated in Table 59 below, a shortlist stage (as well as the presence of GE in the shortlist stage) is more likely when the number of participants increases.²⁹⁸

²⁹⁷ This is because the presence of Siemens is also captured by the dummy variables corresponding to the number of participants. The same consideration applies to Alstom's and MHPS' presences.

²⁹⁸ As discussed in footnote 268, including the number of bidders in a regression makes it more difficult to mitigate the issue of "*omitted variables*". In addition, adding the existence of a shortlist stage in a tender is likely to increase the bias due to this issue of "*omitted variable*", since having a shortlist stage is a decision taken by the customer and one does not observe the determinants of this decision. Therefore, including the presence of a shortlist stage in the regression would also require controlling for the factors that determine the existence of a shortlist stage. This is not done in the regressions provided in Annex 4 of the Response to the SO, which casts further doubt on the validity of the regression model proposed by the Notifying Party.

Table 59. Collinearity between the number of participants and the shortlist stage

Number of participants	Number of observations	Proportion of tenders with a shortlist stage	Proportion of tenders where GE is present in the shortlist stage
1	[number of tenders]	[0-5]%	[0-5]%
2	[number of tenders]	[10-20]%	[10-20]%
3	[number of tenders]	[30-40]%	[30-40]%
4	[number of tenders]	[50-60]%	[40-50]%
5	[number of tenders]	[90-100]%	[60-70]%

(416) Second, the Commission has used an incremental approach to assess the validity of the econometric specification proposed by the Notifying Party. This analysis was done using the regression on GE's equipment margins.

- a. In a first step, the Commission uses the model 12 in Table 68 (regression on GE's equipment margins). This specification is the closest to the one proposed by the Notifying Party in Annex 4 of the Response to the SO.
- b. In a second step, the Commission notes that the dummy variable "*GE not shortlisted but formal shortlisting took place*" concerns only [number of tenders] observations out of [number of tenders] observations. Even if these [number of tenders] tenders had some particular characteristics related to this variable, instead of using a dummy variable that concerns only [number of tenders] observations, the Commission considers that it is more reasonable to exclude these [number of tenders] observations to test the robustness of the regression.²⁹⁹
- c. In a third step, the number of participants is added to the regression (which already includes the identity of the OEMs that participate). As expected, the multi-collinearity issue leads to less statistically significant results. In particular, the presences of Siemens, Alstom and MHPS are not associated anymore with lower GE's margins. This leads to counter-intuitive results. For example, based on this regression, Siemens would not be a close competitor to GE. More generally, the regression model proposed by the Notifying Party shows that no OEM would exert a competitive constraint on GE.
- d. In a fourth step, the Commission adds the dummy variable "*GE shortlisted*", and the quality of the model decreases even more, which is expected due to a higher multi-collinearity between all variables.

(417) Similar considerations apply for the regression analysis on GE's HDGTs margins, where the multi-collinearity issue leads to less statistically significant results.³⁰⁰ The

²⁹⁹ The Commission notes that, after these [number of tenders] observations are excluded from the regression analysis, GE's margins on equipment are significantly lower for tenders where Siemens, Alstom, or MHPS participate.

³⁰⁰ After the exclusion of the [number of tenders] observations related to the dummy variable "*GE not shortlisted but formal shortlisting took place*" (step 2 in paragraph (416)) and once the number of

Commission also observes that, despite the issue of multi-collinearity, Siemens' and Alstom's presences remain negatively correlated with GE's margins on HDGTs. As discussed in paragraph (357), this can be explained by the fact that the main source of market power in tenders relies primarily on the ability to provide the HDGTs, therefore the relation between GE's margins and the presence of competitors is statistically stronger in the regression on GE's HDGTs margins than in the regression on GE's equipment's margins.

- (418) Third, in Table 5 of Annex 4 of the Response to the SO, the Notifying Party considers a variable representing the average number of participants for the tenders where Alstom is present and for the tenders where Alstom is not present. The Commission notes that both the level and the change in this variable are essentially identical when this variable is calculated for Alstom, MHPS, and Ansaldo (see Table 58). Based on this, one would expect that the effect of increased participation affects the estimates not only for Alstom but also MHPS and Ansaldo in a nearly identical way. However, Table 67 and Table 68 reveal different effects between these three firms, especially between Ansaldo and Alstom. This indicates that the firm dummies in the Commission's regressions are picking up an effect that is truly firm-specific and not a mere mechanical effect from increased participation (as claimed by the Notifying Party).
- (419) Fourth, the Notifying Party argues that the variable "*GE shortlist*" should be included in the regression since GE's margins are lower for tenders where there is a shortlist stage compared to tenders where there is no shortlist stage (see Tables 9 and 10 of Annex 4 of the Response to the SO). As discussed above in paragraph (415), including this variable in the regression is not appropriate due to the issue of multi-collinearity. Nevertheless, in order to assess this comment of the Notifying Party, the Commission reports below an analysis of margins for tenders which have a shortlist stage.
- a. GE is shortlisted in [number of tenders] tenders. Among those [number of tenders] tenders, Siemens (with [number of tenders] participations) and Alstom (with [number of tenders] participations) are the OEMs that participate the most often. In comparison, MHPS participates in only [number of tenders] tenders, and Ansaldo participates in only [number of tenders] tenders. In addition, Siemens (with [number of tenders] shortlists) and Alstom (with [number of tenders] shortlists) are the OEMs which are the most often shortlisted against GE among those [number of tenders] tenders. In comparison, MHPS is shortlisted only in [number of tenders] tenders and Ansaldo in [number of tenders] tenders. Therefore, these findings confirm previous results of Commission's analysis (see Sections 4.2, 4.3, 4.4) that Siemens and Alstom are the closest competitors to GE, well above MHPS and Ansaldo.
 - b. Table 60 reports the GE's margins for tenders that have a shortlist stage. It shows that the lower margins of GE at the shortlist stage are actually mainly driven by the presence of Alstom. This analysis therefore confirms previous findings suggesting that Alstom is a close and significant competitive constraint to GE.

participants is added to the regression on GE's HDGT margins (step 3 in paragraph (416)), the level of statistical significance is decreasing for the coefficients of Siemens, Alstom, and MHPS.

Table 60. GE's margins at the shortlist stage depending on the identity of competitors

	Nb. of times a competitor is shortlisted against GE	GE's HDGTs margins %	GE' Equipment margins %
GE vs Alstom	[number of tenders]	[GE margins]	[GE margins]
GE vs Siemens	[number of tenders]	[GE margins]	[GE margins]
GE vs MHPS	[number of tenders]	[GE margins]	[GE margins]
GE vs Ansaldo	[number of tenders]	[GE margins]	[GE margins]
Average GE's margin %		[GE margins]	[GE margins]

(420) The Commission therefore maintains the conclusion from its econometric analysis in Sections 4.4.5 and 4.4.7 that GE's margins are significantly lower for tenders where Alstom is present, suggesting that Alstom is a close and significant competitive constraint to GE.

4.4.11.4. The GT26 HDGT should be considered as one platform

(421) In Annex 5 of the Response to the SO, the Notifying Party argues that the Commission's analysis overstates the competitiveness of Alstom since it does not take into account that Alstom has offered two versions of the GT26: the GT26 2006 rating and the GT26 2011 rating. The Notifying Party argues that: (i) historical bidding data largely reflects Alstom's activities with the GT26 2006 rating, which almost never faced competition from Very large HDGTs, (ii) the GT26 2006 rating has been less offered recently and would have been discontinued irrespective of the proposed transaction, and (iii) in the future, Alstom would (absent the transaction) compete only with the GT26 2011 rating of the GT26 HDGT, and this rating is not competitive because it faces competition from Very large HDGTs.

(422) The Commission disagrees with the Notifying Party for the following reasons.

(423) First, the Notifying Party mentions in the Form CO that Alstom is currently offering the 2006 rating and the 2011 rating of the GT26 HDGT.³⁰¹ Actually, Alstom is currently offering three ratings of the GT26 HDGT:

- a. The 2006 rating of the GT26 HDGT, a version introduced in 2006;
- b. The 2011 rating of the GT26 HDGT, an evolutionary upgrade of the 2006 rating of the GT26 HDGT, introduced in 2011; and,
- c. The 2006 MXL2 rating of the GT26 HDGT, a hybrid between the 2006 rating and the 2011 rating of the GT26 HDGT.³⁰²

(424) Second, the Notifying Party did not provide any evidence (e.g. internal documents) that Alstom (absent the merger) would have discontinued the 2006 rating of the GT26 HDGT.

³⁰¹ See paragraph 195 of the Form CO which describes Alstom's GT portfolio, which includes the GT26 (296MW), i.e. the 2006 rating of the GT26 HDGT, and the GT26+(326MW), i.e. the 2011 rating of the GT26 HDGT, and "Today, ALSTOM offers the 2006 and 2011 models".

³⁰² This version combines the compressor and combustor of the 2006 rating of the GT26 HDGT together with the turbine of the 2011 rating of the GT26 HDGT.

- (425) Third, The Commission notes that there is an internal inconsistency in the claim of the Notifying Party that [Alstom's strategy]. Indeed, the Notifying Party mentions that the 2006 and 2011 ratings of the GT26 HDGT are positioned to meet different customer requirements.³⁰³ This implies that [Alstom's strategy] in order to focus on the 2011 rating.³⁰⁴
- (426) Fourth, the Commission considers that these three different ratings of the GT26 are based on the same underlying technology platform and the same original engine concept, and are the product of an ongoing evolutionary development of the GT26 HDGT's technology:
- a. In particular, the 2011 rating of the GT26 HDGT shares significant technology elements with earlier GT26 ratings. When announcing the 2011 rating of the GT26 HDGT to the market, Alstom explained that [Alstom's strategy].³⁰⁵ Alstom notes in particular that [Alstom's strategy].
 - b. This is further confirmed in the [Alstom's strategy].³⁰⁶ In this report, for instance, it is mentioned that [Alstom's strategy] and that [Alstom's strategy].
 - c. Alstom also stresses the fact that the 2011 rating of the GT26 HDGT is an [Alstom's strategy].³⁰⁷ The 2011 ratings of the GT26 HDGT is simply [Alstom's strategy]³⁰⁸, the latest stage of the "*continuous evolutionary upgrade of a proven platform*"³⁰⁹, or the [Alstom's strategy].³¹⁰ In this context, the 2011 rating of the GT26 HDGT is simply presented as [Alstom's strategy].³¹¹
 - d. The [Alstom's strategy].³¹²
- (427) The Commission therefore still considers that recent past data on the GT26 HDGT are informative about the future competitive strength of Alstom for tenders in the Large segment, irrespective of the exact rating that Alstom would use to participate in tenders.

4.5. Competitive effects in a second price auction environment

- (428) As discussed above, the Commission considers that a first-price auction is the most appropriate framework to assess competitive interactions in the present case (see a detailed assessment in Section 3). The analysis of competitive effect that has been presented so far in Section 4 of the Annex is most directly relevant to a first-price auction environment. However, the Commission, without prejudice to the main line of argument above on the assessment of competitive effects in a first-price auction, has

³⁰³ See page 8 of Annex 5 of the Response to the SO.

³⁰⁴ See page 7 of Annex 5 of the Response to the SO.

³⁰⁵ See [Alstom's internal document], dated 29 September 2011, page 6 (Annex 4322).

³⁰⁶ See Annex 1433 of the Form CO: [...].

³⁰⁷ See [Alstom's internal document].

³⁰⁸ See [Alstom's internal document], June 17 2014, page 30 (Annex 4332).

³⁰⁹ See [Alstom's internal document].

³¹⁰ See "State of the Art in Gas Turbine Power Plants", May 28 2013, page 10 (Annex 4348)

³¹¹ See Exhibit C of this Annex, Figure 4, and Figure 5 of the Letter of Facts, dated 09/07/2015.

³¹² See for instance [Alstom's internal document].

analysed the arguments of the Notifying Party on competitive effects in the context of a second-price auction. This assessment is relevant to the arguments made by the Notifying Party that the Transaction would not lead to a significant impediment to competition in light of the fact that the Parties are rarely winner and runner-up in the same tenders.

4.5.1. *Summary of the Notifying Party's arguments on merger effects in second price environment*

- (429) The Notifying Party argued that the assessment of closeness of competition between two competing bidders should focus only on those tenders where one of the two bidders is the winner and the other the runner-up.³¹³ As discussed in detail Section 3, this argument of the Notifying Party applies primarily in the case of a second-price auction with perfect (or at least very reliable) information on competitors' offers and customers' valuations during each of the tender processes.
- (430) Moreover, the Notifying Party has also assumed that the Parties are able to self-identify themselves when they are the runner-up bidders in any given tender. For example, in the CRA Submission 1 it is stated that: *"the data used here rely on GE and Alstom to self-identify the situations where they were a runner-up to a bid. We believe that GE and Alstom are well positioned to know if they were winner or runner-up for a particular bid, and so we believe that the bidding data are reliable for our main purpose here"*.³¹⁴ Using this assumption, the Notifying Party focuses mainly on bids where Alstom and GE were winner and runner-up.
- (431) The Notifying Party argues that the Parties were together the winner and runner-up in [number of tenders] tenders, representing only [5-10]% ([number of tenders]/([number of tenders])) of the total number of tenders: [number of tenders] is a GE win where Alstom is the runner-up, whilst [number of tenders] tenders are won by Alstom with GE being the runner-up. Among these [number of tenders] tenders, the Notifying Party mentions that only [number of tenders] is in the EEA (project [name of project], won by GE in 2010).
- (432) In the CRA Submission 1, the Notifying Party argues that for the [number of tenders] bids where GE is the runner-up bidder to Alstom, Siemens is likely to be the third choice of customers and the *"difference between GE and Siemens for these customers is likely to be small"*.³¹⁵ The Notifying Party argues that the third choice for customers is critical to understand the potential unilateral effects of the merger: *"this third choice will likely constrain the merged firm from raising its prices in the future to customers that*

³¹³ This is mentioned in the RBB Submission 1, in the CRA submission 1 and in the [Professor A] submission.

³¹⁴ See CRA Submission 1, page 7. The [Professor A] Submission shares similar features with the CRA Submission 1, in particular it focuses on a second price auction design and mentions: (i) competitors rankings in the final stage of the bidding process provide more useful evidence about the competitive pressures that the merging parties exert on each other, (ii) runner-up data that are needed for this assessment are available to the merging parties. Similar to the CRA Submission 1, the [Professor A] Submission relies on the assumption that the Parties *"are able to identify those tenders in which they were the winner or the runner-up"* (see [Professor A] Submission, page 3).

³¹⁵ See CRA Submission 1, page 2.

regard GE and Alstom as their top two choices".³¹⁶ The Notifying Party then argues that Siemens will provide a "robust constraint" to GE for these customers. In other words, the Notifying Party argues that even for the [number of tenders] tenders where GE is the runner-up to Alstom, anti-competitive effects are likely to be contained by intense competition between GE and Siemens.³¹⁷

- (433) In the CRA Submission 1, the Notifying Party considers a [5-10]-[10-20]% price effect on those [number of tenders] tenders as an illustration, in order to compare potential harm to potential efficiencies. The assumed price effect is similar to the one used by the Commission in Section 4.4 of the Annex. Efficiencies are further discussed in Section 8.11 of the Decision, and are not assessed in this Annex.

4.5.2. *Commission assessment of the analysis of the Notifying Party in the context of a second-price auction*

- (434) The Commission has assessed the Notifying Party's arguments on the lack of significant competitive effects in a second-price auction framework, as set out in the economic submissions that have been made to the Commission. The Commission considers however that a number of issues and arguments cast doubts on the analysis submitted by the Notifying Party. In particular:
- a. The assumption made that HDGT tenders can be best characterised as second-price (descending) auctions is not supported by the evidence as set out in detail in Section 3;³¹⁸
 - b. The assumption that the Parties are able to accurately self-identify all the tenders where they are the runner-up bidders is not supported by the evidence in light of the significant uncertainty surrounding this information. This assumption is also contradicted by the data that the Commission was able to collect from competing OEMs and from customers (as is discussed in more detail in Section 3). More generally, the runner-up data available on the relevant tenders provided is characterised by significant uncertainty, and is likely to be of limited reliability. Therefore, the results of any analysis of competitive interactions based on runner-up data needs to be interpreted with significant caution;
 - c. The analysis provided by the Notifying Party is characterized by a significant amount of missing data on the identity of the runner-up (e.g. this concerns [40-50]% of tenders in the Large segment in the CRA Submission 1). This data

³¹⁶ See CRA Submission 1, page 8.

³¹⁷ A similar line of argument is made in the [Professor A] Submission, which notes that even for the small proportion of tenders where GE and Alstom are runner-up to each other ([5-10]% of the tenders in the Large segment), the merger is unlikely to be harmful if a third supplier provides a good alternative. The [Professor A] Submission mentions that "*it is the parties' view that Siemens, which overall is quite successful, provides a very good alternative to Alstom when Alstom turns out to be the runner-up to GE. More generally, the analysis suggests that the merger cannot harm customers if Siemens (or another firm) provides a good alternative for those projects where the merging parties are the best two suppliers*" (see [Professor A] Submission, page 3, footnote 2). A similar argument is mentioned in the RBB Submission 3 (Section 5).

³¹⁸ As discussed in Section 3, the Notifying Party has submitted the [Professor A] model as an economic framework to justify the relevance of runner-up data. As set out in detail in Section 3, the assumption of this model are not supported by the evidence as well.

therefore needs to be complemented in order to capture the full extent of competitive interactions between the merging parties, and also the impact of Alstom on non-merging parties;

- d. Given the high level of margins observed in tenders (especially for GE), significant price effects from a merger can be expected under a second-price auction framework for the affected tenders, in excess of those assumed in the CRA submission 1; and
- e. Finally, the impact of likely discontinuation of Alstom's GT26 post-merger is not considered in the economic submissions made by the Notifying Party. Product suppression implies that, in a second-price auction design, all tenders where Alstom is the winner or the runner-up would suffer from a loss of competition, independently of the ranking of the other merging party. Given the evidence available to the Commission, product suppression would significantly increase price effects under the assumption of a second-price auction.

(435) In what follows, the Commission focuses its assessment of the Notifying Party's economic arguments on the reconstruction of a fuller set of runner-up data (in order to address the missing data issue), and on the evaluation of possible competitive effects in a second-price auction in light of the margin information provided by the Parties and given the likely product discontinuation of the GT26. The more general issues related to the relevance of a second-price auction assumption and the reliability of runner-up (and shortlist) information is already discussed in Section 3 of this Annex. The Commission's evaluation of the Notifying Party's economic arguments that is set out below should therefore be read in light of both the Commission's assessment of the (lack of) suitability of a second-price auction framework, and of the severe data issues that affect the information on runner-up bidders.

4.5.2.1.Reconstruction of missing data: the Parties are runner-up to each other in a significant number of tenders, and Alstom is often the runner-up bidder to other competitors

(436) This section describes the methodology used by the Commission to reconstruct the runner-up bidders in the [number of tenders] competitive tenders in the Large segment, in attempt to address the missing data issue. The table below from the CRA Submission 1 illustrates the importance of missing data to analyse runner-up information. In [number of tenders] tenders out of [number of tenders] tenders runner-up information is not available. For GE's wins, the missing data affects a third of the tenders ([number of tenders] out of [number of tenders]), and for Alstom [40-50]% of its wins ([number of tenders] out of [number of tenders]).

Table 61: Runner-up table from CRA Submission 1 (Table 1).

Winning OEM/runner-up OEM	Alstom	Ansaldo	GE	MHPS	Siemens	Unknown	Total
Alstom	[...]	[...]	[...]	[...]	[...]	[...]	[...]
GE	[...]	[...]	[...]	[...]	[...]	[...]	[...]
Siemens	[...]	[...]	[...]	[...]	[...]	[...]	[...]
MHPS	[...]	[...]	[...]	[...]	[...]	[...]	[...]
Ansaldo	[...]	[...]	[...]	[...]	[...]	[...]	[...]
Total	[...]	[...]	[...]	[...]	[...]	[...]	[...]

- (437) In order to address the missing data issue, in a first step, the Commission has completed runner-up data by using tender information provided by each of the merging parties and internal documents from the merging parties where appropriate.³¹⁹
- (438) For the tenders without runner-up information, the Commission has used information on shortlisted bidders to infer the runner-up OEM. For example, for the project [project name, ID and location], GE is the winning OEM, no information on runner-up is available, and Siemens and Alstom are both shortlisted. Therefore, a weight of 0.5 is assigned to both Siemens and Alstom since they are co runner-up. This "pro-rating" methodology is similar to the one used in the CRA submission 1. Another example involving both of the merging parties is project [project name and location] won by Alstom, where no runner-up information was provided by the Notifying Party, but GE is the only OEM shortlisted with Alstom. Therefore, GE is considered as being the runner-up for this project.³²⁰
- (439) As regard the project [project name and ID] won by GE, Ansaldo is mentioned as being the only runner-up bidder. However, the Commission notes that internal documents of GE suggest that Alstom should be considered at least as the co-runner-up with Ansaldo. In the [title of internal GE] of the tender [project name]³²¹ [contents of internal GE] showing that Alstom outperformed Ansaldo on output and technology leadership, whilst Ansaldo was better on price.³²² Moreover, the customer rankings of offers received for the tender (indicating that Alstom was the number 3 bidder, behind GE and Ansaldo) also appear to be ex-post rankings, and therefore does not

³¹⁹ The Commission first made a correction in the bidding data provided by the Notifying Party. For the tender [project ID], Alstom is listed as being the runner-up while it did not participate in the tender. This also illustrates the uncertainty in the runner-up information. When the Commission asked Alstom to complete the bidding data by mentioning the exact model whenever the model was coded as "unknown", Alstom replied that it did not submit a firm offer (see Alstom's reply to the Commission's Request for Information No. 22, 17.03.2015, question 1). This information seems in contradiction with data submitted by GE. However, the Commission takes a conservative approach by considering that Alstom did not participate and is not the runner-up for this project.

³²⁰ This is also consistent with information in GE's internal documents [quotes from internal GE documents].

³²¹ See GE's reply to the Commission's Request for Information No. 18, 06.03.2015, question 8, [title internal GE document], page 4.

³²² The Commission also notes that in relation to a subsequent bid in [project name and location], another GE internal document suggests that [quote from internal GE document]. See GE's reply to the Commission's Request for Information No.20, 12.03.2015, question 7, doc "GE_0001514_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2646-2463).

necessarily correspond to GE's perception of its closest constraint at the time of submitting its bid.³²³ This follows from the fact that this bid appears to have been a public procurement tender, with a public opening of the bids.³²⁴ Therefore, the Commission assumes that Alstom can also be considered the runner-up (with Ansaldo) for this project.³²⁵

- (440) The Commission also uses runner-up data provided by Alstom.³²⁶ For the projects where GE did not know that Alstom was the runner-up and no other runner-up firm is mentioned, the Commission assigns a weight of one to Alstom. For the other projects where GE mentions a runner-up different from Alstom (for example MHPS), the Commission assigns a weight of 0.5 to each of the mentioned runner-up bidders. Using Alstom's runner-up information does not affect the number of times in which the merging parties are winner and runner-up in the same projects. It however increases the total number of times for which Alstom is runner-up to other OEMs.
- (441) For the tenders without any information on runner-up and shortlisted OEMs, the Commission has used information on the participating suppliers to infer the runner-up bidders. For example, [name of project], GE is the winning OEM, Siemens and GE were the only participants, so Siemens is considered to be the runner-up. For tenders with more than two participants, a pro-rating methodology is used. This adjustment increase the number of tenders in which GE and Alstom are the winner and runner-up by [number of tenders] tenders (using the pro-rating methodology explained above in paragraph (438)).
- (442) Table 62 below reports the result of the first step of the exercise based on the Parties' bidding data and the Notifying Party's internal documents.

Table 62: Replication of CRA's analysis using data from GE bidding data, Alstom's data (RFI28), and GE's internal documents

Winning OEM/runner-up OEM	Alstom	Ansaldo	GE	MHPS	Siemens	Total
Alstom	[...]	[...]	[...]	[...]	[...]	[...]
GE	[...]	[...]	[...]	[...]	[...]	[...]
Siemens	[...]	[...]	[...]	[...]	[...]	[...]
MHPS	[...]	[...]	[...]	[...]	[...]	[...]
Ansaldo	[...]	[...]	[...]	[...]	[...]	[...]
Total	[...]	[...]	[...]	[...]	[...]	[...]

- (443) In the CRA Submission 1, the Notifying Party argues that GE and Alstom are winners or runner-ups to each other in [number of tenders] tenders (or [number of tenders] tenders using the pro-rating methodology). However, by complementing missing data using information provided by the merging parties, Table 62 shows that GE and

³²³ See GE's reply to the Commission's Request for Information No.20, 12.03.2015, question 7, doc "GE_0002403_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2646-3879).

³²⁴ See GE's reply to the Commission's Request for Information No.20, 12.03.2015, question 7, doc "GE_0008499_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2709-10366).

³²⁵ See GE's reply to the Commission's Request for Information No.20, 12.03.2015, question 7, doc "GE_0001514_GE - Strictly Confidential - Contains Business Secrets.msg" (ID 2646-2463).

³²⁶ See GE's reply to the Commission's Request for Information No.28, 21.04.2015, question 1.

Alstom are winners or runner-ups to each other in [number of tenders] tenders (with pro-rating), which corresponds to [number of tenders] tenders (without pro-rating).³²⁷ The [number of tenders] tenders correspond to [number of tenders] tenders won by GE where Alstom can be considered the runner-up (or co-runner-up), and [number of tenders] tenders won by Alstom where GE can be considered the runner-up (or co-runner-up), out of [number of tenders] total wins by Alstom. Therefore, the data and methodology used in the CRA Submission 1 understates the number of tenders in which Alstom and GE are the runner-up or winner to each other.

- (444) Moreover, the CRA Submission 1 argues that there is only [number of tenders] in the EEA [project name, location and year] where GE and Alstom are the winner or runner-up to each other. However, after complementing the missing data on runner-up bidders, the Commission finds additionally [number of tenders] projects in the EEA where the merging parties can be considered as the winner and runner-up to each other: [project names, locations and years].
- (445) The Commission also notes that the exercise summarised in Table 62 suggests that Alstom is the runner-up in a significant number of tenders (including cases where it is the runner-up to an OEM other than GE). Alstom is the runner-up in close to [number of tenders] tenders (using the pro-rating methodology), significantly above the [number of tenders] tenders indicated in the corresponding table in the CRA submission 1. The total number of tenders in which Alstom is the runner-up bidder is relevant under the scenario where the GT26 would be discontinued. Moreover, the fact that Alstom is frequently the runner-up to other OEMs generally points to the competitive importance of Alstom.
- (446) In a second step, in order to further test the reliability of the runner-up information, the Commission has also used the best available information on runner-up bidders provided by customers and competitors.³²⁸
- (447) Using the information provided by customers leads to two changes in the bidding data. For these two observations, the Commission has used a pro-rating methodology. For one project where GE mentioned itself as being the runner-up bidder, customers mention a different runner-up bidder. The Commission therefore includes both GE and the other bidder mentioned by the customer as runner-up. For another project where GE mentions itself as being the runner-up bidder, the customer mentions another runner-up in addition to GE. The Commission therefore includes both GE and the other bidder mentioned by the customer as runner-up.
- (448) Using the best available information provided by competitors, the Commission is able to further complement the assessment of bids where an OEM other than GE was the winner, and Alstom was the runner-up.³²⁹ As stated above, these instances are particularly relevant under the assumption of suppression of the Alstom product. In case of conflicting runner-up information between competitors' data and previous

³²⁷ These 14 tenders are the following: [project names and IDs].

³²⁸ This confidential information was made available in the Data Room.

³²⁹ In case of conflicting information on the identity of runner-up bidder between information provided by the merging parties and information provided by competitors, the Commission pro-rates the runner-up information provided by each source.

runner-up data, the Commission has used a pro-rating methodology. For example, if MHPS was the runner-up bidder based on previous data while competitors indicate Alstom as being the runner-up bidder, the Commission has assigned a weight of 0.5 for MHPS and 0.5 for Alstom.³³⁰

- (449) After complementing runner-up information using data from competing OEMs, GE and Alstom are the winner and runner-up to each other in [number of tenders] (with pro-rating), which corresponds to [number of tenders] (without pro-rating). The [number of tenders] correspond to [number of tenders] won by GE, and [number of tenders] won by Alstom. [number of tenders] of those tenders are in the EEA: [number of tenders] won by GE [project name, location and year] and [number of tenders] won by Alstom [project name, location and year].
- (450) In addition, the Commission's data reconstruction exercise suggests that Alstom is the runner-up in a total of [number of tenders] tenders (with pro-rating). This is higher than the corresponding figure reported in Table 62 ([number of tenders] tenders).
- (451) Under a second-price auction framework, the discontinuation of Alstom's GT26 implies that adverse competition effects would apply to all tenders where Alstom is the winner or runner-up, independently of whether GE is winner or runner up. This implies that potential anti-competitive effects would spread over [number of tenders] tenders (with pro-rating): [number of tenders] tenders where Alstom is the winner and [number of tenders] tenders (with pro-rating) where Alstom is the runner-up bidder. This corresponds to [number of tenders] tenders overall (without pro-rating). This is a significant number of tenders, equivalent to [50-60]% of competitive tenders in the Large segment.
- (452) Of these [number of tenders] tenders, [number of tenders] happened in the EEA from 2009 to 2013 (out of a total of [number of tenders] competitive tenders over the 2009-2014 period). [number of tenders] are already listed above: [number of tenders] won by GE [project names, locations and years] and [number of tenders] by Alstom ([project name, location and year]. The other [number of tenders] rely on confidential information provided by third party OEMs.³³¹ This evidence suggests that EEA customers are also likely to suffer from a potential loss of competition.
- (453) The Commission also notes that there is additional evidence suggesting that Alstom's GT26 HDGT is a significant competitive constraint (and in some cases) the runner-up bidder for some tenders not included in the analysis above. This applies in particular to the following cases:
- a. Project [project name and location], which is coded as "Pending" in the bidding data provided by the Notifying Party ([project ID]). GE's internal documents suggest that Alstom would be the winner or the runner-up for this project.³³² Whilst the Commission does not consider this project in its quantitative analysis given that it has not been awarded, the Commission considers that the performance

³³⁰ The complete table on runner-up bidders is based on confidential information provided by competing OEMs and customers, and it was therefore made available in the Data Room only.

³³¹ The complete list of tenders was made available in the Data Room.

³³² [quote from internal GE documents]

of Alstom for this project is still indicative of Alstom as a competitive force in the EEA and of close competitive interaction with GE.

- b. Runner-up data provided by Alstom³³³ shows also that Alstom is the runner-up bidder for [number of tenders] projects won by Very Large HDGTs. This concerns [project name and ID] won by GE, and [project name and ID] won by Siemens. The fact that Alstom was perceived by GE to be its main competitor on the [project name] appears to be in line with GE's internal documents.³³⁴ While these [number of tenders] projects are not included in the Large segment analysis, it should be kept in mind that (particularly under a second-price auction framework) competitive harm due to the loss of competition with GE would apply to project [project name] and competitive harm due to Alstom's product discontinuation would apply to [project name].

4.5.2.2. The evidence on margins indicate that the merger would result in significant price rise and consumer harm even if one assumes a second-price auction framework

- (454) In the CRA Submission 1, in order to illustrate potential harm to consumers, the Notifying Party assumed a [5-10]-[10-20]% price increase on the [number of tenders] tenders where the merging parties were the winner or runner-up to each other.³³⁵ Based on this assumption and on the [number of tenders] occurrences where the parties are winner and runner-up, the Notifying Party computes an illustrative consumer harm of USD 14-28 million per year.
- (455) In this section, the Commission provides its own assessment of an illustrative price effect for tenders affected by the merger if one assumes a second-price auction framework (as the Notifying Party effectively assumes), and for potential harm to consumers from price effects (abstracting from additional potential non-price effects). In doing so, the Commission considers:
 - a. The [number of tenders] tenders ([number of tenders] tenders with pro-rating) for Large HDGTs where GE and Alstom are winners or runner-ups to each other;
 - b. The additional [number of tenders] ([number of tenders] with pro-rating) tenders where the likely discontinuation of Alstom's GT26 would lead to a loss of competitive pressure and competitive harm.³³⁶
- (456) In a second-price auction set-up, the price effects from a merger depend on the distance between the number 2 bidder and the number 3 bidder (see Section 2.3 for a discussion). As mentioned in the CRA submission 1 and in the [Professor A] Submission, when the merging parties are the winning OEM and the runner-up, Siemens is typically the next best alternative. As discussed in Section 2.3, margin data are useful to assess the distance between competitors in a differentiated market, also in the context of a second-price auction. In particular, the margin earned by the winning

³³³ See Alstom's reply to the Commission's Request for Information No.28, question 1.

³³⁴ [quote from internal GE documents].

³³⁵ See CRA Submission 1, page 11.

³³⁶ This second point is not considered in the CRA Submission 1 and in the [Professor A] Submission.

OEM in a second-price auction approximates the difference in the surplus offered to the customer between the winning bidder and the runner-up OEM. The margin data can therefore also be used to proxy the distance in customer valuation between the same two bidders when are they respectively the second and third best placed bidder in a tender. The Commission relies on evidence on average margins from past tenders to obtain a proxy of this distance.

- (457) The margin data can be used in particular to test the assumption that Siemens would impose a sufficiently strong constraint on GE in those tenders where the parties are the winner and the runner-up so as to prevent a significant price increase. Given that GE is able to earn significant margins in tenders where Siemens is its main competitor (as is discussed further below), this assumption does not seem to be supported by the data.
- (458) The Commission considers three configurations of tender with potential price effects due to the merger:
- a. Tenders where Alstom is the winning OEM and GE is the runner-up: this includes [number of tenders] using the pro-rating methodology (corresponding to [number of tenders] without pro-rating);
 - b. Tenders where GE is the winning OEM and Alstom is the runner-up: this includes [number of tenders] using the pro-rating methodology (corresponding to [number of tenders] without pro-rating); and
 - c. Tenders when Alstom is the runner-up bidder and OEMs other than GE are the winner, and tenders where Alstom was the winner and an OEM other than GE was the runner-up: this concerns [number of tenders] with pro-rating (corresponding to [number of tenders] in absolute terms).
- (459) A summary of the Commission's assumptions for these three types of tenders, and illustrative price effects, is included in Table 63.
- (460) As regards the first configuration of bids, the Commission relies on GE's win margins when Siemens is the runner to approximate the price effect from the merger. This allows to proxy the distance between GE and Siemens. For the tenders where GE wins and Siemens is the runner-up, GE's margins are [GE margins]% on the overall equipment, including the HDGTs. This margin excludes the additional margin on LTSA, and is therefore a conservative estimate of the relevant overall margins (as it is shown in Section 3.2.3). An adjustment for the effect due to LTSA margins is discussed below.
- (461) As regards the second configuration of bids, the Commission uses Alstom's average win margins to approximate the price effect. Alstom has provided margin data on [number of tenders] of its wins in the Large segment. The average margin on these tenders was of [Alstom margins]%. The Commission relies on this margin data to proxy the distance between Alstom and other OEMs (typically Siemens) for tenders where Alstom is the number two bidder, and another OEM (typically Siemens) is the number three.

- (462) The Commission also notes that using Alstom's reported margins of [Alstom margins]% is likely to be conservative, since Alstom was not able provide the breakdown of its margins per components. The Commission understands that Alstom's margins also include the EPC part for example (construction work) which is characterized by a higher number of active firms and therefore most probably lower margins. Therefore, Alstom's margins are likely to be conservative when measuring any potential price rise for HDGTs or equipment. This can also be seen by the fact that GE's margins when Siemens is the runner-up bidder are considerably higher than those of Alstom ([Alstom margins]% as opposed to [Alstom margins]%). As in the case of GE's margins, the Alstom's margin excludes the additional margin on LTSA, and is therefore a conservative estimate of the relevant overall margins. Based on margin data provided to the Commission, the Alstom's margin on LTSA equal to [Alstom margins]%, and is therefore well in excess of its equipment margin.³³⁷
- (463) As regards the third configuration, it concerns [number of tenders] additional tenders (with pro-rating) where Alstom is either the winner or the runner-up bidder. For the tenders where the winning OEM is Siemens, MHPS, or Ansaldo and Alstom is the runner-up ([number of tenders] tenders), the third best alternative would be typically GE or Siemens. As discussed before, due to few observations on Alstom's margins, the Commission uses the average Alstom margins to measure potential price effect in this case. As regards tenders where Alstom is the winner and Ansaldo, MHPS, or Siemens are the runner-up bidders, which concerns [number of tenders] tenders, the next best alternative would be typically GE. However the Commission does not have margins data on third party OEMs. For these tenders, the Commission also uses Alstom's average margins. Given the relatively low level of Alstom's margins (in comparison to GE) this approach too is conservative. In any event, given the low number of affected tenders ([number of tenders] out of a total of [number of tenders] relevant tenders), this assumption does not significantly affect the results reported below.
- (464) For each of these three configurations, the potential price rise is applied to an average project value of [average GE price]. As already described in Section 4.4.9 this is the average price of GE's overall equipment for tenders where Alstom participates.³³⁸
- (465) The Commission applies a price increase on the affected bids by also taking account the discounted margins on LTSA. Based on the methodology set out in Section 4.4.9 the Commission uses a discounted value of [average GE price] for the LTSA, for both GE and Alstom.³³⁹ As regards each of the three configurations described above, the

³³⁷ Based on financial data, Alstom realises a margin of [Alstom margin]% on the O&M contracts for the GT26 fleet and a margin of [Alstom margin]% on GT26's revenues not included in O&M contracts (see Form CO, paragraph 1186).

³³⁸ The average project value of Alstom's wins is higher than that of GE ([average product value]), given that Alstom's tends to offer a wider scope than GE. In order to focus the assessment only on the elements of HDGT tenders most affected by the transaction, the Commission relies on the average value of the GE scope.

³³⁹ Alstom's price for the LTSA is around [Alstom LTSA price] based on 5 projects won by Alstom. This is significantly higher than the GE's price for the LTSA, at [GE LTSA price]. Therefore the Commission's approach to use the discounted GE's LTSA prices of [GE LTSA price] also for the Alstom LTSA is conservative.

Commission uses the following LTSA margins to approximate price effects under a second-price auction framework:

- a. For the first configuration, an average margin on the LTSA of [average GE margins]% is used (based on GE's average LTSA margin in wins in competitive tenders); including the LTSA margin in addition to the HDGT and equipment margins, implies an overall margin of [average GE margins]% in bids where GE is the winner and Siemens the runner-up (see Table 63);
- b. For the second and third configurations, the Commission uses an average margin on the LTSA of [average Alstom margins]% (based on Alstom's average LTSA margin in its wins); including the LTSA margin in addition to the HDGT and equipment margins, implies an overall margin of [average GE margins]% in bids where Alstom is the winner (see Table 63).

- (466) Overall, the loss of competition between the merging parties could lead to a potential price rise of [price effect]% on HDGT, related equipment and the LTSA for the [number of tenders] affected tenders (based on pro-rating) where GE and Alstom are the winner and runner-up. This leads to a total harm of USD 453 million for the [number of tenders], resulting in an average harm per bid of [harm per bid]. These [number of tenders] over a 6 years period would correspond to an average of [number of tenders] per year.³⁴⁰ This implies a yearly harm to consumer of around USD 75 million (see Table 63, for the two columns under “A. Without product discontinuation”).³⁴¹ Whilst these figures are computed for largely illustrative purposes and only in order to address the economic submissions made by the Notifying Party, the Commission notes that the estimated price effects and consumer harm are significantly higher than the ones mentioned in the CRA Submission 1 (which estimated an illustrative consumer harm of USD 14-28 million per year).³⁴²
- (467) In the case of product discontinuation, the potential price effect leads to a [price effect]% potential price increase on HDGT, related equipment and LTSA for an additional [number of tenders] ([number of tenders] tenders based on pro-rating). This amounts to an additional consumer harm of USD 573 million. The total consumer harm with product discontinuation would therefore amount to USD 1,026 million. Using the [number of tenders] (with pro-rating) affected by the loss of Alstom's product, this would lead to an average harm per bid around [harm per bid]. These [number of tenders] over a 6 years period would correspond to an average of roughly [number of tenders] per year. This implies a yearly harm to consumer around USD 171 million. This illustrative estimate of harm is significantly in excess of the one described in the CRA Submission 1 (which did not evaluate the case of product suppression). It is also higher than the illustration of consumer harm described by the Commission in Section 4.4.9. The Commission also notes that this illustrative estimate

³⁴⁰ The Commission uses a 6 year period to compute the annual harm, rather than the 5 year period assumed in the CRA Submission 1, in order to provide a more conservative measure of annual consumer harm.

³⁴¹ The Commission notes that a higher harm estimate would be obtained if one were to add the Project [project name] to the number of projects where the parties are winner and runner-up.

³⁴² See CRA Submission 1, page 12.

of consumer harm does not include potential non-price effects due to the merger (e.g. due to the loss of innovation).

Table 63: Illustrative computation of the merger's impact on consumer welfare under a second-price auction assumption (Large HDGTs)

	A. Without product discontinuation		B. With product discontinuation
	GE wins when Alstom is runner-up	Alstom wins when GE is runner-up	Other Alstom runner-up bids or wins
Number of bids affected	[number of tenders]	[average margin]	[number of tenders]
Scope of bid (HDGT + equipment) (USD m)	[average price]	[average price]	[average price]
Discounted value of LTSA (USD m)	[average price]	[average price]	[average price]
% Margin on HDGTs + equipment	[average margin]	[average margin]	[average margin]
% Margin on LTSA	[average margin]	[average margin]	[average margin]
Overall % Margin	[average margin]	[average margin]	[average margin]
Price effect from merger in 2nd-price auction	[price effect]	[price effect]	[price effect]
Total impact on consumer welfare (USD m)	81	371	573
Annual impact on consumer welfare (USD m)	13	62	96

4.5.3. The Notifying Party's criticisms in the Response to the SO do not have a significant impact on the outcome of the Commission's analysis

(468) In Annex 1 of the Response to the SO, the Notifying Party's comments on the methodology used by the Commission can be summarised as follows:

- a. As regards tenders with missing data on runner-up bidders, the Notifying Party agrees to the use of data on shortlisted bidders to infer the runner-up bidders (see paragraph (438)). However, the Notifying Party argues that, for the tenders where there is no information on runner-up and shortlisted bidders, the inference of runner-up bidders should be based on market shares.³⁴³
- b. The Notifying Party argues that it is not appropriate to include the equipment other than the HDGTs and the corresponding LTSA in the base on which to compute the price increase.³⁴⁴
- c. The Notifying Party argues that the [price effect]% price effect used by the Commission for the projects awarded to Alstom where GE is the runner-up bidder is not realistic.³⁴⁵

³⁴³ See Section 2 of Annex 1 to the Response of the SO.

³⁴⁴ See Section 3.A of Annex 1 to the Response of the SO.

³⁴⁵ See Section 3.B of Annex 1 to the Response of the SO.

(469) In the following, the Commission assesses each of these points in detail. The Commission also provides the results of an updated assessment of the Notifying Party's economic framework in light of the Notifying Party's comments that the Commission considers reasonable.

4.5.3.1. The methodology of the Notifying Party to infer runner-up bidders is not appropriate and does not use all available data

(470) As regards the tenders with no information on runner- bidders, while the Notifying Party agrees with the Commission's approach to use data on shortlisted bidders to infer the runner-up bidders, the Notifying Party disagrees to use information on bidders that participate at the firm stage when there is no information on runner-up and shortlisted bidders. For the tenders with no information on runner-up and shortlisted bidders, the Notifying Party proposes to infer the runner-up bidders using data on market shares.³⁴⁶

(471) First, the Commission disagrees with the approach of the Notifying Party since it implies that, for those projects, all OEMs are effectively treated as runner-up bidders, which includes therefore the OEMs that do not participate in tenders. For example, for the tender [project name and ID], GE is the winning OEM and Siemens and GE are the only two participants. The approach of the Notifying Party implies that all four OEMs, Siemens, MHPS, Alstom, and Ansaldo are the runner-up bidders (and the respective market share determines the weight of each of them³⁴⁷), even if some OEMs do not participate in tenders (which is counter-intuitive). In contrast, the approach of the Commission is more realistic: for example, in this particular tender, Siemens is considered as being the only runner-up bidders since no other OEMs has participated in this tender. Therefore, the Commission considers that the approach of the Notifying Party to infer missing data on runner-up bidders is not appropriate.³⁴⁸

(472) Second, the approach of the Notifying Party understates the number of tenders where Alstom is the runner-up to other OEMS, which is critical to assess the loss of competition due to the discontinuation of Alstom's GT26 HDGT (which is not addressed in the CRA Submissions). Product discontinuation implies that all tenders where Alstom is the winner or runner-up would suffer from a loss of competition, independently of whether GE is the winner or runner-up. While the Commission's analysis shows that Alstom is the runner-up to Siemens, MHPS and Ansaldo in

³⁴⁶ See Section 2 of Annex 1 to the Response of the SO: "*pro-rating based on wins is superior, since the likelihood that firm is a runner-up, and the ability of a firm to be an effective runner-up bidder, are better measured by that firm's success at winning projects than by that firm's participation in tenders*".

³⁴⁷ The Notifying Party calls this "*pro-rating based on wins*".

³⁴⁸ As regards the number of tenders affected by a potential loss of competition between the merging parties, the Commission notes that the approach used by the Notifying Party gives comparable results with the approach used by the Commission. The Notifying Party finds that GE and Alstom are the winner and runner-up bidder to each other in [number of tenders] tenders (see Table 1B of Annex 1 to the Response of the SO), while the corresponding figure in the Commission's analysis is [number of tenders] (see Table 63).

[number of tenders]³⁴⁹, the analysis of the Notifying Party shows that Alstom is the runner-up to these OEMs in [number of tenders] tenders.³⁵⁰

- (473) The Commission has used runner-up data provided by competing OEMs to measure the number of tenders where Alstom is the runner-up to other OEMs (see paragraph (448)). The Notifying Party has not contested this approach in the Response to the SO. However, the Notifying Party did not rely on this information to complement its runner-up table, despite the fact that the underlying data was made available to the external economists of the Notifying Party in the data room. Therefore, the Commission considers that the analysis of runner-up information undertaken by the Notifying Party is incomplete since it does not use all available data on runner-up bidders.
- (474) Therefore, the Commission maintains that: (i) [number of tenders] (based on pro-ratings) would be affected by a loss of competition between the merging parties, and (ii) additionally [number of tenders] (with pro-rating) would be affected by a loss of competition due to the likely discontinuation of Alstom's GT26 HDGT with the merger. The merger would therefore leads to a loss of competition over [number of tenders] with pro-rating, corresponding to [number of tenders] in absolute terms.³⁵¹

4.5.3.2. The evidence shows that the base on which to apply the price increase should include the complements sold with the HDGTs

- (475) In the Commission's analysis, the hypothetical price increase is applied to a base of [average price per tender] per project. The [average price per tender] is comprised of a [average price per tender] project price which includes both HDGTs and complements (for example, the steam turbines and generators, see paragraph (464)) and a [average price per tender] discounted LTSA price (see paragraph (465)).
- (476) The Notifying Party argues that it is not appropriate to include equipment other than the HDGTs and the corresponding LTSA in the base on which to compute the price increase. In particular, the Notifying Party argues that the sale of equipment takes place in a separate market and is not related to HDGTs.³⁵²
- (477) The Commission disagrees with this claim of the Notifying Party for the reasons discussed in the following paragraphs. Therefore, since competitive harm would also concern the complements sold with HDGTs and LTSAs, the Commission maintains its approach used in the SO to include the complements in the base on which to apply the potential price increase.

³⁴⁹ Alstom is the runner-up bidders in [number of tenders] (see paragraph (451)), minus [number of tenders] where Alstom is the runner-up to GE (see Table 63). This leads to [number of tenders] where Alstom is the runner-up to Siemens, MHPS, and Ansaldo.

³⁵⁰ See Table 1B of Annex 1 to the Response of the SO: [number of tenders] tenders where Alstom is the runner-up bidders, minus [number of tenders] tenders where Alstom is the runner-up to GE. This leads to [number of tenders] tenders where Alstom is the runner-up to Siemens, MHPS, and Ansaldo.

³⁵¹ See paragraph (451) and Table 63: Alstom is the winner for [number of tenders] tenders and the runner-up for [number of tenders] tenders.

³⁵² See Section 3.A of Annex 1 of the Response to the SO.

- (478) First, as discussed in Sections 9.1.1 and 9.2.1 of the Decision, the Commission considers there is a separate market for complements bundled with HDGTs.
- (479) Second, including the complements in the base to compute the price increase is also consistent with GE's internal documents. Indeed, GE's internal documents show that [information on GE's pricing strategy].³⁵³
- (480) Third, this is also confirmed by Alstom's pricing data. [Alstom pricing strategy].³⁵⁴
- (481) Fourth, the Commission's econometric analysis in Section 4.4.6 shows that the presences of Siemens, Alstom, and MHPS are associated with significantly lower GE's margins on its overall scope (i.e. HDGTs plus complements). This contradicts the claim of the Notifying Party that the complements should not be included in the competitive assessment.

4.5.3.3. The price effect used by the Commission for the projects awarded to Alstom where GE is the runner-up is realistic and justified if one adopts the economic framework suggested by the Notifying Party; even after taking into account the Notifying Party's criticism, the merger would lead to significant harm to consumer

- (482) The Notifying Party argues that the [price effect]% price effect used by the Commission for the projects awarded to Alstom where GE is the runner-up bidder is questionable. The Notifying Party essentially argues that:³⁵⁵
- a. Siemens will be "*a highly effective*" competitor to GE post-merger, and therefore a [price effect]% price increase is more realistic. In addition, the Notifying Party argues that an increase of [price effect]% percentage points would lead to an unrealistic increase of the project margins awarded to Alstom pre-merger.
 - b. The Commission's analysis assumes that the gap in value between GE and Siemens is the same for the customers who purchased from GE as for the customers who purchased from Alstom, and that this assumption is questionable. In particular, customers who purchased from GE have a preference for GE, and therefore the [price effect]% margins computed using tenders awarded to GE when Siemens is the runner-up is likely to overestimate the price effect for tenders awarded to Alstom when GE is the runner-up. This is because customers who buy from Alstom have no such preference for GE.
 - c. The Notifying Party also criticizes the assumption in the Commission's analysis that the expected gap between GE and Siemens (as the number 2 and number 3 bidders) for customers who choose Alstom is equal to the expected gap between GE and Siemens (as number 1 and number 2 bidders) for customers who choose GE..

³⁵³ [information on GE's pricing strategy].

³⁵⁴ See email sent to the Commission on 05/12/2014 (DOC ID 596 and DOC ID 597). See also paragraph (347).

³⁵⁵ See Section 3.B of the Response to the SO.

- d. The use of [price effect]% price effect is a direct implication of the economic framework justifying the use of runner-up data for the competitive assessment
- (483) First, the use of [price effect]% price effect is the direct consequence of using a second-price auction framework for the competitive assessment. As discussed in Section 2.3, only a second-price auction framework can justify the exclusive focus on runner-up data for all tenders in the competitive assessment. The Commission notes that the Notifying Party did not provide any other economic framework to justify the exclusive use of the runner-up data.³⁵⁶
- (484) The Notifying Party also argues that Siemens, who is the number 3 bidder for the projects awarded to Alstom where GE is the runner-up, would constrain any potential price rise. This is a typical element of a second-price auction framework (see Section 2.3).
- (485) As discussed in Section 2.3 (see also paragraph (456)), in a second-price auction framework, margins data for tenders awarded to GE where Siemens is the runner-up are useful to assess the distance between GE and Siemens, and therefore to determine the potential price effect for tenders awarded to Alstom where GE is the number 2 bidder and Siemens the number 3 bidder.³⁵⁷ This approach was used by the Commission to derive the [price effect]% price effect for tenders awarded to Alstom where GE is the runner-up.
- (486) Second, the approach used by the Commission allows testing the claim of the Notifying Party that Siemens would constrain any potential price effect. Given the high level of GE's margins when Siemens is the runner-up bidder (around [GE margin]), the Commission considers that it is unlikely that Siemens would significantly constrain any price rise following the merger for the tenders awarded to Alstom where GE is the runner-up, under the assumption that a second-price auction framework should be adopted to assess the impact of the merger (as the Notifying Party is effectively arguing). The [price effect]% price effect mentioned by the Notifying Party in the CRA Submissions due to the competitive pressure exerted by Siemens is therefore not justified.
- (487) Third, the Notifying Party argues that a price increase of [price effect]%³⁵⁸ percentage points would lead to an unrealistic increase of the project margins.³⁵⁹ In particular the Notifying Party mentions that the [price effect]% price effect would imply post-merger a margin of [GE margin] for the projects concerned, which is a departure from "*real-world experience*" and is not reflected in data on actual margins earned. The Commission disagrees with the Notifying Party for the following reason: a margin of

³⁵⁶ Except the [Professor A] Submission, but its assumptions are closely related to a second price auction framework and are contradicted by the evidence on HDGTs tenders (see Section 3 for further details).

³⁵⁷ This is also recognised in an academic paper published by Carl Shapiro (2010), "The 2010 Horizontal Merger Guidelines: From Hedgehog to Fox in Forty Years", *Antitrust Law Journal*, Vol. 77, page 735. See footnote 39 for further details.

³⁵⁸ As discussed above (see paragraph (465)a), the [price effect] percentage points increase in price is derived from the [margin]% margin actually observed in the data, it corresponds to the average of GE's margins on its product offerings ([GE margin]) and on its LTSAs ([GE margin]).

³⁵⁹ See Section B of Annex 1 to the Response of the SO.

[average margin] over a project price of USD [average price per tender] would lead to a margin of [average margin], which is in line with what is observed in the data where GE's margin on its product offerings can reach a maximum of [GE margin].³⁶⁰

- (488) Fourth, for the tenders awarded to GE where Alstom is the runner-up, the Commission has used a [price effect]% price effect, which is an [Alstom margin] margins of Alstom on LTSA. As discussed in paragraph (462), the [Alstom margin]% margins on Alstom's offerings include the EPC part (construction work) which is characterised by lower margins than on HDGTs and complements. Therefore, the Commission's approach is conservative regarding the price effects applied to tenders awarded to GE where Alstom is the runner-up.
- (489) Fifth, for the tenders awarded to Alstom where GE is the runner-up, for which the Commission has applied a [price effect]% price effect, the Commission has used a project price of USD [project price] (see Table 63). This is a conservative approach. Indeed, since the projects were awarded to Alstom, the base on which to apply the price increase of [price effect]% should have been the project price corresponding to Alstom's offering. The average value of Alstom's wins is equal to [Alstom project price] (see footnote 338). Using this base price instead of USD [project price] in Table 63 would have led to significantly higher consumer harm.

(a) Even after taking into account the Notifying Party's criticism on "*customer attachment*" to GE, runner-up data suggest that the merger would lead to significant harm to consumers

- (490) The Notifying Party criticises the assumption in the Commission's analysis that the gap in value between GE and Siemens is the same for the customers who purchased from GE as for the customers who purchased from Alstom. In particular, the Notifying Party mentions that "*some HDGTs customers have a preference for GE based on their experience and familiarity with GE equipment and services*",³⁶¹ and customers who purchased from Alstom have no such attachment.
- (491) The Commission acknowledges that that GE's margins may be driven in part by customer loyalty to GE. Therefore, the Commission has performed a sensitivity analysis to take into account the "*customer attachment*" to GE. After identifying this "*customer attachment effect*", the Commission removes this effect from the [price effect]% price increase discussed above.
- (492) In order to measure the "*customer attachment*" to GE, the Commission has compared GE's margins on non-competitive tenders with GE's margins on competitive tenders. This approach measures the margin's premium of GE associated with non-competitive tenders, and this margin premium is used to proxy the preference of customers for GE (loyalty to GE, or "*customer attachment*" to GE).

³⁶⁰ It is also in line with GE's margins on its LTSAs, which are [average margins]% in average.

³⁶¹ See Annex 1 to the Response of the SO, page 7.

- (493) Table 64 shows that GE's margins are higher in non-competitive tenders than in competitive tenders, by [GE margin] percentage points for HDGTs and by [GE margin] percentage points for the overall product offering.

Table 64. GE's margins for non-competitive and competitive tenders

	Number of observations	%margin on HDGTs	%margin on overall scope
Non-competitive tenders	[number of tenders]	[GE margin]	[GE margin]
Competitive tenders	[number of tenders]	[GE margins]	[GE margins]

- (494) The Commission reports below in Table 71 and Table 72 the results of an econometric analysis to assess the robustness of this finding, by using several control variables (see also Sections 4.4.4, 4.4.6 and 4.4.7 for the definition of the control variables). The variable of interest is "*noncomp*", which is equal to one for non-competitive tenders. The corresponding coefficient corresponds to the margin's premium obtained by GE in non-competitive tenders, which is used later to proxy the "*customer attachment*" to GE.
- (495) Similar to the econometric analysis carried out in Sections 4.4.4, 4.4.6 and 4.4.7, the Commission considers the results of specifications 7-12 which include time dummies. Table 71 and Table 72 show that, compared to competitive tenders, (i) GE's margins on HDGTs are around [GE margins] percentage points higher in non-competitive tenders, and (ii) GE's margins on equipment are around [GE margins] percentage points higher in non-competitive tenders.
- (496) Therefore, as regards the tenders awarded to Alstom where GE is the runner-up:
- Instead of using a [GE margin] margin on LTSAs, the Commission uses a [GE margin] margin;³⁶²
 - Instead of using a [GE margin] margins for the overall GE's offering, the Commission uses a [GE margin] margins.³⁶³
- (497) This implies an average GE's margins on its product offerings and LTSA around [GE margin]%. In other words, the customer attachment effect to GE is estimated around [price effect] percentage points, which is equal to [GE margin].
- (498) The Commission reports in Table 65 below the illustrative consumer harm using this conservative approach, i.e. by removing the "*customer attachment*" effect to GE. The potential loss of competition between the merging parties over the [number of tenders] tenders affected would lead to a yearly harm to consumers around USD 57 million.

³⁶² The average of the coefficients in specifications 7-12 of Table 71 is equal to [GE margins]. Therefore, the Commission has used [GE margins] (see Table 63) minus [GE margins]% to obtain the [GE margins] margin.[GE margins]. The Commission considers this is a reasonable assumption since LTSAs are sold with HDGTs.

³⁶³ The average of the coefficients in specifications 7-12 of Table 72 is equal to [5-10]%. Therefore, the Commission has used [average margins] (see Table 63) minus [average margins] to obtain the [average margins] margin.

While this consumer harm is lower than in the SO,³⁶⁴ the Commission considers that it is still significant. It is also significantly higher than the yearly consumer harm mentioned in Annex 1 of the response to SO (around USD 20-23 million).

- (499) In addition, in Annex 1 of the Response to the SO, the Notifying Party did not take into account the likely discontinuation of Alstom's GT26 with the merger. The Commission's assessment of the impact of product discontinuation is not affected by the comments made by the Notifying Party. In case of product discontinuation, the yearly consumer harm would increase by USD 96 million (for the [number of tenders] affected with the discontinuation of Alstom's GT26).
- (500) To conclude, even under the economic framework proposed by the Notifying Party (and which the Commission does not consider to be relevant in this case), the overall consumer harm would amount to USD 153 million for the [number of tenders] affected (with pro-rating), corresponding to [number of tenders] in absolute term.³⁶⁵ As discussed in Section 4.5.2.2, this illustrative estimate of consumer harm does not include potential non-price effects due to the merger (e.g. due to the loss of innovation).

Table 65. Illustrative computation of the merger's impact on consumer welfare under a second-price auction assumption (Large HDGTs, conservative approach)

	A. Without product discontinuation		B. With product discontinuation
	GE wins when Alstom is runner-up	Alstom wins when GE is runner-up	Other Alstom runner-up bids or wins
Number of bids affected	[number of tenders]	[number of tenders]	[number of tenders]
Scope of bid (HDGT + equipment) (USD m)	[average price]	[average price]	[average price]
Discounted value of LTSA (USD m)	[average price]	[average price]	[average price]
% Margin on HDGT + equipment	[average margin]	[average margin]	[average margin]
% Margin on LTSA	[average margin]	[average margin]	[average margin]
Overall % Margin	[average margin]	[average margin]	[average margin]
Price effect from merger in 2nd-price auction	[price effect]	[price effect]	[price effect]
Total impact on consumer welfare (USD m)	81	261	573
Annual impact on consumer welfare (USD m)	13	44	96

³⁶⁴ In the Commission's analysis in the SO, the yearly harm to consumers was around USD 75 million (see Table 63).

³⁶⁵ In the SO, the yearly consumer harm with product discontinuation amounts to USD 171 million. The difference of USD 18 million is related to consumer harm for tenders where GE and Alstom are the winner and runner-up (USD 75 million in the SO, USD 57 million in the revised analysis).

4.5.4. Summary of conclusions: significant anti-competitive effects can also be expected even in a second price auction framework

- (501) In summary, the Commission considers that, even under the second-price auction framework that would justify focusing on runner-up data for the competitive assessment and even after taking into account the criticisms of the Notifying Party in the Response of the SO, the transaction would result in a significant loss of competition. This follows from the observation that the merging parties, once issues related to missing data are addressed, are winner and runner-up in [number of tenders] tenders. Moreover, significant price effects can be expected in the affected tenders, considering the highly differentiated nature of the industry, as shown by the significant margins earned by OEMs (including margins on LTSA). Furthermore, considering the likely effective discontinuation of the GT26, the transaction would result in adverse effects for consumers in all those bids where Alstom was either the preferred supplier or the runner-up bidder. Based on the Commission's analysis of bidding data, this affects many bids (in excess of [number of tenders]), implying that the transaction would result in significant adverse effects on consumers, around USD 153 million per year. Therefore, even if one considers for the sake of completeness the economic framework proposed by the Notifying Party (which the Commission actually does not consider to be the appropriate economic framework to use in this case), the transaction would lead to significant consumer harm.

4.6. Conclusions on bidding data for Large HDGTs

4.6.1. Market share analysis

- (502) In merger analysis, high combined market shares are an initial but important indicator of potential competitive harm.³⁶⁶ The Commission considers that the high market share of the merged entity, in the range of [50-60]% or above of competitive tenders depending on the time period considered, provides an initial indication of significant unilateral effects (especially in a market characterised by high barriers to entry), unless the merging parties are not close competitors.

4.6.2. Highly differentiated market

- (503) The analysis of bidding data also shows that [70-80]% of tenders in the Large segment have three participants or fewer at a Worldwide level excluding China. In the EEA, [70-80]% of tenders in the Large segment have three participants or fewer. Therefore, despite the presence of five OEMs and customers willing to invite at least four or five OEMs to participate in tenders, customers have often less than four or five available choices in practice (actually, often three choices available). This suggests that in many tenders customers have the choice between three or fewer firms due to significant product differentiation.[information on GE margins].

4.6.3. Analysis of OEMs' participations in tenders

- (504) Next, the Commission has analysed the participations of all OEMs in order to determine whether the high market share of the merged entity is the result of GE and Alstom competing against one another in tenders. The Commission concludes that the

³⁶⁶ See Horizontal Merger Guidelines, paragraph 27.

analyses of the firm participation and shortlist information contained in the bidding data shows as follows:

- a. After Siemens, Alstom is the OEM that competes the most often against GE, both in terms of firm participations and shortlists;
- b. MHPS and Ansaldo have more limited competitive interactions with GE than Alstom (both in terms of firm participations and shortlists), and do not interact significantly with Alstom;
- c. Alstom and GE compete against one another in a significant share of competitive tenders (roughly half), which are the tenders the most likely to suffer from a loss of competition between the merging parties;
- d. Tenders where GE and Alstom compete against one another have a concentrated market structure, with at least [40-50]% of tenders including only one other firm participant in addition to the parties based on GE's estimate of participation in each tender.³⁶⁷

- (505) Therefore, the Commission concludes that this evidence suggests that GE and Alstom are close competitors. In light of the high combined market share of the merged entity (above [50-60]%), this evidence is indicative of significant horizontal unilateral effects. Moreover, the market is highly concentrated as suggested by the high proportion of "3-to-2 bids" when the merging parties compete against one another, with the third competitor being typically Siemens. This evidence also suggests the presence of significant unilateral effects post-merger.
- (506) Moreover, the analysis of firm participation and of shortlist also indicates a significant competitive interaction between Alstom and Siemens (based on similar considerations as the ones that suggest that GE and Alstom are close competitors, see Section 4.3.5 for further details). This evidence therefore suggests that the discontinuation of Alstom's GT26 post-merger is also likely to results in significant loss of competition vis-à-vis Siemens, with the existence of adverse effects in addition to the standard unilateral effects.
- (507) Last, bidding data also shows that MHPS and Ansaldo have limited interactions with Alstom in terms of participations, suggesting that these two OEMs are not close competitors to Alstom. This implies that greater participation by other OEMs (most notably MHPS and/or Ansaldo) in tenders where GE and Alstom interact with each other is unlikely to fully offset the merged entity's incentives to raise price post-merger (see Section 4.3.5 for further details).

³⁶⁷

When using data on participations submitted by competing OEMs, the percentage of tenders where the Parties met and where there was only one other participant increases to roughly [60-70]%. However, this should be interpreted with caution as an upper-bound given the limitation of MHPS' participation data (see paragraph (177)).

4.6.4. Evidence on wins and on margins

- (508) The Commission has carried out an additional analysis of the competitive interactions between the Parties, based on win rates and on margins. This analysis is relevant for an assessment of the closeness of competition, in particular in the context of a first-price auction framework. As discussed in Section 3, the Commission considers that a first-price auction design is the most appropriate framework to capture competitive interactions in the present case.
- (509) The Commission concludes that the analysis of bidding data shows as follows:
- a. After Siemens, Alstom appears as the main competitive constraint on GE's probability of winning a tender; this is less the case for MHPS' participation, and even less the case for Ansaldo's participation.
 - b. Alstom has a significant negative effect on GE's probability of winning: Alstom wins a significant number of tenders when GE loses, both at the firm stage and at the shortlist stage. This is also confirmed by a regression analysis, with GE's probability of winning being significantly lower for tenders where Alstom participates. These results suggest a significant "probability diversion ratio" between Alstom and GE.
 - c. GE's margins are negatively correlated with Alstom's participations.
 - d. In addition to Siemens, GE participates in many tenders against Alstom, and GE's accounts for a significant share of Alstom's losses, suggesting that GE is a competitive constraint to Alstom.
- (510) Therefore, the Commission concludes that: (i) Alstom is a close and significant competitive constraint to GE, whilst this is less the case for MHPS and even less for Ansaldo, (ii) GE is a close and significant competitive constraint to Alstom, (iii) the merging parties exert a significant two-way competitive constraint on each other. Moreover, the analysis of bidding also shows that Alstom and MHPS/Ansaldo are not close competitors due to limited interactions both in term of participations and wins against each other.
- (511) In a first-price auction, the tenders likely to suffer from a potential loss of competition between the merging parties are all tenders where GE and Alstom both participate. This amounts to [number of tenders] tenders in the Large segment, representing slightly more than [50-60]% of the competitive tenders. The analysis of the bidding data suggests that the merger could lead to significant harm to consumers for these tenders, with a potential increase of GE's prices around [5-10]%-[10-20]% for HDGTs and around [0-5]%-[5-10]% for equipment.
- (512) The Commission has also carried out an illustrative computation of the order of magnitude of the adverse impact of the merger on consumers, in terms of possible price effects. Using a price increase of [0-5]%-[5-10]% on the overall equipment and a price increase of [5-10]%-[10-20]% on the LTSA over the [number of tenders] tenders affected by the potential loss of competition between GE and Alstom, the impact of the merger on consumer welfare would be in the range of USD 73-142 million per

year. This significant harm concerns only customers in the Large segment, at a Worldwide level 50Hz excluding China.

- (513) The discontinuation of Alstom's GT26 would also lead to significant additional harm to customers, in addition to the horizontal unilateral effect identified previously. This is because discontinuation of the GT26 would eliminate the direct competition between Alstom and other OEMs, most notably Siemens. With product discontinuation, competitive harm will spread to all tenders where Alstom participates, which represents [number of tenders] tenders, that is [60-70]% of competitive tenders. Under this scenario, the overall harm for consumers would therefore be in the range of 82-160 USD million per year. This estimate of consumer harm ignores the additional harm that would result from the fact that some customers ([number of tenders] projects in the Large segment awarded to Alstom's GT26 HDGT) would no longer have access to their preferred product.
- (514) The Commission also notes that this illustrative estimate of consumer harm does not include potential non-price effects due to the merger (e.g. loss of product choice and/or loss of innovation).

4.6.5. Evaluation of the Notifying Party's claims on competitive effects in a second price auction framework

- (515) The Commission has also evaluated the claims made by the Notifying Party that the transaction would not have a significant effect on competition, given the low number of tenders where the Parties are the winner and the runner-up. This claim is made in the context of a second-price auction framework. While the Commission considers that a first price auction framework is more relevant to assess HDGT tenders, it also analysed the evidence and claims made by the Notifying Party in the context of a second-price auction design.
- (516) The Commission has found that the runner-up data used by the Notifying Party appears to lack sufficient reliability to reach firm conclusions on the competitive effects of the merger. Moreover, when complementing the runner-up data submitted by the Parties with additional evidence from the market investigation and the rest of the bidding data, the Commission finds that the evidence presented by the Notifying Party underestimates the number of tenders when the Parties are the winner and runner-up. In addition, Alstom is often the runner-up in tenders won by other OEMs, which is a relevant fact to consider in the scenario where the Alstom product would be discontinued. Finally, the Commission has found that significant price effects can be expected also in the context of a second-price auction framework, given the level of margin earned by the Parties in HDGT tenders and the significant number of tenders where Alstom is the runner-up bidder. Based on the Commission's analysis of bidding data, with the discontinuation of Alstom's GT26 HDGT, the loss of competition due to the merger would affect a significant number of tenders (in excess of [number of tenders]), implying that the transaction would result in significant adverse effects on consumers, around USD 153 million per year.

EXHIBIT A: RESULTS OF REGRESSION ANALYSES

Table 66: Probit analysis (GE's probability of winning a tender)³⁶⁸

Model specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Alstom's participation	[-...] 1.107*** (0.002)	[-...] *** (0.002)	[-...] *** (0.003)	[-...] ** (0.012)	[-...] ** (0.011)	[-...] *** (0.004)	[-...] *** (0.000)	[-...] *** (0.000)	[-...] *** (0.000)	[-...] *** (0.002)	[-...] *** (0.003)	[-...] *** (0.000)
Siemens' participation	[-...] *** (0.000)	[-...] *** (0.000)	[-...] *** (0.001)	[-...] *** (0.000)	[-...] *** (0.000)	[-...] *** (0.000)	[-...] *** (0.000)	[-...] *** (0.000)	[-...] *** (0.000)	[-...] *** (0.000)	[-...] *** (0.001)	[-...] *** (0.000)
Ansaldo's participation	[...] ** (0.031)	[...] * (0.028)	[...] ** (0.021)	[...] ** (0.022)	[...] ** (0.022)	[...] ** (0.022)	[...] (0.116)	[...] (0.116)	[...] (0.113)	[...] * (0.089)	[...] (0.108)	[...] * (0.088)
MHPS' participation	[-...] * (0.068)	[-...] * (0.053)	[-...] * (0.054)	[-...] * (0.085)	[-...] * (0.064)	[-...] * (0.078)	[-...] *** (0.004)	[-...] *** (0.004)	[-...] *** (0.004)	[-...] *** (0.004)	[-...] *** (0.004)	[-...] *** (0.001)
GE_GT_Cost_ln		0.282 (0.292)	0.355 (0.256)		0.361 (0.283)	0.535 (0.136)		0.169 (0.588)	0.197 (0.585)		0.183 (0.635)	0.476 (0.289)
GE_Equip_Only_ln			-0.061 (0.676)		0.009 (0.952)	-0.017 (0.913)			-0.023 (0.897)		0.033 (0.857)	-0.006 (0.977)
model9F03				0.695* (0.057)	0.776** (0.037)	0.989** (0.022)				0.555 (0.183)	0.611 (0.135)	0.903* (0.082)
EEA						0.837 (0.143)						1.353** (0.047)
Year dummies	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.482*** (0.000)	-1.576 (0.591)	-1.806 (0.538)	0.969** (0.012)	-3.091 (0.312)	-4.927 (0.136)	1.246*** (0.007)	-0.583 (0.863)	-0.679 (0.840)	0.858* (0.098)	-1.478 (0.667)	-4.590 (0.251)
Nb. Of Obs.	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]
Pseudo R-square	0.281	0.291	0.293	0.317	0.333	0.359	0.452	0.454	0.454	0.467	0.471	0.525

³⁶⁸

Robust Standard Errors, p-values in parentheses, (= * p<0.1, ** p<0.05, *** p<0.01).

Table 67: Margin analysis (GE's margins on HDGTs)³⁶⁹

Model specifications	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Alstom's participation	-[...]*** (0.001)	-[...]*** (0.001)	-[...]*** (0.004)	-[...]*** (0.010)	-[...]** (0.014)	-[...]** (0.015)	-[...]*** (0.001)	-[...]*** (0.001)	-[...]*** (0.002)	-[...]*** (0.010)	-[...]** (0.013)	-[...]** (0.019)
Siemens' participation	-[...]*** (0.001)	-[...]*** (0.003)	-[...]** (0.010)	-[...]*** (0.000)	-[...]*** (0.001)	-[...]*** (0.001)	-[...]*** (0.004)	-[...]*** (0.006)	-[...]** (0.016)	-[...]*** (0.000)	-[...]*** (0.001)	-[...]*** (0.001)
Ansaldo's participation	-[...] (0.531)	-[...] (0.400)	-[...] (0.616)	-[...] (0.844)	-[...] (0.815)	-[...] (0.822)	-[...] (0.570)	-[...] (0.482)	-[...] (0.774)	[...] (0.925)	[...] (0.871)	[...] (0.870)
MHPS' participation	-[...]** (0.018)	-[...]* (0.073)	-[...]* (0.060)	-[...]** (0.013)	-[...]** (0.048)	-[...]* (0.053)	-[...] (0.103)	-[...] (0.231)	-[...] (0.221)	-[...]* (0.078)	-[...] (0.170)	-[...] (0.180)
GEwin	-[...] (0.258)	-[...] (0.437)	-[...] (0.407)	-[...]** (0.039)	-[...]* (0.097)	-[...] (0.107)	[...] (0.993)	[...] (0.841)	[...] (0.863)	-[...] (0.481)	-[...] (0.617)	-[...] (0.676)
GE_GT_Cost_ln		-0.042*** (0.003)	-0.024 (0.137)		-0.024 (0.135)	-0.023 (0.181)		-0.030** (0.041)	-0.014 (0.368)		-0.012 (0.384)	-0.014 (0.372)
GE_Equip_Only_ln			-0.016* (0.051)		-0.009 (0.214)	-0.009 (0.214)			-0.014* (0.059)		-0.007 (0.249)	-0.007 (0.275)
model9F03				0.085*** (0.000)	0.072*** (0.002)	0.073*** (0.004)				0.087*** (0.000)	0.079*** (0.000)	0.076*** (0.000)
EEA						0.005 (0.860)						-0.008 (0.776)
Year dummies	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.290*** (0.000)	0.745*** (0.000)	0.688*** (0.000)	0.243*** (0.000)	0.586*** (0.000)	0.579*** (0.001)	0.297*** (0.000)	0.622*** (0.000)	0.581*** (0.000)	0.256*** (0.000)	0.462*** (0.001)	0.477*** (0.002)
Nb. Of Obs.	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]
R-square	0.382	0.444	0.474	0.515	0.562	0.562	0.508	0.536	0.558	0.637	0.655	0.656
Adjusted R-square	0.333	0.390	0.413	0.468	0.503	0.495	0.423	0.446	0.463	0.567	0.574	0.566

³⁶⁹

Robust Standard Errors, p-values in parentheses, (=* p<0.1, ** p<0.05, *** p<0.01).

Table 68: Margin analysis (GE's margins on equipment)³⁷⁰

Model specifications	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Alstom's participation	-[...]*** (0.001)	-[...]*** (0.002)	-[...]*** (0.009)	-[...]** (0.015)	-[...]** (0.031)	-[...]** (0.038)	-[...]*** (0.002)	-[...]*** (0.005)	-[...]*** (0.008)	-[...]** (0.031)	-[...]** (0.037)	-[...]* (0.078)
Siemens' participation	-[...]*** (0.003)	-[...]*** (0.009)	-[...]** (0.043)	-[...]*** (0.001)	-[...]*** (0.008)	-[...]** (0.011)	-[...]** (0.010)	-[...]** (0.015)	-[...]** (0.043)	-[...]*** (0.002)	-[...]*** (0.003)	-[...]*** (0.004)
Ansaldo's participation	-[...] (0.987)	-[...] (0.848)	[...] (0.630)	[...] (0.653)	[...] (0.442)	[...] (0.451)	-[...] (0.995)	-[...] (0.892)	[...] (0.453)	[...] (0.418)	[...] (0.185)	[...] (0.167)
MHPS' participation	-[...]** (0.018)	-[...]* (0.069)	-[...]** (0.036)	-[...]** (0.012)	-[...]** (0.027)	-[...]** (0.028)	-[...]* (0.052)	-[...] (0.134)	-[...]* (0.088)	-[...]** (0.044)	-[...]* (0.060)	-[...]* (0.067)
GEwin	-[...]* (0.074)	-[...] (0.150)	-[...]* (0.092)	-[...]*** (0.005)	-[...]** (0.011)	-[...]** (0.013)	-[...] (0.728)	-[...] (0.884)	-[...] (0.818)	-[...] (0.218)	-[...] (0.314)	-[...] (0.449)
GE_GT_Cost_In		-0.040*** (0.003)	-0.004 (0.773)		-0.004 (0.765)	-0.006 (0.662)		-0.030** (0.026)	0.003 (0.797)		0.005 (0.631)	0.000 (0.975)
GE_Equip_Only_In			-0.030*** (0.000)		-0.024*** (0.000)	-0.024*** (0.000)			-0.030*** (0.000)		-0.024*** (0.000)	-0.023*** (0.000)
model9F03				0.085*** (0.000)	0.063*** (0.001)	0.059*** (0.006)				0.089*** (0.000)	0.071*** (0.000)	0.063*** (0.000)
EEA						-0.014 (0.487)						-0.026 (0.202)
Year dummies	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.289*** (0.000)	0.713*** (0.000)	0.604*** (0.000)	0.241*** (0.000)	0.514*** (0.000)	0.536*** (0.000)	0.286*** (0.000)	0.608*** (0.000)	0.524*** (0.000)	0.243*** (0.000)	0.415*** (0.000)	0.465*** (0.000)
Nb. Of Obs.	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]
R-square	0.301	0.367	0.501	0.464	0.584	0.586	0.429	0.462	0.579	0.592	0.677	0.684
Adjusted R-square	0.245	0.305	0.444	0.412	0.528	0.523	0.330	0.359	0.489	0.513	0.600	0.602

³⁷⁰

Robust Standard Errors, p-values in parentheses, (= * p<0.1, ** p<0.05, *** p<0.01).

Table 69: Margins regression based on number of participants (GE's HDGTs margins)³⁷¹

Model specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1 participant	[...] ^{***} (0.000)	[...] ^{***} (0.000)	[...] ^{***} (0.000)	[...] ^{***} (0.000)	[...] ^{***} (0.000)	[...] ^{***} (0.000)	[...] ^{***} (0.002)	[...] ^{***} (0.006)	[...] ^{***} (0.004)	[...] ^{***} (0.001)	[...] ^{***} (0.001)	[...] ^{***} (0.003)
2 participants	[...] ^{***} (0.005)	[...] ^{***} (0.010)	[...] ^{**} (0.014)	[...] ^{**} (0.010)	[...] ^{**} (0.016)	[...] ^{**} (0.019)	[...] ^{**} (0.032)	[...] ^{**} (0.047)	[...] [*] (0.065)	[...] ^{**} (0.048)	[...] [*] (0.071)	[...] (0.106)
4 participants	-[...] ^{**} (0.040)	-[...] ^{**} (0.041)	-[...] (0.127)	-[...] [*] (0.052)	-[...] (0.102)	-[...] (0.113)	-[...] ^{**} (0.047)	-[...] [*] (0.053)	-[...] (0.157)	-[...] ^{**} (0.042)	-[...] (0.106)	-[...] [*] (0.093)
5 participants	-[...] (0.506)	-[...] (0.433)	-[...] (0.455)	-[...] (0.589)	-[...] (0.499)	-[...] (0.503)	-[...] (0.160)	-[...] (0.140)	-[...] (0.349)	-[...] (0.445)	-[...] (0.604)	-[...] (0.610)
GEwin	-[...] (0.641)	-[...] (0.858)	-[...] (0.863)	-[...] (0.126)	-[...] (0.264)	-[...] (0.278)	[...] (0.618)	[...] (0.536)	[...] (0.543)	-[...] (0.770)	-[...] (0.915)	[...] (0.984)
GE_GT_Cost_ln		-0.043 ^{***} (0.002)	-0.026 (0.107)		-0.026 [*] (0.093)	-0.027 (0.132)		-0.031 ^{**} (0.023)	-0.016 (0.355)		-0.014 (0.355)	-0.017 (0.306)
GE_Equip_Only_ln			-0.015 ^{**} (0.045)		-0.008 (0.234)	-0.008 (0.267)			-0.014 [*] (0.073)		-0.008 (0.276)	-0.007 (0.340)
model9F03				0.083 ^{***} (0.000)	0.072 ^{***} (0.001)	0.071 ^{***} (0.003)				0.086 ^{***} (0.000)	0.078 ^{***} (0.000)	0.073 ^{***} (0.001)
EEA						-0.002 (0.945)						-0.015 (0.588)
Year dummies	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
constant	0.149 ^{***} (0.000)	0.630 ^{***} (0.000)	0.591 ^{***} (0.000)	0.113 ^{***} (0.000)	0.495 ^{***} (0.001)	0.499 ^{***} (0.003)	0.169 ^{***} (0.000)	0.519 ^{***} (0.001)	0.492 ^{***} (0.001)	0.134 ^{***} (0.000)	0.373 ^{***} (0.005)	0.406 ^{***} (0.010)
Nb. Of Obs.	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]
R-square	0.371	0.436	0.463	0.504	0.554	0.554	0.480	0.511	0.532	0.612	0.633	0.635
Adjusted R-square	0.321	0.381	0.401	0.456	0.495	0.486	0.391	0.417	0.432	0.537	0.546	0.540

³⁷¹

Robust Standard Errors, p-values in parentheses, (= * p<0.1, ** p<0.05, *** p<0.01).

Table 70: Margins regression based on number of participants (GE's equipment margins)³⁷²

Model specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1 participant	[...] ^{***} (0.001)	[...] ^{***} (0.002)	[...] ^{***} (0.001)	[...] ^{***} (0.000)	[...] ^{***} (0.000)	[...] ^{***} (0.001)	[...] ^{**} (0.011)	[...] ^{**} (0.024)	[...] ^{**} (0.010)	[...] ^{***} (0.005)	[...] ^{***} (0.003)	[...] ^{***} (0.008)
2 participants	[...] ^{***} (0.008)	[...] ^{**} (0.017)	[...] ^{**} (0.014)	[...] ^{**} (0.013)	[...] ^{**} (0.012)	[...] ^{**} (0.016)	[...] [*] (0.068)	[...] [*] (0.091)	[...] [*] (0.091)	[...] (0.102)	[...] [*] (0.095)	[...] (0.185)
4 participants	-[...] (0.103)	-[...] [*] (0.100)	-[...] (0.579)	-[...] (0.162)	-[...] (0.599)	-[...] (0.530)	-[...] [*] (0.095)	-[...] (0.107)	-[...] (0.667)	-[...] (0.109)	-[...] (0.661)	-[...] (0.542)
5 participants	-[...] (0.817)	-[...] (0.744)	-[...] (0.911)	[...] (0.861)	[...] (0.768)	[...] (0.793)	-[...] (0.358)	-[...] (0.350)	[...] (0.936)	-[...] (0.988)	[...] (0.413)	[...] (0.434)
GEwin	-[...] (0.240)	-[...] (0.377)	-[...] (0.357)	-[...] ^{**} (0.018)	-[...] [*] (0.050)	-[...] [*] (0.058)	[...] (0.852)	[...] (0.742)	[...] (0.757)	-[...] (0.448)	-[...] (0.628)	-[...] (0.822)
GE_GT_Cost_ln		-0.040 ^{***} (0.002)	-0.007 (0.626)		-0.007 (0.590)	-0.009 (0.518)		-0.032 ^{***} (0.010)	0.001 (0.944)		0.003 (0.802)	-0.003 (0.842)
GE_Equip_Only_ln			-0.029 ^{***} (0.000)		-0.023 ^{***} (0.000)	-0.023 ^{***} (0.001)			-0.030 ^{***} (0.000)		-0.024 ^{***} (0.000)	-0.023 ^{***} (0.001)
model9F03				0.083 ^{***} (0.000)	0.063 ^{***} (0.001)	0.059 ^{***} (0.004)				0.086 ^{***} (0.000)	0.070 ^{***} (0.000)	0.061 ^{***} (0.001)
EEA						-0.012 (0.570)						-0.027 (0.202)
Year dummies	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
constant	0.164 ^{***} (0.000)	0.615 ^{***} (0.000)	0.539 ^{***} (0.000)	0.127 ^{***} (0.000)	0.454 ^{***} (0.000)	0.479 ^{***} (0.001)	0.174 ^{***} (0.000)	0.531 ^{***} (0.000)	0.473 ^{***} (0.000)	0.139 ^{***} (0.000)	0.366 ^{***} (0.001)	0.426 ^{***} (0.001)
Nb. Of Obs.	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]
R-square	0.285	0.355	0.482	0.447	0.567	0.569	0.398	0.437	0.554	0.560	0.653	0.661
Adjusted R-square	0.229	0.292	0.422	0.393	0.509	0.503	0.294	0.329	0.459	0.475	0.571	0.573

³⁷²

Robust Standard Errors, p-values in parentheses, (= * p<0.1, ** p<0.05, *** p<0.01).

Table 71. Margins analysis for non-competitive and competitive tenders (GE's margins on HDGTs)³⁷³

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
noncomp	[...] ^{***} (0.000)	[...] ^{***} (0.001)	[...] ^{***} (0.002)	[...] ^{***} (0.000)	[...] ^{***} (0.001)	[...] ^{***} (0.001)	[...] ^{***} (0.003)	[...] ^{***} (0.010)	[...] ^{***} (0.009)	[...] ^{***} (0.001)	[...] ^{***} (0.003)	[...] ^{***} (0.006)
GEwin	[...] (0.850)	[...] (0.677)	[...] (0.749)	-[...] (0.376)	-[...] (0.579)	-[...] (0.575)	[...] (0.249)	[...] (0.223)	[...] (0.252)	[...] (0.727)	[...] (0.638)	[...] (0.542)
GE_GT_Cost_ln		-0.050 ^{***} (0.004)	-0.023 (0.250)		-0.024 (0.179)	-0.023 (0.239)		-0.037 ^{**} (0.025)	-0.011 (0.553)		-0.010 (0.518)	-0.013 (0.434)
GE_Equip_Only_ln			-0.023 ^{***} (0.004)		-0.015 ^{**} (0.044)	-0.016 ^{**} (0.046)			-0.022 ^{***} (0.007)		-0.014 [*] (0.053)	-0.014 [*] (0.065)
model9F03				0.097 ^{***} (0.000)	0.078 ^{***} (0.001)	0.079 ^{***} (0.003)				0.096 ^{***} (0.000)	0.081 ^{***} (0.000)	0.076 ^{***} (0.000)
EEA						0.005 (0.874)						-0.016 (0.587)
Year dummies	No	No	No	No	No	No	Yes (0.663)	Yes (0.821)	Yes (0.677)	Yes (0.681)	Yes (0.390)	Yes (0.378)
Constant	0.140 ^{***} (0.000)	0.700 ^{***} (0.000)	0.639 ^{***} (0.001)	0.101 ^{***} (0.000)	0.535 ^{***} (0.001)	0.526 ^{***} (0.005)	0.182 ^{***} (0.000)	0.590 ^{***} (0.001)	0.539 ^{***} (0.002)	0.140 ^{***} (0.000)	0.411 ^{***} (0.004)	0.446 ^{***} (0.007)
Nb. Of Obs.	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]
R-square	0.178	0.268	0.342	0.363	0.451	0.451	0.365	0.408	0.470	0.538	0.583	0.586
Adjusted R-square	0.153	0.234	0.301	0.333	0.407	0.398	0.292	0.329	0.390	0.476	0.512	0.506

³⁷³

Robust Standard Errors, p-values in parentheses, (= * p<0.1, ** p<0.05, *** p<0.01)

Table 72. Margins analysis for non-competitive and competitive tenders (GE's margins on Equipment)³⁷⁴

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
noncomp	[...] ^{***} (0.002)	[...] ^{***} (0.008)	[...] ^{**} (0.011)	[...] ^{***} (0.001)	[...] ^{***} (0.009)	[...] ^{**} (0.012)	[...] ^{**} (0.014)	[...] ^{**} (0.032)	[...] ^{**} (0.025)	[...] ^{***} (0.007)	[...] ^{**} (0.012)	[...] ^{**} (0.021)
GEwin	-[...] (0.661)	-[...] (0.838)	-[...] (0.674)	-[...] [*] (0.091)	-[...] (0.163)	-[...] (0.191)	[...] (0.426)	[...] (0.383)	[...] (0.459)	-[...] (0.872)	-[...] (0.986)	[...] (0.773)
GE_GT_Cost_ln		-0.046 ^{***} (0.002)	-0.007 (0.651)		-0.008 (0.568)	-0.010 (0.516)		-0.036 ^{**} (0.011)	0.001 (0.941)		0.002 (0.861)	-0.003 (0.779)
GE_Equip_Only_ln			-0.033 ^{***} (0.000)		-0.027 ^{***} (0.000)	-0.026 ^{***} (0.000)			-0.032 ^{***} (0.000)		-0.026 ^{***} (0.000)	-0.024 ^{***} (0.000)
model9F03				0.092 ^{***} (0.000)	0.066 ^{***} (0.001)	0.062 ^{***} (0.004)				0.092 ^{***} (0.000)	0.070 ^{***} (0.000)	0.060 ^{***} (0.000)
EEA						-0.012 (0.619)						-0.029 (0.167)
Year dummies	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.160 ^{***} (0.000)	0.677 ^{***} (0.000)	0.590 ^{***} (0.000)	0.123 ^{***} (0.000)	0.502 ^{***} (0.000)	0.524 ^{***} (0.001)	0.185 ^{***} (0.000)	0.586 ^{***} (0.000)	0.511 ^{***} (0.000)	0.145 ^{***} (0.000)	0.401 ^{***} (0.000)	0.462 ^{***} (0.000)
Nb. Of Obs.	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]
R-square	0.144	0.238	0.422	0.348	0.516	0.517	0.319	0.370	0.533	0.514	0.636	0.645
Adjusted R-square	0.118	0.203	0.385	0.318	0.477	0.471	0.241	0.286	0.462	0.449	0.573	0.577

³⁷⁴

Robust Standard Errors, p-values in parentheses, (= * p<0.1, ** p<0.05, *** p<0.01)

EXHIBIT B: DOCUMENTS ON ALSTOM'S VERY LARGE STRATEGY

Figure 1 illustrates Alstom's strategy to introduce the GT36 (FKA50VL) [potential Alstom GT frame] to compete against H-class HDGTs in the future. Figure 2 illustrates that the GT36 [potential Alstom GT frame], with the lowest costs of producing electricity, would allow Alstom to compete effectively against other H-class HDGTs. Figure 3 illustrates Alstom's strategy to use the GT36 to compete against the MHPS 701J HDGT (GE's HA.02 HDGT is also positioned in this space) [potential Alstom GT frame and related strategic plans].

Figure 1. Alstom's GT36 to address the Very Large segment (Source: Gas Portfolio Days Nov 13, Annex 1229 of the Form CO)

[extract from internal Alstom document – information on Alstom strategic plans concerning GT26]

Figure 2. Alstom's GT36 and [potential Alstom GT frame]: cost of electricity (Source: Annex 1435)

[extract from internal Alstom document benchmarking the COE of potential Alstom GT frame against competitors in the Gulf/MEA region]

Figure 3. Alstom's GT36 [potential Alstom GT frame]: positioning (Source: Annex 1584)

[extract from internal Alstom document showing position of potential Alstom GT frames]

EXHIBIT C: ALSTOM OFFERINGS IN THE LARGE SEGMENT.

Figure 4. GT26 models proposed by Alstom (Source: " 2014-09-08 - Alstom Thermal Power Gas Clean team meeting_CONFIDENTIAL (8-9 September 2014)", Reply to Questions 10 and 11 of RFI 28, dated 21 April 2015)

[extract from internal Alstom document showing solution of GT26]

Figure 5 [GT26 programs] (Source: Annex 1311, dated June 2014)

[extract from internal Alstom document showing business case for Alstom GT26 programs]

ANNEX II

Market shares for the worldwide market of 50 Hz HDGTs including China and Iran

Table 1: Shares in the market for 50 Hz HDGTs worldwide (2009Q2-2014Q1)

	SC&CC (2009-2014Q1) [number of projects]		CC (2009-2014Q1) [number of projects]		SC (2009-2014Q1) [number of projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[40-50]%	[30-40]%	[40-50]%	[30-40]%	[50-60]%	[40-50]%
Alstom	[5-10]%	[5-10]%	[5-10]%	[5-10]%	[5-10]%	[5-10]%
GE+Alstom	[50-60]%	[40-50]%	[40-50]%	[40-50]%	[50-60]%	[50-60]%
Ansaldo	[5-10]%	[5-10]%	[0-5]%	[0-5]%	[10-20]%	[5-10]%
MHPS	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[0-5]%	[0-5]%
Siemens	[30-40]%	[30-40]%	[30-40]%	[30-40]%	[20-30]%	[30-40]%

Source: McCoy.

Table 2: Shares in the Large segment of the market for 50 Hz HDGTs worldwide (2009Q2-2014Q1)

	SC&CC (2009-2014Q1) [number of projects]		CC (2009-2014Q1) [number of projects]		SC (2009-2014Q1) [number of projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[40-50]%	[30-40]%	[40-50]%	[30-40]%	[30-40]%	[30-40]%
Alstom	[5-10]%	[5-10]%	[5-10]%	[5-10]%	[10-20]%	[10-20]%
GE+Alstom	[40-50]%	[40-50]%	[40-50]%	[40-50]%	[50-60]%	[40-50]%
Ansaldo	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[10-20]%	[10-20]%
MHPS	[10-20]%	[10-20]%	[10-20]%	[20-30]%	[0-5]%	[0-5]%
Siemens	[30-40]%	[30-40]%	[30-40]%	[30-40]%	[30-40]%	[40-50]%

Source: McCoy.

Table 3: Shares in the Very Large segment of the market for 50 Hz HDGTs worldwide (2009Q2-2014Q1)

	CC (2009Q2-2014Q1) [number of projects]	
	#GTs	Capacity (MW)
GE	[20-30]%	[20-30]%
Alstom	[0-5]%	[0-5]%
GE+Alstom	[20-30]%	[20-30]%
Ansaldo	[0-5]%	[0-5]%
MHPS	[30-40]%	[30-40]%
Siemens	[40-50]%	[40-50]%

Source: McCoy.

Table 4: Shares in the Medium segment of the market for 50 Hz HDGTs worldwide (2009Q2-2014Q1)

	SC&CC (2009Q2-2014Q1) [number of projects]		CC (2009Q2-2014Q1) [number of projects]		SC (2009Q2-2014Q1) [number of projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[40-50]%	[40-50]%	[40-50]%	[30-40]%	[50-60]%	[40-50]%
Alstom	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[5-10]%
GE+Alstom	[50-60]%	[50-60]%	[50-60]%	[40-50]%	[50-60]%	[50-60]%
Ansaldo	[5-10]%	[5-10]%	[0-5]%	[0-5]%	[10-20]%	[10-20]%
MHPS	[0-5]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[0-5]%
Siemens	[30-40]%	[30-40]%	[40-50]%	[40-50]%	[20-30]%	[20-30]%

Source: McCoy.

Market shares with threshold for Large/Very Large at 320 MW

Table 5: Segment shares in the Large segment of the market for 50 Hz HDGTs in the EEA

	CC (2009Q2-2014Q1) [number of projects]		CC (2004Q2-2014Q1) ¹ [number of projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[50-60]%	[40-50]%	[50-60]%	[50-60]%
Alstom	[10-20]%	[10-20]%	[5-10]%	[5-10]%
GE+Alstom	[60-70]%	[50-60]%	[60-70]%	[50-60]%
Ansaldo	[5-10]%	[5-10]%	[5-10]%	[5-10]%
MHPS	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Siemens	[30-40]%	[30-40]%	[30-40]%	[30-40]%

Source: McCoy.

Table 6: Segment shares in the Large segment of the market for 50 Hz HDGTs worldwide, excluding China and Iran (2009Q2-2014Q1)

	SC+CC [number of projects]		CC [number of projects]		SC [number of projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[50-60]%	[40-50]%	[50-60]%	[50-60]%	[20-30]%	[20-30]%
Alstom	[10-20]%	[10-20]%	[5-10]%	[5-10]%	[20-30]%	[10-20]%
GE+Alstom	[60-70]%	[50-60]%	[60-70]%	[50-60]%	[40-50]%	[30-40]%
Ansaldo	[5-10]%	[5-10]%	[5-10]%	[5-10]%	[10-20]%	[10-20]%
MHPS	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Siemens	[30-40]%	[30-40]%	[30-40]%	[30-40]%	[40-50]%	[40-50]%

Source: McCoy.

¹ There was no Large HDGT sold for SC in the period 2004Q2-2014Q1.

**Table 7: Segment shares in the Very Large segment of the market for 50 Hz HDGTs
(2009Q2-2014Q1)**

	CC EEA [number of projects]		CC worldwide (excl. China and Iran) ² [number of projects]	
	#GTs	Capacity (MW)	#GTs	Capacity (MW)
GE	[20-30]%	[20-30]%	[10-20]%	[10-20]%
Alstom	[0-5]%	[0-5]%	[10-20]%	[10-20]%
GE+Alstom	[20-30]%	[20-30]%	[20-30]%	[20-30]%
Ansaldo	[0-5]%	[0-5]%	[0-5]%	[0-5]%
MHPS	[20-30]%	[20-30]%	[50-60]%	[50-60]%
Siemens	[50-60]%	[50-60]%	[20-30]%	[20-30]%

Source: McCoy.

² There were only [number of tenders] projects for Very Large HDGT sold for SC in the period 2009-2014Q1, [number of tenders] won by MHPS.

ANNEX III

Case M.7278 – General Electric / Alstom (Thermal Power - Renewable Power & Grid Business)

NON CONFIDENTIAL COMMITMENTS TO THE EUROPEAN COMMISSION

Pursuant to Article 8(2) of Council Regulation (EC) No 139/2004 (the "**EU Merger Regulation**"), General Electric Company ("**GE**") hereby enters into the following commitments (the "**Commitments**") vis-à-vis the European Commission (the "**Commission**") with a view to rendering the acquisition of the Thermal Power, Renewable Power & Grid businesses of ALSTOM (Société Anonyme) ("**Alstom**") by GE (the "**Transaction**") compatible with the internal market and the functioning of the EEA Agreement.

This text shall be interpreted in light of the Commission's decision pursuant to Article 8(2) of the EU Merger Regulation to declare the Transaction compatible with the internal market and the functioning of the EEA Agreement (the "**Decision**"), in the general framework of European Union law, in particular in light of the EU Merger Regulation, and by reference to the Commission Notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004 (the "**Remedies Notice**").

Section A. Definitions

1. For the purpose of the Commitments, the following terms shall have the following meaning:

Affiliated Undertakings: undertakings controlled from time to time by the Parties and/or by the ultimate parents of the Parties, whereby the notion of control shall be interpreted pursuant to Article 3 of the EU Merger Regulation and in light of the Commission Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings (the "**Consolidated Jurisdictional Notice**").

Alstom: ALSTOM (Société Anonyme), incorporated under the laws of France, with its registered office at 3 Avenue André Malraux, 92300 Levallois-Perret, France.

Alstom's Gas Business: is the advanced HDGT and gas turbine power plant business currently owned by Alstom.

ATL: Alstom Technology Limited.

Base Fleet: Alstom gas turbines except the GT13, GT24, GT26 and GT36 series.

Closing: the transfer of the legal title to the Divestment Business to the Purchaser.

Confidential Information: any business secrets, know-how, commercial information, or any other information of a proprietary nature that is not in the public domain.

Conflict of Interest: any conflict of interest that impairs the Monitoring Trustee's objectivity and independence in discharging its duties under the Commitments.

Design Gate Review: is a review of the detailed design that covers design element criteria and validation requirements, sourcing, manufacturing, construction plan, environmental health and safety, lifecycle plan and a market introduction plan.

Designated Design Tools: design tools licensed by a third party to Alstom [...].

Divestment Agreements: the Framework Agreement between GE and the Purchaser, including those agreements ancillary to it.

Divestment Business: the business as defined and fully described in Schedule 1.

Effective Date: the date of the Decision.

EPC: engineering, procurement and construction.

GE: General Electric Company, incorporated under the laws of New York, with its registered office at 3135 Easton Turnpike, Fairfield, Connecticut, 06828, United States.

GT26 2006: the 2006 variant of the GT26 gas turbine, with and without MXL2.

GT26 2011: the 2011 variant of the GT26 gas turbine.

GT36: the GT36 gas turbine programme.

HDGT: 50Hz and 60Hz heavy duty gas turbines.

Hold Separate Manager: the person appointed by GE for the Divestment Business to manage the day-to-day business under the supervision of the Monitoring Trustee.

Key Personnel: employees listed in Confidential Appendix 3.

MHPS: Mitsubishi Hitachi Power Systems or its antecedents in title.

Monitoring Trustee: one or more natural or legal person(s) who is approved by the Commission and appointed by GE, and who has the duty to monitor GE's compliance with the conditions and obligations attached to the Decision.

Parties: GE and Alstom.

Personnel: employees listed in [Appendix 2].

Pipeline Projects: are defined in paragraph 16.1.1(d) of Schedule 1.

PSM: Power Systems Mfg., LLC, an Alstom Affiliated Undertaking, a Delaware limited liability company, with its headquarters at 1440 West Indiantown Road, Jupiter, Florida 33458, United States.

PSM Business: is defined in paragraph 8 of Schedule 1.

PSM Rights Geographic Scope: globally excluding the People's Republic of China.

Purchaser: ANSALDO ENERGIA S.P.A, a Società per Azioni incorporated under the laws of Italy, having its registered office at Via N. Lorenzi, 8 Genova, GE 16152, Italy.

Purchaser Criteria: the criteria laid down in paragraph 13 of these Commitments that the Purchaser must fulfill in order to be approved by the Commission.

Retained Business: is defined in paragraph 9 of Schedule 1.

Siemens: Siemens AG or its antecedents in title.

Unrestricted Shared Intellectual Property: [...].

Section B. The commitment to divest and the Divestment Business

Commitment to divest

2. In order to maintain effective competition, GE commits to divest, or procure the divestiture of, the Divestment Business to the Purchaser according to the procedure described in these Commitments. The divestiture of the Divestment Business shall only be consummated if, and after, the Transaction is consummated, with Closing no later than 3 months after consummation of the Transaction. In the event that the Transaction lapses, these Commitments shall lapse.
3. In order to maintain the structural effect of the Commitments, GE shall, for a period of [...] after Closing, not acquire, whether directly or indirectly, the possibility of exercising influence (as defined in paragraph 43 of the Remedies Notice, footnote 3) over the whole or part of the Divestment Business, unless, following the submission of a reasoned request from GE showing good cause and accompanied by a report from the Monitoring Trustee (as provided in paragraph 35 of these Commitments), the Commission finds that the structure of the market has changed to such an extent that the absence of influence over the Divestment Business is no longer necessary to render the proposed concentration compatible with the internal market.
4. The proposed concentration shall not be implemented before GE has entered into a final binding sale and purchase agreement for the sale of the Divestment Business and the Commission has approved the purchaser and the terms of sale in accordance with paragraph 14.

Structure and definition of the Divestment Business

5. The objective of these Commitments is to create a business that is viable, standalone and competitive insofar as the Purchaser's resources and capabilities are taken into account, which will replicate Alstom as a viable and competitive force in HDGTs. The legal and functional structure of the Divestment Business is described in more detail in Schedule 1.

Transitional arrangements

6. In addition, the Divestment Business includes the benefit of various transitional arrangements, as detailed in Schedule 1. Strict firewall procedures will be adopted so as to ensure that any competitively sensitive information related to, or arising from, such transitional arrangements will not be shared with, or passed on to, anyone outside the clean teams of the Parties which are providing the relevant transitional arrangements. These clean teams shall receive competitively sensitive information on

a need to know basis only and shall observe the ring-fencing obligations set out in paragraph 10 below.

Section C. Related commitments

Preservation of viability, marketability and competitiveness

7. Alstom commits, from the Effective Date until completion of the Transaction, and GE commits, from the Effective Date until Closing, to preserve or procure the preservation of the economic viability, marketability and competitiveness of the Divestment Business, in accordance with good business practice, and each of them shall minimise as far as possible any risk of loss of competitive potential of the Divestment Business. In particular the Parties undertake:
- (a) not to carry out any action that might have a significant adverse impact on the value, management or competitiveness of the Divestment Business or that might alter the nature and scope of activity, or the industrial or commercial strategy or the investment policy of the Divestment Business;
 - (b) to make available, or procure to make available, sufficient resources for the development of the Divestment Business, on the basis and continuation of the existing business plans; and
 - (c) to take all reasonable steps, or procure that all reasonable steps are being taken, including appropriate incentive schemes (based on industry practice), to encourage all Key Personnel to remain with the Divestment Business, and not to solicit or move any Personnel to GE's remaining business. Where, nevertheless, individual members of the Key Personnel exceptionally leave the Divestment Business, GE shall provide a reasoned proposal to replace the person or persons concerned to the Commission and the Monitoring Trustee. GE must be able to demonstrate to the Commission that the replacement is well suited to carry out the functions exercised by those individual members of the Key Personnel. The replacement shall take place under the supervision of the Monitoring Trustee, who shall report to the Commission.

Hold-separate obligations

8. Alstom commits, from the Effective Date until completion of the Transaction, and GE commits, from the Effective Date until Closing, to procure that the Divestment Business is kept separate from the businesses that GE will be retaining and, after closing of the notified transaction, to keep the Divestment Business separate from the businesses that GE is retaining and to ensure that unless explicitly permitted under these Commitments: (i) management and staff of the businesses retained by GE have no involvement in the Divestment Business; (ii) the Key Personnel and Personnel of the Divestment Business have no involvement in any business retained by GE and do not report to any individual outside the Divestment Business.
9. Until Closing, the Parties shall assist the Monitoring Trustee in ensuring that the Divestment Business is managed as a distinct and saleable entity separate from the businesses which GE is retaining. Immediately after the adoption of the Decision, GE

shall appoint a Hold Separate Manager, who shall be part of the Key Personnel. The Hold Separate Manager shall manage the Divestment Business independently and in the best interest of the business with a view to ensuring its continued economic viability, marketability and competitiveness and its independence from the businesses retained by GE. The Hold Separate Manager shall closely cooperate with, and report to, the Monitoring Trustee. Any replacement of the Hold Separate Manager shall be subject to the procedure laid down in paragraphs 7(c) of these Commitments. The Commission may, after having heard GE, require GE to replace the Hold Separate Manager.

Ring-fencing

10. GE shall implement, or procure to implement, all necessary measures to ensure that it does not, after the Effective Date, obtain any Confidential Information relating to the Divestment Business and that any such Confidential Information obtained by GE before the Effective Date will be eliminated and not be used by GE. In particular, the participation of the Divestment Business in any central information technology network shall be severed to the extent possible without compromising the viability of the Divestment Business. The Parties may obtain or keep information relating to the Divestment Business only as long as strictly necessary (i) which is reasonably necessary for the divestiture of the Divestment Business; (ii) which is reasonably required to maintain the viability of the Divestment Business until Closing; (iii) or the disclosure of which to the Parties is required by law.

Non-solicitation clause

11. GE undertakes, subject to customary limitations, not to solicit, and to procure that its Affiliated Undertakings do not solicit, the Key Personnel transferred with the Divestment Business for a period of [...], subject to applicable legislation, after Closing.

Due diligence

12. In order to enable the Purchaser to carry out a reasonable due diligence of the Divestment Business, the Parties shall, subject to customary confidentiality assurances and dependent on the stage of the divestiture process:
 - (a) provide to the Purchaser sufficient information as regards the Divestment Business;
 - (b) provide to the Purchaser sufficient information relating to the Personnel and allow them reasonable access to the Personnel.

Section D. The Purchaser

13. In order to be approved by the Commission, the Purchaser must fulfil the following criteria:
 - (a) The Purchaser shall be independent of and unconnected to the Parties and their Affiliated Undertakings (this being assessed having regard to the situation following the divestiture).

- (b) The Purchaser shall have the financial resources, proven expertise and incentive to maintain and develop the Divestment Business as a viable and active competitive force in competition with the Parties and other competitors;
 - (c) The acquisition of the Divestment Business by the Purchaser must neither be likely to create, in light of the information available to the Commission, prima facie competition concerns nor give rise to a risk that the implementation of the Commitments will be delayed. In particular, the Purchaser must reasonably be expected to obtain all necessary approvals from the relevant regulatory authorities for the acquisition of the Divestment Business.
- 14. The final Divestment Agreements relating to the divestment of the Divestment Business shall be conditional on the Commission's approval. When GE has reached an agreement with the Purchaser, it shall submit a fully documented and reasoned proposal, including a copy of the final Divestment Agreements, within one week to the Commission and the Monitoring Trustee. GE must be able to demonstrate to the Commission that the Purchaser fulfils the Purchaser Criteria and that the Divestment Business is being sold in a manner consistent with the Commission's Decision and the Commitments. For the approval, the Commission shall verify that the Purchaser fulfils the Purchaser Criteria and that the Divestment Business is being sold in a manner consistent with the Commitments including their objective to bring about a lasting structural change in the market. The Commission may approve the sale of the Divestment Business without one or more Assets or parts of the Personnel, or by substituting one or more Assets or parts of the Personnel with one or more different assets or different personnel, if this does not affect the viability and competitiveness of the Divestment Business after the sale, taking account of the Purchaser.[...].

Section E. Monitoring Trustee

I. Appointment procedure

- 15. GE shall appoint a Monitoring Trustee to carry out the functions specified in these Commitments for a Monitoring Trustee. GE commits not to close the Transaction until a Monitoring Trustee has been appointed.
- 16. The Monitoring Trustee shall:
 - (a) at the time of appointment, be independent of the Parties and their Affiliated Undertakings;
 - (b) possess the necessary qualifications to carry out its mandate, for example have sufficient relevant experience as an investment banker or consultant or auditor; and
 - (c) neither have nor become exposed to a Conflict of Interest.
- 17. The Monitoring Trustee shall be remunerated by GE in a way that does not impede the independent and effective fulfilment of its mandate.

Proposal by GE

18. No later than 2 weeks after the Effective Date, GE shall submit the name or names of one or more natural or legal persons whom GE proposes to appoint as the Monitoring Trustee to the Commission for approval. The proposal shall contain sufficient information for the Commission to verify that the person or persons proposed as Monitoring Trustee fulfil the requirements set out in paragraph 16 and shall include:
 - (a) the full terms of the proposed mandate, which shall include all provisions necessary to enable the Monitoring Trustee to fulfil its duties under these Commitments; and
 - (b) the outline of a work plan which describes how the Monitoring Trustee intends to carry out its assigned tasks.

Approval or rejection by the Commission

19. The Commission shall have the discretion to approve or reject the proposed Monitoring Trustee and to approve the proposed mandate subject to any modifications it deems necessary for the Monitoring Trustee to fulfil its obligations. If only one name is approved, GE shall appoint or cause to be appointed the person or persons concerned as Monitoring Trustee, in accordance with the mandate approved by the Commission. If more than one name is approved, GE shall be free to choose the Monitoring Trustee to be appointed from among the names approved. The Monitoring Trustee shall be appointed within one week of the Commission's approval, in accordance with the mandate approved by the Commission.

New proposal by GE

20. If all the proposed Monitoring Trustees are rejected, GE shall submit the names of at least two more natural or legal persons within one week of being informed of the rejection, in accordance with the requirements and the procedure set out in paragraphs 15 and 19.

Monitoring Trustee nominated by the Commission

21. If all further proposed Monitoring Trustees are rejected by the Commission, the Commission shall nominate a Monitoring Trustee, whom GE shall appoint, or cause to be appointed, in accordance with a trustee mandate approved by the Commission.

II. Functions of the Monitoring Trustee

22. The Monitoring Trustee shall assume its specified duties and obligations in order to ensure compliance with the Commitments. The Commission may, on its own initiative or at the request of the Monitoring Trustee or GE, give any orders or instructions to the Monitoring Trustee in order to ensure compliance with the conditions and obligations attached to the Decision.

Duties and obligations of the Monitoring Trustee

23. The Monitoring Trustee shall:

- (a) propose in its first report to the Commission a detailed work plan describing how it intends to monitor compliance with the obligations and conditions attached to the Decision.
- (b) oversee, in close co-operation with the Hold Separate Manager, the on-going management of the Divestment Business with a view to ensuring its continued economic viability, marketability and competitiveness and monitor compliance by the Parties with the conditions and obligations attached to the Decision. To that end the Monitoring Trustee shall:
 - (i) monitor the preservation of the economic viability, marketability and competitiveness of the Divestment Business, and the keeping separate of the Divestment Business from the businesses retained by GE, in accordance with paragraphs 7 and 8 of the Commitments;
 - (ii) supervise the management of the Divestment Business as a distinct and saleable entity, in accordance with paragraph 9 of these Commitments;
 - (iii) with respect to Confidential Information:
 - (A) determine all necessary measures to ensure that GE does not after the Effective Date obtain any Confidential Information relating to the Divestment Business, in accordance with paragraph 10 of these Commitments,
 - (B) in particular strive for the severing of the Divestment Business' participation in a central information technology network to the extent possible without compromising the viability of the Divestment Business,
 - (C) make sure that any Confidential Information relating to the Divestment Business obtained by GE before the Effective Date is eliminated and will not be used by GE, and
 - (D) decide whether such information may be disclosed to or kept by the Parties as the disclosure is reasonably necessary to allow the Parties to carry out the divestiture or as the disclosure is required by law;
 - (iv) monitor the splitting of assets and the allocation of Personnel between the Divestment Business and the Parties or their Affiliated Undertakings;
 - (v) act as a contact point for any requests by third parties, in particular the Purchaser, in relation to the Commitments;

- (c) propose to the Parties such measures as the Monitoring Trustee considers necessary to ensure the Parties' compliance with the conditions and obligations attached to the Decision, in particular the maintenance of the full economic viability, marketability or competitiveness of the Divestment Business, the holding separate of the Divestment Business and the non-disclosure of competitively sensitive information;
- (d) provide to the Commission, sending GE a non-confidential copy at the same time, a written report within 15 days after the end of every month that shall cover the operation and management of the Divestment Business as well as the splitting of assets and the allocation of Personnel so that the Commission can assess whether the business is held in a manner consistent with the Commitments;
- (e) promptly report in writing to the Commission, sending GE a non-confidential copy at the same time, if it concludes on reasonable grounds that the Parties are failing to comply with these Commitments;
- (f) within one week after receipt of the documented proposal referred to in paragraph 14 of these Commitments, submit to the Commission, sending GE a non-confidential copy at the same time, a reasoned opinion as to the suitability and independence of the Purchaser and the viability of the Divestment Business after the Sale and as to whether the Divestment Business is sold in a manner consistent with the conditions and obligations attached to the Decision, in particular, if relevant, whether the Sale of the Divestment Business without one or more Assets or not all of the Personnel affects the viability of the Divestment Business after the sale, taking account of the Purchaser; and
- (g) assume the other functions assigned to the Monitoring Trustee under the conditions and obligations attached to the Decision.

III. Duties and obligations of the Parties

- 24. The Parties shall provide and shall cause their advisors to provide the Monitoring Trustee with all such co-operation, assistance and information as the Monitoring Trustee may reasonably require to perform its tasks. The Monitoring Trustee shall have full and complete access to any of the Parties' or the Divestment Business' books, records, documents, management or other personnel, facilities, sites and technical information necessary for fulfilling its duties under the Commitments and the Parties and the Divestment Business shall provide the Monitoring Trustee upon request with copies of any document. The Parties and the Divestment Business shall make available to the Monitoring Trustee one or more offices on their premises and shall be available for meetings in order to provide the Monitoring Trustee with all information necessary for the performance of its tasks.
- 25. The Parties shall provide the Monitoring Trustee with all managerial and administrative support that it may reasonably request on behalf of the management of the Divestment Business. This shall include all administrative support functions

relating to the Divestment Business which are currently carried out at headquarters level. The Parties shall provide and shall cause its advisors to provide the Monitoring Trustee, on request, with the information submitted to the Purchaser, in particular give the Monitoring Trustee access to the data room documentation and all other information granted to the Purchaser in the due diligence procedure. GE shall keep the Monitoring Trustee informed of all developments in the divestiture process.

26. GE shall indemnify the Monitoring Trustee and its employees and agents (each an "**Indemnified Party**") and hold each Indemnified Party harmless against, and hereby agrees that an Indemnified Party shall have no liability to GE for any liabilities arising out of the performance of the Monitoring Trustee's duties under the Commitments, except to the extent that such liabilities result from the wilful default, recklessness, gross negligence or bad faith of the Monitoring Trustee, its employees, agents or advisors.
27. At the expense of GE, the Monitoring Trustee may appoint advisors (in particular for technological, intellectual property, corporate finance or legal advice), subject to GE's approval (this approval not to be unreasonably withheld or delayed) if the Monitoring Trustee considers the appointment of such advisors necessary or appropriate for the performance of its duties and obligations under the Mandate, provided that any fees and other expenses incurred by the Monitoring Trustee are reasonable. Should GE refuse to approve the advisors proposed by the Monitoring Trustee the Commission may approve the appointment of such advisors instead, after having heard GE. Only the Monitoring Trustee shall be entitled to issue instructions to the advisors. Paragraph 26 of these Commitments shall apply *mutatis mutandis*.
28. The Parties agree that the Commission may share Confidential Information proprietary to the Parties with the Monitoring Trustee. The Monitoring Trustee shall not disclose such information and the principles contained in Article 17 (1) and (2) of the EU Merger Regulation apply *mutatis mutandis*.
29. GE agrees that the contact details of the Monitoring Trustee are published on the website of the Commission's Directorate-General for Competition and shall inform interested third parties of the identity and the tasks of the Monitoring Trustee.
30. For a period of 10 years from the Effective Date the Commission may request all information from the Parties that is reasonably necessary to monitor the effective implementation of these Commitments.

IV. Replacement, discharge and reappointment of the Monitoring Trustee

31. If the Monitoring Trustee ceases to perform its functions under the Commitments or for any other good cause, including the exposure of the Monitoring Trustee to a Conflict of Interest:
 - (a) the Commission may, after hearing the Monitoring Trustee and GE, require GE to replace the Monitoring Trustee; or
 - (b) GE may, with the prior approval of the Commission, replace the Monitoring Trustee.

32. If the Monitoring Trustee is removed according to paragraph 31, the Monitoring Trustee may be required to continue in its function until a new Monitoring Trustee is in place to whom the Monitoring Trustee has effected a full hand over of all relevant information. The new Monitoring Trustee shall be appointed in accordance with the procedure referred to in paragraphs 15 - 21.
33. Unless removed according to paragraph 31, the Monitoring Trustee shall cease to act as Monitoring Trustee only after the Commission has discharged it from its duties after all the Commitments with which the Monitoring Trustee has been entrusted have been implemented. However, the Commission may at any time require the reappointment of the Monitoring Trustee if it subsequently appears that the relevant remedies might not have been fully and properly implemented.

Section F. The review clause

34. The Commission may extend the time periods foreseen in the Commitments in response to a request from GE or, in appropriate cases, on its own initiative. Where GE requests an extension of a time period, it shall submit a reasoned request to the Commission no later than one month before the expiry of that period, showing good cause. This request shall be accompanied by a report from the Monitoring Trustee, who shall, at the same time send a non-confidential copy of the report to GE. Only in exceptional circumstances shall GE be entitled to request an extension within the last month of any period.
35. The Commission may further, in response to a reasoned request from GE showing good cause waive, modify or substitute, in exceptional circumstances, one or more of the undertakings in these Commitments. This request shall be accompanied by a report from the Monitoring Trustee, who shall, at the same time send a non-confidential copy of the report to GE. The request shall not have the effect of suspending the application of the undertaking and, in particular, of suspending the expiry of any time period in which the undertaking has to be complied with.

Section G. Entry into force

The Commitments shall take effect upon the date of adoption of the Decision.

Duly authorised by *[Signed]*

for and on behalf of General Electric Company

Date: 6 August 2015

.....

Duly authorised by *[Signed]*

for and on behalf of ALSTOM (Société Anonyme)

Date: 6 August 2015

.....

SCHEDULE 1: THE DIVESTMENT BUSINESS

1. As noted in paragraph 2 of these Commitments, GE commits to divest, or procure the divestiture of the Divestment Business to the Purchaser according to the procedure described in these Commitments. The Divestment Business consists of Alstom's Gas Business combined with the PSM Business, excluding (i) those areas of Alstom's Gas Business where no competition issues arise (as listed at paragraph 11 below); and (ii) elements of Alstom's Gas Business and the PSM Business that are not needed by the Purchaser to replicate Alstom as a viable and competitive force in HDGTs insofar as the Purchaser's resources and capabilities are taken into account (as listed at paragraph 12 below) ("**Divestment Business**").
2. Without changing the structural effects of the foregoing, these Commitments provide for various transitional services as well as rights granted between GE and the Purchaser that are necessary to maintain the competitiveness and viability of both the Divestment Business and the businesses retained by GE, the Retained Business as defined in paragraph 9 below.
3. As further detailed in paragraphs 9 to 17 below, the approach to the divestiture of intangible assets in Alstom's Gas Business will be as follows:
 - (a) intangible assets used exclusively in the Divestment Business will transfer to the Purchaser without a licence back to GE. This includes, for example, intangible assets used exclusively in the (i) GT26 2011 and/or (ii) GT36;
 - (b) intangible assets used exclusively in the Retained Business will be retained by GE;
 - (c) intangible assets used both in the Divestment Business and in the Retained Business will transfer to the Purchaser; and
 - (d) all intangible assets, including Pipeline Projects, which (i) are not included in paragraphs 3(a)-(c) above; and (ii) are related to the gas turbine portion of Alstom's Gas Business will transfer to the Purchaser.
4. The objective is to create a business that is viable, standalone and competitive in the hands of the Purchaser, which replicates Alstom as a viable and competitive force in HDGTs. The Divestment Business is described in more detail in paragraphs 15 to 17 below.

Alstom's Gas Business

5. For the purposes of these Commitments, Alstom's Gas Business can be described as the combination of business activities within Alstom's Thermal Power Sector responsible for the development, sale, servicing and delivery of gas plant products and projects. It includes Alstom's sale, manufacture, development and service of gas turbines products and innovation related to such, including, but not limited to, GT26 2006 and GT26 2011 gas turbines and the GT36 programme, and all personnel supporting this business.
6. Alstom's Gas Business comprises all assets, tangible and intangible, related to the:

- (a) Gas Regions Units – four regional units responsible for sales, tendering and execution of customer projects (including products and engineering, procurement and construction ("**EPC**")). This includes all customer facing functions (customer contracts and associated partner, subcontractor and supplier agreements), as well as EPC and support functions including quality, environmental health and safety, finance, human resources and legal and contracts;
- (b) Product Units – two product units responsible for technology, new product development, product delivery (including intellectual property owned or controlled by Alstom Technology Limited ("**ATL**") insofar as it relates to the activities of Alstom's Gas Business), and research and development agreements:
 - (i) GST – responsible for the development and delivery of rotating equipment, namely gas turbines, steam turbines and generators;
 - (ii) GSH – responsible for the development and delivery of static equipment, namely Heat Recovery Steam Generators,

all of these are supported by typical centralised tools, operational and support functions ("**Global Support**").

- (c) Gas Operations – that part of Operations responsible for the factories in which all Alstom gas plant products and parts are manufactured;
 - (d) Gas Transverse Technology (TTT) – that part of TTT responsible for gas turbine technologies which are transverse to other Alstom Thermal Power technologies; and
 - (e) Gas Thermal Service – responsible for servicing and upgrades of gas turbine plants and products including the base fleet of Alstom gas turbines no longer offered as new products¹ ("**TSG**"), supported by regional service facilities ("**Service Network**").
7. Alstom's Gas Business purchases, but does not include, other corporate support functions such as information technology, indirect sourcing, communications, tax, treasury services, bonds and guarantees, international network and corporate management from the wider Alstom group.

PSM Business

8. For the purposes of these Commitments, the "**PSM Business**" is defined as all shares in PSM together with intellectual property owned or controlled by ATL insofar as it was created and/or is used by PSM.

The Retained Business (differences between (i) Alstom's Gas Business and the PSM Business, and (ii) the Divestment Business)

¹ The base fleet comprises Alstom gas turbines except GT13, GT24, GT26 and GT36 series ("**Base Fleet**").

9. The "**Retained Business**" consists of the (tangible and intangible) assets and personnel included in Alstom's Gas Business and the PSM Business, as at the Effective Date that (i) are included in areas of Alstom's Gas Business where no competition issues arise; or (ii) are not needed by the Purchaser to replicate Alstom as a viable and competitive force in HDGTs insofar as the Purchaser's resources and capabilities are taken into account.
10. The Purchaser is an established HDGT OEM with an installed base of its own and with a solid financial outlook. The Purchaser already provides a scope of supply ranging from rotating equipment (including HDGTs, steam turbines and generators) up to, and including, a complete turnkey power plant. It has manufacturing facilities capable of taking on the products of the Divestment Business, along with the engineering staff to support manufacturing, servicing and development. It is well-positioned to acquire the Divestment Business and integrate it into its current business operations. This also means that not all assets, personnel, or other supporting functions from a broader business are necessary for the Purchaser to replicate Alstom as a viable and competitive force in HDGTs.
11. The areas within the Retained Business that fulfill criterion (i) in paragraph 9 above include, but are not limited to:
 - (a) Medium-Class gas turbines (GT13);
 - (b) Base fleet business (all gas turbines except GT13, GT24, GT26 and GT36);
 - (c) GT24 gas turbines;
 - (d) All balance of plant, boiler, air quality control systems, control systems (PAC), HRSG and EPC activities and all tangible and intangible assets and personnel related thereto that are not used for gas turbine products.
12. The areas within the Retained Business that fulfill criterion (ii) in paragraph 9 above include, but are not limited to:
 - (a) Those parts of the Gas Regions Units, GSH, Global Support, Gas Operations, Gas Transverse Technology, Gas Thermal Service, that are not necessary for the Purchaser to replicate Alstom as a viable and competitive force in HDGTs insofar as the Purchaser's resources and capabilities are taken into account;
 - (b) Earlier ratings of the GT26 than GT26 2006;
 - (c) Contracts, agreements and arrangements related to the installed base fleet of the GT26 gas turbines (including reconditioning parts and services agreements for the GT26 gas turbines), except as specifically set out below;
 - (d) All steam turbines and generators, and all tangible and intangible assets and personnel related thereto that are not used for gas turbine products;

- (e) All Alstom manufacturing facilities, other than facilities of PSM located in Jupiter (Florida) and Houston (Texas), not necessary to replicate Alstom as a viable and competitive force in HDGTs insofar as the Purchaser's resources and capabilities are taken into account;
 - (f) Those Alstom servicing facilities (including data centres) not necessary to replicate Alstom as a viable and competitive force in HDGTs insofar as the Purchaser's resources and capabilities are taken into account;
 - (g) Personnel relating to any of the above categories and other personnel from Alstom's Gas Business and PSM Business which are not necessary for the Purchaser to replicate Alstom as a viable and competitive force in HDGTs insofar as the Purchaser's resources and capabilities are taken into account; and
 - (h) Other corporate support functions such as information technology, indirect sourcing, communications, tax, treasury services, bonds and guarantees, international network and corporate management from the wider Alstom group which are not necessary for the Purchaser to replicate Alstom as a viable and competitive force in HDGTs insofar as the Purchaser's resources and capabilities are taken into account.
13. For the avoidance of doubt, and subject to paragraph 18 below, GE will retain all assets (tangible and intangible, including tooling) and personnel used exclusively in the Retained Business, as described in paragraphs 9, 11 and 12 of this Schedule.
14. In addition to the assets and personnel that GE will retain as part of the Retained Business, GE and the Purchaser may agree that the Purchaser will provide to GE various licences, copies or other commercial arrangements in respect of certain (i) intangible assets; (ii) tangible assets; (iii) licences, permits and authorisations; (iv) contracts, agreements, leases, commitments and understandings; (v) customer and other records; (vi) personnel; and (vii) arrangements for the supply of products and services, that (a) are included in the Divestment Business; (b) are necessary for GE to operate the Retained Business; and (c) are not necessary for the viability and competitiveness of the Divestment Business.

The Divestment Business

15. The divestiture of the Divestment Business consists of a transfer of shares (including of PSM) and assets, with associated ancillary agreements. The objective of these Commitments is to transfer a Divestment Business that, as described below, consists of a viable and competitive business in the hands of the Purchaser capable of replicating the competitive constraints exerted by Alstom.
16. In accordance with paragraph 5 of these Commitments, the Divestment Business includes, but is not limited to:
- 16.1 **the following main intangible assets:**
- 16.1.1 all technology and know-how, including intellectual property, controlled by Alstom that is owned or used in Alstom's Gas Business as at Closing, exclud-

ing that used exclusively in relation to the Retained Business. [...]. The technology and know-how to be transferred to the Purchaser includes, but is not limited to:

- (a) the following technical information, documentation and fleet data originating in Alstom, including, to the extent available:
 - (i) for the GT26 2006, including the MXL2 upgrade, and GT26 2011 – all drawing documentation, manufacturing information (including tooling design), quality information for manufacturing, reconditioning, performance information, tender documentation, installation and commissioning information, design data and parameters (including validation reports), and services information; and
 - (ii) for the GT36 – all drawing documentation, manufacturing information (including tooling design), quality information for manufacturing, performance information, tender documentation, design data and parameters, and services information, all as available based on the status of the design program at Closing. [...];
- (b) all technology and know-how (including intellectual property), including Pipeline Projects, which (i) are not included in paragraphs 3(a)-(c) above; and (ii) are related to the gas turbine portion of Alstom's Gas Business;
- (c) all design tools controlled by Alstom;
- (d) all (i) patents; (ii) patent applications; (iii) invention disclosures; or (iv) other documents or data files articulating inventions or know-how, created on or prior to the Effective Date for the gas turbines business ("**Pipeline Projects**") (including, but not limited to, the feasibility study for the [...]; the development concept for the [...]²; and Pipeline Projects for the GT26 series);
- (e) the Divestment Business shall include the right to use the transferred technology and know-how, including intellectual property, to develop and sell upgrades for any GT26 gas turbine, including (but not limited to) the MXL2 upgrade and the feasibility study for the [...], and to compete for the sale of parts and provision of servicing for any GT26 gas turbine;
- (f) the rights set out in paragraph 16.1.1(e) above shall not include the right to use such transferred technology and know-how, including intellectual property (except for Unrestricted Shared Intellectual Property), to compete for the sale of parts or upgrades or the provision of ser-

² For the avoidance of doubt, the transfer of the relevant GT26 2006 technology supports development efforts in respect of these development possibilities.

vicings for any other element of the Retained Business, for a period of [...] from Closing;

- (g) GE will provide to the Purchaser various licences, copies or other commercial arrangements in respect of certain (i) intangible assets; (ii) tangible assets; (iii) licences, permits and authorisations; (iv) contracts, agreements, leases, commitments and understandings; (v) customer and other records; (vi) personnel; and (vii) arrangements for the supply of products and services, that are included in the Retained Business and that are necessary for the Purchaser to replicate Alstom as a viable and competitive force in HDGTs.
- (h) The technology and know-how (including intellectual property) referred to in paragraph 3(c) above will be transferred to the Purchaser subject to a licence to GE:
 - (i) the content contained in this licence shall be the technology and know-how (including registered intellectual property) used on or before the Effective Date in the Retained Business.
 - (ii) the scope of the licence will be royalty-free, fully paid up, worldwide, irrevocable, unrestricted and perpetual, with the right to grant sublicences to its Affiliated Undertakings or as otherwise required in the ordinary course of business;
 - (iii) the use of the licence shall be for the Retained Business and any other use of GE not inconsistent with the Purchaser's rights.
- (i) The technology and know-how (including intellectual property) referred to in paragraph 3(d) above will be transferred to the Purchaser without license back to GE.³ Notwithstanding the foregoing, the following Pipeline Projects will be licensed back to GE:
 - (A) Pipeline Projects that relate exclusively to the Retained Business; and
 - (B) a list of Pipeline Projects agreed with the Commission prior to the signing of the Divestment Agreements, which fulfill the following objective criteria:
 - (1) the Pipeline Project is specifically planned for use in the provision of parts, upgrades or servicing for the Retained Business; and
 - (2) the Pipeline Project is projected to reach commercialisation (including the ability to quote or bid) or the ability to be used in manufacture or in the commercial provision of parts, upgrades or servicing specifically for the Retained Business.

³ For the avoidance of doubt, the Purchaser will acquire exclusive rights in respect of the [...].

ness no longer than eighteen months from the Effective Date;

For the purposes of this paragraph 16.1.1(i), depending on the type of project, it is understood that a Pipeline Project may meet the criteria cited above at the Design Gate Review.

- (i) the scope of the licence will be royalty-free, fully paid up, worldwide, irrevocable, unrestricted and perpetual, with the right to grant sublicences to its Affiliated Undertakings or as otherwise required in the ordinary course of business;
 - (ii) the use of the licence shall be for the Retained Business and any other use of GE not inconsistent with the Purchaser's rights.
- (j) For the avoidance of doubt, this licence does not enable GE to sell new units of the GT26 2006, GT26 2011 or GT36.⁴

16.1.2 all technology and know-how (including intellectual property) developed or used by the PSM Business (the "**PSM Technology**") as well as the "PSM" name and associated trademark rights.

- (a) The transfer of the PSM Technology will be subject to:
- (i) a non-exclusive, royalty-free, fully paid up, worldwide, irrevocable, unrestricted and perpetual licence to GE, with the right to grant sublicences to its Affiliated Undertakings or as otherwise required in the ordinary course of business, to all PSM Technology necessary for GE to be able to offer products and services consistent with the PSM Business prior to the Transaction to customers of Siemens AG ("**Siemens**") or Mitsubishi Hitachi Power Systems ("**MHPS**") units, provided that this licence back specifically excludes the PSM Technology exclusively used in the GT26 2011 or GT36;
 - (ii) copies of the designs of all tooling used by PSM in relation to Siemens or MHPS products or services;
 - (iii) a field-of-use restriction, preventing the Purchaser from using (either directly or indirectly) the PSM Technology outside the PSM Rights Geographic Scope in relation to the GE 7FA and 9FA Gas Turbines, provided however that nothing in this paragraph shall be construed as limiting the Purchaser's ability to use the PSM Technology in new gas turbine units on a global basis.

16.1.3 [...]

⁴ In the circumstances set out in paragraph 16.5, GE shall be entitled to a limited licence to enable it to perform the obligations set out in that paragraph.

(a) [...] and

(b) [...];

16.1.4 the model names "GT26" and "GT36", subject to a perpetual reverse unrestricted right to GE to use the model name "GT26" in relation to GT26 series units (excluding the GT26 2011 name), for servicing and marketing such servicing to these units or any upgrades thereto.

16.2 the following main tangible assets:

16.2.1 in relation to testing facilities:

- (a) all equipment located within the power plant testing facility for the GT26 (the Birr 3 facility) located on the premises of Alstom at Birr (Switzerland) ("**Birr 3**"), excluding that used exclusively in relation to Retained Business, as at Closing; and
- (b) work in progress assets associated with the GT36 programme, to be transferred to the power plant testing facility for the GT36 programme (the Birr 4 facility, under construction) located on the premises of Alstom at Birr (Switzerland) ("**Birr 4**").

16.2.2 in relation to tooling owned by Alstom:

- (a) all tooling that is exclusive to the GT26 2011 existing as at Closing, as soon as GE has fulfilled its obligations under the transitional services arrangements set out in paragraph 16.8 below and/or to any use or access rights necessary for GE to perform its obligations in relation to servicing of active agreements as set out at paragraph 16.5;
- (b) all tooling that is exclusive to the GT36 existing as at Closing; and
- (c) at the option of the Purchaser, at least one set of all tooling that is exclusive to the servicing of the GT26 2006 will be available for purchase by the Purchaser for a period of [...] following the Effective Date, subject to reasonable consideration of GE's continuing need for such tools to supply the Purchaser under the Component Supply Agreement and the continuing service activities of the Retained Business.

16.2.3 In relation to servicing, all tangible assets (including data centres) necessary for the Purchaser to service, supply parts and upgrade the GT26 2006 units listed in Confidential Appendix 1, except those not needed by the Purchaser to replicate Alstom as a viable and competitive force in HDGTs insofar as the Purchaser's resources and capabilities are taken into account;

16.2.4 all tangible assets of PSM, including, but not limited to:

- (a) the assets located at PSM's facilities, as detailed in paragraph 16.4.4(a); and

- (b) all PSM tooling assets, subject to any negotiated split of such tooling assets and/or GE rights to obtain copies of or use such tooling *in situ* insofar as it is necessary for GE to be able to offer products and services consistent with the PSM Business prior to the Transaction to customers of MHPS and Siemens units.

16.3 the following main licences, permits and authorisations:

- 16.3.1 licences, permits and authorisations currently owned or held by Alstom's Gas Business in relation to the Divestment Business. If any licences, permits or authorisations require consent upon change of control, GE will use its best efforts to assist the Purchaser in obtaining consents or waivers from such third parties as appropriate or putting in place appropriate alternative arrangements with the relevant third parties. [...];

16.4 the following main contracts, agreements, leases, commitments and understandings:

- 16.4.1 each of GE and the Purchaser shall upon request of the other provide the requesting party on a periodical basis but not less than every six months a written report in reasonable detail concerning material technical issues relating to the GT26 2011 fleet for as long as GE is a party to a GT26 2011 agreement and to the GT26 2006 fleet for as long as GE has a service contract with respect to a GT26 2006. The information to be provided in such reports would include, in general, a characterisation of the material technical issue, any detection or avoidance possibilities and, if available, a root cause or corrective action, to the level of detail customarily provided by OEMs to customers and insurers;

- 16.4.2 in relation to testing facilities:

- (a) The Parties will use their best efforts to transfer to the Purchaser a lease of up to [...]in duration to Birr 3, Birr 4 and the facilities shared between the Heat Recovery Steam Generator (HRSG) facility (the Birr 2 facility), Birr 3 and Birr 4 facilities.[...]. The facilities shared between the Birr 2, 3 and 4 facilities include, but are not limited to, control rooms, transformers, switchyard, water tanks, oil tanks, utility infrastructure (gas, electricity and water), ducting/piping, storage space and permits, including emissions permits (the "**Birr Shared Facilities**"). The lease shall be subject to GE being granted access to the Birr Shared Facilities for [...] for up to a total of [...] of testing in any one year and, during any such allocated windows, GE being given full and unrestricted access to the Birr Shared Facilities and for the avoidance of doubt, none of the above shall restrict GE's access to any facilities related to the Birr manufacturing facility nor shall it grant GE access to the Birr 3 and Birr 4 facilities other than the Birr Shared Facilities;
- (b) transfer of all Alstom's rights to use the HBK5 high pressure combustor test facility located in Cologne (Germany), and, at the option of the Purchaser, transfer of Alstom's ownership rights with respect to the fa-

cility, with negotiated access rights for GE at the option of the Purchaser, subject to landlord consent;

16.4.3 GE will provide to the Purchaser a list of all third party suppliers in prior use by Alstom for the manufacturing of a GT26 2006, GT26 2011 or GT36. GE will, to the extent possible, transfer such contracts, information relating to them and existing relationships to the Purchaser. If the Purchaser requests, GE would release such suppliers from any exclusivity obligations in favour of Alstom to the extent required for the manufacturing of the foregoing;

16.4.4 in relation to PSM:

- (a) PSM's leased facilities located in Jupiter, Florida, and its leased field services facility in Houston, Texas, United States, together with all the assets located therein, subject to landlord consent, for the full duration of the leases that Alstom currently holds, which GE understands to extend to [...] in respect of the Jupiter facilities and [...] in respect of the Houston facility; and
- (b) contracts, agreements, commitments and understandings of PSM with third parties existing as of the Closing; [...]. If any contracts, agreements, leases, commitments or understandings require consent upon change of control, GE will, upon request from the Purchaser, use its best efforts to assist the Purchaser in obtaining consents or waivers from such third parties as appropriate or putting in place appropriate alternative arrangements with the relevant third parties.[...];⁵ and

16.4.5 The Parties will use their best efforts to transfer to the Purchaser contractual arrangements with Axpo for the connection of the Birr testing facilities to the Swiss electricity grid and export of power.[...];

16.5 the following customer, credit and other records (including, but not limited to, customer contracts):

16.5.1 GE will use its best efforts to transfer the following to the Purchaser.[...]:⁶

- (a) open tenders for new units (GT26 2006, GT26 2011 and GT36). [...].⁷[...];
- (b) active contracts for new units (GT26 2011 or GT36).[...].⁸[...];
- (c) servicing agreements associated with open tenders or active contracts for new units for the GT26 2011, including agreements for 4 GT26

⁵ [...].

⁶ For the avoidance of doubt, to the extent necessary to perform the obligations set out in this clause, GE shall [...] not be obligated to guarantee or otherwise support, except as set out in paragraph 16.8 of this Schedule, any such obligations transferred to the Purchaser.

⁷ [...].

⁸ [...].

2011 units per the attached Confidential Appendix 1, and GT36, and servicing agreements associated with open tenders for new units for the GT26 2006. [...];⁹ and

- (d) customer contracts and customer records (including open tenders) of PSM,

all as existing as at Closing.

- 16.5.2 GE will transfer to the Purchaser the servicing agreements for 30 GT26 2006 units located predominantly in EEA countries per the attached Confidential Appendix 1.[...].¹⁰ In addition, all available historical fleet data and technical specifications concerning connectivity to the units with a remote monitoring system would also be transferred.

16.6 the following Personnel:

The Divestment Business will include the Personnel necessary to replicate Alstom as a viable and competitive force in HDGTs, insofar as the Purchaser's resources and capabilities are taken into account, set out in [Appendix 2].

For the avoidance of doubt, the Personnel to be transferred shall include additional services personnel necessary to replicate Alstom as a viable and competitive force in HDGTs, insofar as the Purchaser's resources and capabilities are taken into account, to support the transfer of the GT26 2006 servicing agreements described in paragraph 16.5 above.

The terms of any employment contracts offered to the Personnel,[...] ¹¹, will not be less favourable than those in effect at the time of signing of the agreements in respect of the Divestment Business and will remain unchanged for at least [...].

16.7 the following Key Personnel:

Key Personnel necessary to replicate Alstom as a viable and competitive force in HDGTs are the persons listed in Confidential Appendix 3, subject to review by the Purchaser, the Parties, the Monitoring Trustee and the Commission in the light of the ongoing negotiations and the Purchaser's resources and capabilities.

16.8 the arrangements for the supply with the following products or services by GE or Affiliated Undertakings:

- 16.8.1 At the option of the Purchaser, GE will offer, on a transitional basis, services as necessary to maintain the full economic viability and competitiveness of the Divestment Business and to ensure the effective implementation of the com-

⁹ [...].

¹⁰ [...].

¹¹ [...].

mitments. These transitional services include, but are not limited to, the following:

16.8.2 GE will offer supply of:

- (a) flange to flange GT26 2006 and GT26 2011 units; and
- (b) certain components relevant to the GT26 2006 and GT26 2011 (namely rotors, blades and vanes, turbines and combustors HGPs, casings and turbine control systems),

to be manufactured and, if appropriate, assembled in accordance with Alstom's designs and procedures as at Closing, for a transitional period, initially up to [...] from Closing with the option to extend for an additional [...] at the option of the Purchaser.¹²

16.8.3 at the option of the Purchaser, GE will provide technical assistance and consultation to support the transition of manufacture, assembly, sale and marketing to the Purchaser's facility in Genoa, for a transitional period, not to exceed [...] from Closing. Such assistance includes, but is not limited to:

- (a) IP Services: certain services regarding the gathering of technical information concerning the GT26 2006, GT26 2011 and the GT36, which will be placed (in their original file format) and maintained in an electronic repository for the Purchaser to access following completion of the Transaction, and responding to requests concerning the provision of such information.
- (b) IT Services: certain services including the transfer of IT hardware and software, operating system and basic infrastructure set-up, email installation, local printing services, provision of IT network and security, payroll, data storage, support and hosting for certain in-house developed tools and dedicated IT support.
- (c) Commercial Services: certain services including the transfer of technical tendering tools, training associated with such tools and identification and potential transfer of open tenders.
- (d) Manufacturing Services: certain services including the provision of technical information, supplier lists, training and technical assistance / consultation in respect of the manufacturing of and access to supplier tooling for GT26 2006 and GT26 2011. In addition, GE shall permit the Purchaser to use tooling that is exclusive to the servicing of GT26 2006 during the transitional period.

16.8.4 At the option of the Purchaser, GE will offer the supply of steam turbines and generators from the Retained Business to be sold with new units of the GT26

¹² For the avoidance of doubt, to the extent necessary to perform the obligations set out in this clause, GE shall have the right to obtain a transitional licence back to the technology and know-how exclusively used in the GT26 2011 or GT36 as necessary to provide transition services as contemplated by these Commitments.

2006, GT26 2011 or GT36 sold by the Purchaser, for a transitional period, initially up to [...] from Closing with the option to extend for an additional [...] at the option of the Purchaser, on commercially reasonable arm's length terms and conditions.

16.8.5 in relation to PSM, for a transitional period of up to [...] after Closing:

- (a) at the option of the Purchaser, GE will provide transitional services, technical assistance and consultation, including access to facilities shared between Alstom and PSM;
- (b) the Purchaser shall permit GE to use PSM tooling necessary for GE to be able to offer products and services consistent with the PSM Business prior to the transaction to customers of MHPS and Siemens units for a transitional period;
- (c) the Purchaser shall support the transition of PSM's current activities in relation to the GT24, including through the transfer of relevant tooling.

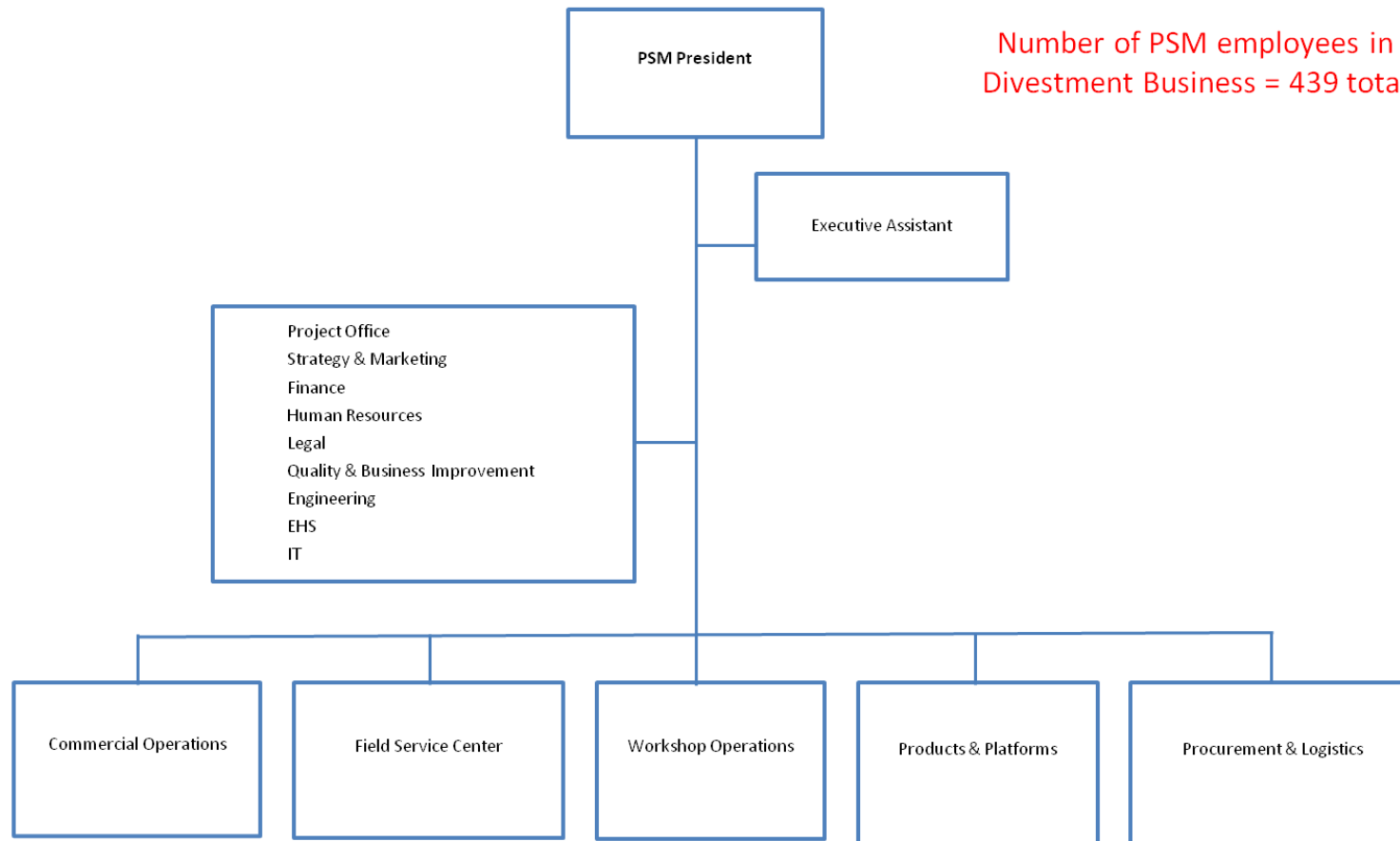
17. For the avoidance of doubt, the Divestment Business shall not include:

- (a) any manufacturing facility of either GE or Alstom, other than facilities of PSM;
- (b) any personnel of either GE or Alstom, other than any Personnel or Key Personnel as set out in paragraphs 16.6 and 16.7 above;
- (c) spare parts and work in progress at any manufacturing facility of the Parties, other than those that are unique to the GT26 2011 or GT36 and that are not related to an existing Alstom contract under execution, and other than those used in the business of PSM;
- (d) any legacy servicing agreement in respect of the installed base of GT26 2002 and earlier rating units;
- (e) neither GE nor Alstom shall be required to provide the Purchaser with support or developments in relation to any design tools, except as explicitly specified above;
- (f) approximately [10 % of the] personnel of PSM, comprising research and development and service engineers, field and repairs personnel, commercial operations, procurement and logistics, and workshop operations personnel, as agreed between GE and the Purchaser to the extent that this does not adversely affect the viability and competitiveness of PSM;
- (g) any assets, interests, rights or property (including any intellectual property, patents, know-how or trademarks) of GE or its Affiliated Undertakings other than assets, interests, rights or property that GE acquires from Alstom pursuant to the Transaction; and

- (h) nothing in these Commitments will prevent GE to use or further develop existing GE innovation, intellectual property, plans or objectives already developed by GE before the Effective Date.
- 18. If there is any asset or personnel which is not covered by paragraph 16 of this Schedule but which is both used (exclusively or not) in Alstom's Gas Business and necessary for the continued viability and competitiveness of the Divestment Business, that asset, personnel or adequate substitute will be offered to the Purchaser.

[illegible]

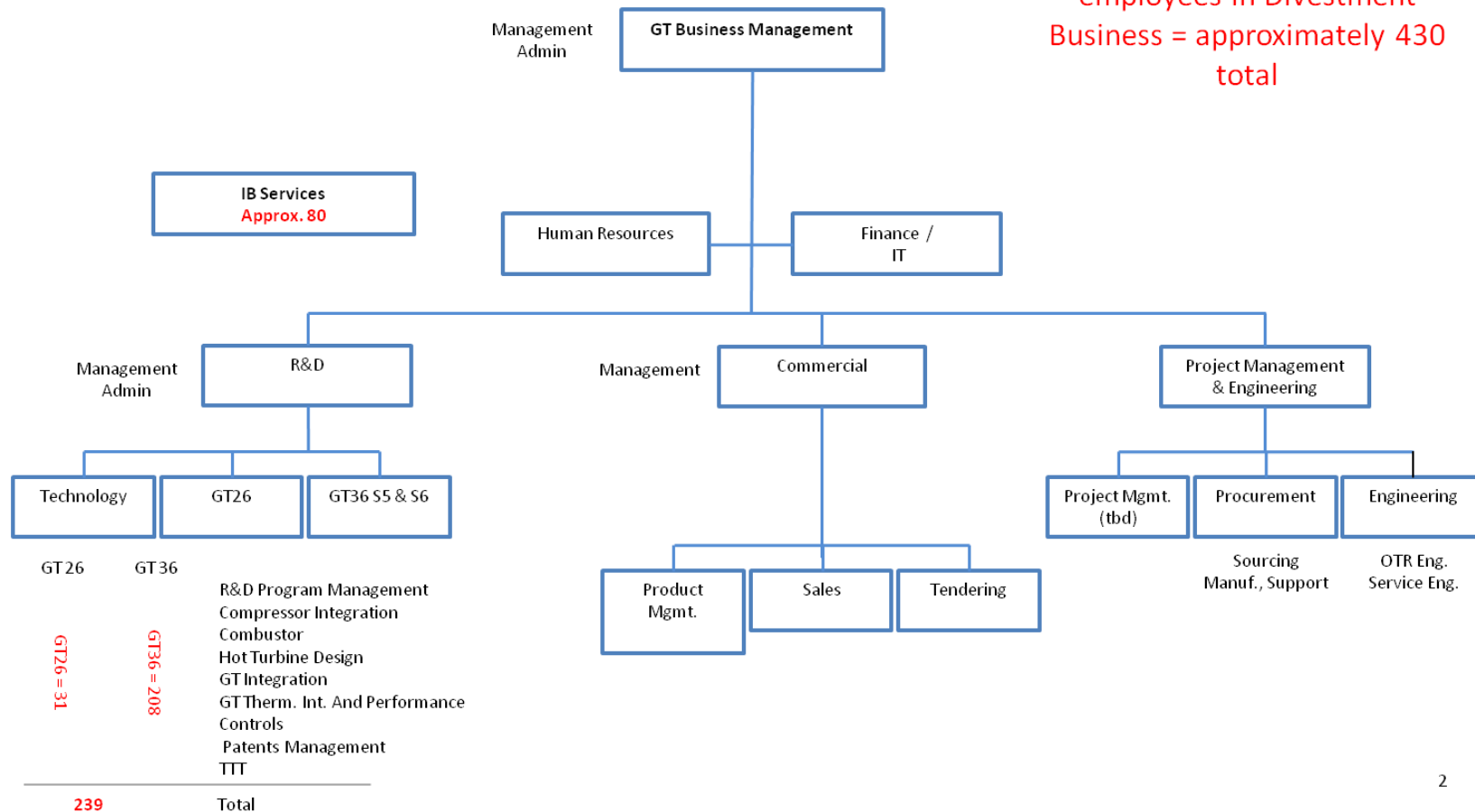
PSM



1

GT Business

Number of GT Business
employees in Divestment
Business = approximately 430
total



[illegible]

[illegible]

[...].