EUROPEAN COMMISSION

Brussels, 14 April 2010

In the published version of this decision, some information has been omitted, pursuant to articles 24 and 25 of Council Regulation (EC) No 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 93 of the EC Treaty, concerning non-disclosure of information covered by professional secrecy. The omissions are shown thus […].

PUBLIC VERSION
WORKING LANGUAGE
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Subject: State aid case N 451/2009 – Germany
Energy saving by direct strip casting technology for light steels – aid to Salzgitter Flachstahl GmbH

Dear Sir,

1. PROCEDURE

1. On 22 July 2009, the German authorities notified the measure, which aims at promoting a project of Salzgitter Flachstahl GmbH in the area of energy saving. This individual aid has been notified to the Commission for a detailed assessment in line with the Chapter 5 of the Community Guidelines on State Aid for Environmental Protection¹, which are applicable for the assessment of the proposed measure.

2. Following requests for additional information of 22 September and 17 December 2009 and 2 February 2010, the German authorities provided replies registered on 19 October 2009, 28 January and 15 February 2010.

2. DESCRIPTION

3. Germany intends to grant an aid of EUR 19.1 million to Salzgitter Flachstahl GmbH (SZFG) to support the investment in an energy saving steel production process, the Direct Strip Casting (DSC), by the realization of a strip casting steel plant for demonstration purposes with an accordingly limited volume of output, i.e. 25,000 tons of HSD (High Strength and Ductility) steel a year. Only in the long run, depending from the successful implementation of the project and market developments, the beneficiary

¹ OJ C 82 of 01.04.2008

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may invest in subsequent projects (e.g. a technology using Inline Rolling), which however would require substantial additional investments amounts.

4. According to the German authorities, such steel may be produced in two technically different production processes:
   - Direct Strip Casting (DSC), which is characterised by low energy consumption
   - Electro-Slag Remelting (ESR), which would result in lower-quality HSD steels and substantially higher energy consumption.

5. The notified project consists of investments in a direct strip casting process. At a later stage, in five to ten years, the process could be up-graded by an additional EUR 200 million investment by implementing the "Inline Rolling technology".

6. During the project's runtime Salzgitter would also test the ideal breadth and length of the cast that allows getting the best quality of HSD steels and would implement it at a later stage in the production at industrial scale.

   a. The technologies involved

7. Currently, the state-of-the-art steel production is performed through the slab casting process where the liquid steel is poured into a mould that forms a cast with a thickness of 200-250 mm. The reheating of the quenched stabs of steel in the size of 15-35 t takes place between the casting and rolling. Another currently prevailing technique is the thin slab casting process where the liquid steel is poured into slabs within moulds of the size of 60-80 mm. The slab is not cooled down in this process before the rolling (warm rolling). Nevertheless, large furnaces are required to ensure an accurate setting and to equalize the distribution of heat in the slab before rolling.

8. The Salzgitter project would constitute the world's first strip casting steel plant. It would be built for demonstration purposes and accordingly with a limited output volume, i.e. 25,000 tons of steel a year.

9. The technology of direct strip casting allows achieving an enhanced product quality (HSD steels) due to the horizontal casting direction and since the course of the process is horizontal too; therefore there is no bending at elevated temperature and the moving mould that hinders the relative movements between the strand and the mould. After solidification in a protective atmosphere, the yielded strip is directly rolled without intermediate reheating. Thus, due to the reduced energy consumption for hot rolling and reheating, substantial energy savings as compared to the conventional slab casting can be achieved. However, there is no continuous, mass-production process yet available for HSD steels, and demonstration projects are necessary according to the German authorities.

10. In the Salzgitter plant, the innovation (Direct Strip Casting, DSC) would consist of a slab smelting process, which makes a radically different concept of casting in the thickness of 8 to 15 mm possible. Instead of being poured vertically into a mould, the liquid steel flows horizontally on a steel ladle moving with the speed of the smelt. Due to the low thickness of the smelt metal, the time needed to adjust the temperature required to the rolling process is significantly shorter.
11. The direct environmental effect relevant for the Commission decision in the case at hand is the effect of investing in DSC technology in Salzgitter namely the energy savings by using the DSC process to produce HSD (High Strength and Ductility) steels. HSD steels feature higher proportions of aluminum and silicon, which result in high strength combined with very high ductility. Using such technology would result in an improved quality compared to the steels currently available. Further to the comparably low energy consumption in the production process, additional energy saving would be realised when using these lighter steels in cars, which would need less fuel for driving.

12. The main environmental objective of the measure is to achieve energy savings by using the DSC process to produce HSD (High Strength and Ductility) steels. HSD steels feature higher proportions of aluminium and silicon, which offer high strength combined with very high ductility. Using such technology would result in an improved quality compared to the steels currently available. Further to the low energy consumption in the production process, additional energy savings would be realised when using these lighter steels in cars, which would need less fuel for driving.

13. The production of 25,000 tons of HSD steels through the two production process would require the following amounts of energy:

- 1.4 GJ/ton under the notified project (DSC)², due to less coke required for the production;

² If one considers phase 2 of the project (introduction of Inline Rolling), the energy requirements would decrease to 0.8 GJ/ton of HSD steel produced.

Source: German authorities

b. Environmental benefits
9.0 GJ/ton under the counterfactual scenario (ESR);

14. As a matter of comparison, the production of conventional non-HSD steels currently requires 2.1 and 3.5 GJ/ton (conventional and thin slab casting respectively).

15. Table 1 presents the annual energy need of the DSC technology, the alternative ESR technology and for conventional steel casting for 25,000 tonnes of steel. Whereas strip casting with Inline mills (Inline Rolling technology) would require an additional investment project of estimated EUR 200 million, which may be envisaged only in the long term, both the conventional slab casting and thin slab casting only allow for the production of conventional steel not providing the advanced quality of HSD steel (e.g. thin and light, high strength and ductility).

16. As explained above, according to the German authorities, HSD steel cannot be produced by the state-of-the-art processes, namely by conventional or thin slab casting. The counterfactual investment for DSC would be the ESR (Electro-Slag Remelting), whose energy use is clearly higher than for the DSC technology.

Table: Annual energy demand for the production of steel (25,000 t) through various steel casting processes

<table>
<thead>
<tr>
<th>Annual energy needs for the production of 25,000 t (GJ)</th>
<th>Annual energy needs for the production of 25,000 t, per tonne (GJ/t)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current steel production</strong> Conventional slab casting</td>
<td>87,500</td>
</tr>
<tr>
<td><strong>Current steel production</strong> Thin slab casting</td>
<td>52,500</td>
</tr>
<tr>
<td><strong>Notified project</strong></td>
<td>35,000</td>
</tr>
<tr>
<td><strong>Strip casting with Steckel mill (DSC)</strong></td>
<td>&gt;225,000</td>
</tr>
<tr>
<td><strong>Counterfactual scenario</strong> Block smelt, electro-slag remelting (ESR)**</td>
<td></td>
</tr>
<tr>
<td><strong>Potential development</strong> Strip casting with Inline Rolling</td>
<td>20,000</td>
</tr>
</tbody>
</table>

Source: German authorities

c. National legal basis, beneficiary, duration and budget


18. The beneficiary of the measure is Salzgitter Flachstahl GmbH, a subsidiary of the Salzgitter AG group. On the steel market, Salzgitter AG's market share is in the range of 1% worldwide and 4% in Europe.

19. The support of EUR 19.1 million will be provided in the form of a direct grant. According to Germany, taking into account the operational profits and costs over the first five years, the eligible costs amount to EUR 43.0 million.

20. The aid is subject to the approval of the Commission and would be granted in several tranches until the year 2012.
21. The beneficiary is required to inform the aid grantor, which also monitors the implementation and the cumulation of aid, of any additional aid for which he applies or which he receives. The German authorities undertake that the aid cannot be combined with any other State aid.

d. Cost calculations

22. The cost calculation submitted by the German authorities is presented below, based on the following methodologies and considering the DSC and counterfactual (ESR) scenarios:

− First, under the standard assessment cost calculation (see chapter 3 of the EAG), extra investment costs for environmental protection are calculated net of extra operating costs and benefits, in nominal terms. Operating costs and benefits are, as a first approximation, thus calculated over the first five years of the project (point 82 EAG). Additionally, savings on ETS allowance purchases are not included as operating benefits pursuant to point 70(20) of the EAG;

− Second, under the detailed assessment's cost calculation (see chapter 5 of the EAG), the profitability of the notified project is assessed over the lifetime of the investment (i.e. beyond the first five years of the project), with and without aid. This verification is carried out to ensure that the aid amount does not exceed the expected lack of profitability over the whole lifetime until the investment is fully depreciated. This calculation also features savings on ETS allowance purchases due to the notified project, and assumes a price of EUR 30 per t of CO2;

Total investment costs of the project net of operating costs and benefits over the first five years

23. The table below provides a calculation of eligible costs. The details of operating cost and benefit calculations are presented in appendix.

<table>
<thead>
<tr>
<th>Table: Net eligible costs, DSC production process vs. counterfactual ESR production process, first five years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Investment</td>
</tr>
<tr>
<td>Operating benefits over the first 5 years</td>
</tr>
<tr>
<td>Operating costs over the first 5 years</td>
</tr>
<tr>
<td>Net eligible costs</td>
</tr>
<tr>
<td>Aid amount</td>
</tr>
<tr>
<td>Aid intensity</td>
</tr>
</tbody>
</table>

Source: German authorities

24. The German authorities submit that the total investment costs for the DSC production process would amount to EUR 63.7 million, as compared to the investment costs of only EUR 5 million in the counterfactual scenario (ESR process). Consequently, the additional investment costs related to environmental benefits amount to EUR 58.7
million. When taking into account the operational profits and costs for the first five years, the eligible costs amount to EUR 43.0 million. Finally, the proposed aid amount of EUR 19.1 million would result in an aid intensity of 44%.

**Profitability over the lifetime**

25. Germany indicated that without State aid, market players would not invest in the pilot plant to introduce the DSC process because of the high costs, risks and low return rate. Without aid the beneficiary would invest in the more energy intensive, less environmentally friendly ESR process, which is the counterfactual scenario.

26. The German authorities calculated profitability over the lifetime of the plant, i.e. until the plant has been fully depreciated (10-year period), which also corresponds to the technical lifetime of the plant in the case at hand. They retained the following main assumptions:

- The discount rate is 14%;
- The cost of capital for investment is 10% and the expected rate of return for cash flows is 14%, including a 4% risk premium. The German authorities submitted Salzgitter's internal investment guidelines establishing the 14% threshold for IRR for large projects such as the notified one, below which the Board of Directors of Salzgitter would not accept to invest. The German authorities also provided the Commission with examples of recent projects by Salzgitter which have been accepted as their IRR is equal or superior to 14%;
- The DSC and ESR production processes will use the existing steel production line in a similar way; the investment costs correspond to the extra investments needed to plug them into the existing steel production line;
- Raw material costs: EUR […] per ton, sale price of HSD steel: EUR […] per ton⁴; price of conventional steel: EUR […] per ton;
- EU ETS allowance costs of EUR 30 per tCO₂⁵ resulting in total CO₂ costs of EUR 4.4 and 0.7 million over the lifetime (2011-21) for the ESR and DSC processes respectively;
- The beneficiary expects to license the DSC technology to other companies for EUR […] million over the lifetime (no licensing under the ESR scenario). However, Germany underlined that this figure is a rough estimate only and can at the time being not be exactly calculated. In any case this amount constitutes only a minor element in the calculation of operational costs and benefits of the project;

³ These 9 examples of investments by Salzgitter cover the 2006-2008 period and consist of production investments such as extension of the current production capacities. They involve investment amounts varying between EUR 2.5 and 200 million. The IRR varies between 16.08 and 28.74%, and the corresponding payback periods between 2.3 and 6 years.

⁴ The sale price for HSD steels has been calculated by the German authorities on the basis of the price for conventional steels after taking into account the lower raw materials needed to produce comparable end products.

⁵ This price, which is significantly above the prevailing CO₂ price at the moment of this decision, was part of the modelling results for the policy options in the Commission's impact assessment accompanying the Commission's proposal of the revised EU ETS (Emission Trading System).
There is no terminal value, since after the 10-year period the plant will not be operational anymore; the beneficiary indicated that the plant will only be maintained with a 10-year perspective, since this limited technical lifetime corresponds to a testing phase. Afterwards, it will be decided either to invest again and introduce further innovations into the production process (e.g. Inline Rolling), potentially at a larger scale, or to stop the HSD project.

27. As regards the Salzgitter project (production of HSD steels through DSC process), the Internal Rate of Return (IRR), payback period and Net Present Value calculations are the following:

- With the aid of EUR 19.1 million: IRR of 14.6%, payback period of 9.3 years, Net Present Value of EUR 2.7 million;
- Without the aid: IRR of 10.98%, payback period superior to 10 years, Net Present Value of - EUR 15.2 million;

28. The calculation of the undiscounted cash flows under the DSC scenario is presented in the appendix.

29. In the counterfactual scenario:

- The ESR production process would have the same 25,000 t steel production capacity as the DSC process but would reach more quickly this capacity. Taking this into account, according to the German authorities, the NPV and IRR of the ESR investment would rise to EUR 41.0 million and 54.9%. This calculation corresponds to the most likely counterfactual situation from a business perspective.
- If one considers on the contrary the production of the same steel quantities as under the aid scenario, as for the Chapter 3 eligible cost calculations, the IRR would be 33.8%, the payback period 3.3 years, and the Net Present Value EUR 17.2 million.

30. As regards the fact that the ESR process seems more profitable than the notified investment with or without the aid, the German authorities argued that the beneficiary would still prefer investing in the notified project since it has a better market potential (opening the way to further improvements such as Inline Rolling production process), requires less maintenance to maintain quality standards and may also improve the green image of the company.

31. According to the beneficiary, the lifetime of this investment is 10 years, which corresponds to the amortization period according to normal accounting rules such as IFRS. In view of this, the German authorities argue that the project would not be implemented unless State aid of EUR 19.1 million is granted as aid is necessary to limit the payback period to 10 years or less.

Effect of the aid on the project

32. As regards proportionality, Germany also mentioned that the aid would result in an IRR of 14.6% instead of 10.98% without the aid. As mentioned above, according to Salzgitter's internal investment guidelines, this 14.6% IRR would be just above the minimum IRR for projects to be accepted by Salzgitter.
33. With regard to the beneficiary's ability to reduce the unit costs of production and accordingly increase its sales, the German authorities informed that the potential sales of HSD steels (25,000 tons a year) are very low as compared to the sales of high-alloy flat steels in the EU (10.5 million tons a year), or to Salzgitter sales in total. Indeed, the potential sales volumes of HSD steels would represent less than 1% of Salzgitter GmbH's 2007 steel production (4.3 million tons), 10% of which are high-alloy steels.

34. In the worldwide ranking of the largest steel producers in 2008, Salzgitter AG, Salzgitter GmbH's parent company, is the 41st with a worldwide crude steel production of 7.2 million tons; the first worldwide producer is ArcelorMittal with 101.6 million tons. The total crude steel production in 2008 is 1300 million tons worldwide and 198 million tons in Europe. Therefore the market share of the Salzgitter AG is less than 1% worldwide and about 4% in Europe (3.8% in 2008, 3.9% in 2009). In Germany, on the crude steel market, Salzgitter's market share was 15.4 and 16.6% in 2008 and 2009 respectively.

35. High-alloy steels account for an estimated 10% of the steel market worldwide. The production of high-alloy flat steel products in 2007-2008 was 10.5 million tons in the EU, of which 3 million tons were produced in Germany. On this basis, according to information provided by the German authorities, Salzgitter AG's market share still remains below 5% on the European market.

36. The German authorities allege that high-alloy steels should develop further in the future, representing 30% of the automotive steel market as compared to 10% today, due to the growing energy efficiency requirements in this sector. There should also be growth potential for high-alloy steels in the household equipment manufacturing sector.

37. According to Germany, other steel producers are currently developing steels with high content of alloy or manganese, but have difficulties in developing an energy-efficient production process. Therefore the German authorities allege that the Salzgitter project would develop a more environmentally-friendly process than those developed by its competitors.

38. The high-alloy steel market in the EU is structured as presented in the table below.

Table: High-alloy steel market in the EU-27, market shares, in percentage points

<table>
<thead>
<tr>
<th>Company</th>
<th>Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ArcelorMittal</td>
<td>25</td>
</tr>
<tr>
<td>Thyssenkrupp</td>
<td>15</td>
</tr>
<tr>
<td>Corus</td>
<td>15</td>
</tr>
<tr>
<td>Severstahl</td>
<td>10</td>
</tr>
<tr>
<td>Salzgitter AG</td>
<td>5</td>
</tr>
<tr>
<td>Others</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: German authorities

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6 Out of this total, Salzgitter GmbH produced 4.3 million tons of steel in 2008. Source: Salzgitter.

7 Source: World Steel, see [http://www.worldsteel.org/pictures/storyfiles/Past%20top%20producers%202009.pdf](http://www.worldsteel.org/pictures/storyfiles/Past%20top%20producers%202009.pdf)
39. On the German market, its main market, Salzgitter AG has the following market shares for high-alloy flat steels:

- ~ 10 % in the automotive industry;
- < 5 % in mechanical engineering;
- < 5 % in the household equipment manufacturing.

40. The potential sales volumes in Germany per year, following the first five years of the introduction of HSD steel for the […] processing industries would be the following:

- […];
- […];
- […].

41. Based on the total volume of steels produced, the share of the HSD steels on the EU market would be below 1% (between 0.08% and 0.67%).

42. According to the German authorities, the Herfindahl-Hirschman Index (HHI) for high-alloy steels in the European market (EU-27) is as follows:

\[
\begin{align*}
\text{Market Share (Square)}_{\text{ArcelorMittal}} &= 25 \times 25 = 625 \quad (25 \%) \\
\text{Market Share (Square)}_{\text{ThyssenKrupp}} &= 15 \times 15 = 225 \quad (15 \%) \\
\text{Market Share (Square)}_{\text{Corus}} &= 15 \times 15 = 225 \quad (15 \%) \\
\text{Market Share (Square)}_{\text{Severstahl}} &= 10 \times 10 = 100 \quad (10 \%) \\
\text{Market Share (Square)}_{\text{Salzgitter AG}} &= 5 \times 5 = 25 \quad (5 \%)
\end{align*}
\]

\[
HHI_{\text{total volume_high-alloy_Europe}} = \sum \text{Market Share (Square)} = 1200 \text{ to } 1350\]

3. ASSESSMENT

a. Existence of State aid

43. A measure constitutes State aid under Article 107(1) of the TFEU if it fulfils four conditions. Firstly, the funding comes from the state or from State resources. Secondly, the measure confers an advantage to certain undertakings or economic activities. Thirdly, the measure is selective. Fourthly, the measure has the potential to affect trade between Member States and distorts competition in the common market.

44. The aid to the beneficiary fulfils all the conditions mentioned above. The aid is funded by the budget of the Federal Republic of Germany and the aid confers an advantage to the beneficiary by providing funds which he would not have obtained under normal market conditions. The aid is selective since it is granted only to the beneficiary. It has the potential to affect trade between Member States and to distort competition because

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8 The HHI is not fully accurate because it is based on 70% of the market. However, since the other market players would all have a market share below 5%, the total HHI cannot be superior to \(1200 + 6 \times 25 = 1350\).
the beneficiary is active in a sector where trade between Member States takes place. The aid granted to the beneficiary thus constitutes State aid pursuant to Article 107(1) of the TFEU.

b. Lawfulness of the aid

45. Germany confirmed to the Commission that the payment of the aid is subject to the approval by the European Commission. Therefore Germany has fulfilled its obligation according to Article 108(3) of the TFEU by notifying the aid measure before its implementation.

c. Compatibility of the aid

46. The objective of the aid is environmental protection since the aid aims at reducing the energy consumption in the process of producing steel.

47. Investment aid enabling undertakings to achieve energy savings may be considered compatible with the common market within the meaning of Article 107(3)(c) of the TFEU (point 94 EAG).

48. According to the definition provided in point 70 (2) of the EAG, energy-saving measures include any action which enables undertakings to reduce the amount of energy used in particular in their production cycle, thus increases the level of environmental protection. Accordingly, the aid will be assessed on the basis of chapter 3.1.5 of the EAG (aid for energy saving). Investment aid, where the aid amount exceeds EUR 7.5 million for one undertaking, is subject to a detailed assessment (point 160 b, EAG). Further to examining the incentive effect and the necessity of aid on the basis of chapter 3.2 of the EAG, a detailed assessment of the compatibility of the aid (chapter 5 of the EAG) was carried out.

49. As a matter of principle, the rules for the detailed assessment of the Environmental Aid Guidelines lay down that the detailed assessment will be conducted on the basis of the positive and negative elements of the aid in questions. As regards the positive effect, the environmental aid must address a clearly identified market failure, have an incentive effect and be proportionate. The negative impact of the aid on competition and trade must be limited. Compliance of aid with Environmental Aid Guidelines is to be verified by balancing the positive and negative elements.

i. Common objective and market failure

50. According to point 167 of the EAG, the Commission will verify whether 'State aid is targeted at [a] market failure by having a substantial impact on environmental protection'. In this context, the Commission paid particular attention to the expected contribution of the measure to environmental protection.

51. Since the measure would generate substantial energy savings in a specific production process for steel products, the objective of the aid is clearly targeted on environmental protection. Although the investment allows consumers to use the improved (lighter) finished products (e.g. in cars) and generate further energy savings, such indirect effects are not taken into account. The reason is that firstly these indirect effects are not directly
linked to the measure and secondly similar savings would be generated as well in the counterfactual scenario.

52. On the one hand, it may be argued that the market failure is limited since European steel producers will specialize with or without aid in premium steels such as the HSD steels to achieve a comparative advantage at global level. Additionally, the quality of the HSD steels produced under the DSC process will be higher than under the counterfactual process, since the latter would require more monitoring according to the beneficiary to reach the same product quality. In addition, the notified project has a potential for further process improvement and already provides energy savings.

53. However, on the other hand, it seems that the market potential is still to be established and that the DSC process therefore involves higher risks due to its largely higher investment. Therefore it is probable that without the aid the beneficiary would prefer an investment in the ESR production process, which is characterized by a higher profitability in spite of higher energy consumption. Irrespective of this, without the aid, the DSC production process would not reach the minimum investment threshold and would therefore not be launched by the beneficiary.

54. Therefore, the Commission considers that there are clear indications for a market failure justifying State aid to improve environmental protection by this more environmentally friendly investment. Only with the aid, Salzgitter would implement the DSC technology with its positive impact on energy consumption and thus on the environment.

ii. Appropriate instrument

55. In line with points 169 and 170, the Commission assessed as well whether State aid is an appropriate instrument to achieve the objective of environmental protection aimed by the measure. According to the information provided by the German authorities, it seems that no regulatory framework provides for the investment in HSD steels. The production of steel sheets by the counterfactual ESR process would also comply with the current regulatory framework.

56. According to Germany, it is not possible to use a regulatory instrument to achieve the same result in terms of environmental protection as with the aid. The Commission takes into account that Germany could only set certain standards but not impose a specific technology upon steel producers. However, standards may provide a less efficient incentive for further improving a given technology compared to the aid.

57. Therefore in the current situation, it can be concluded that investment aid constitutes an appropriate instrument to obtain the objective of environmental protection, given that less distortive instruments not involving aid are not available or may not achieve the same results.

iii. Incentive effect and necessity of aid

58. On the basis of the information submitted, the beneficiary applied for aid to the German authorities before the start-up of the project. Therefore, according to point 143 of the EAG, the aid may provide an incentive for a more environmentally friendly behaviour, if all other conditions as mentioned below are met.
59. According to point 171 of the EAG, 'State aid must result in the recipient changing its behaviour to increase the level of environmental protection'. The German authorities have substantiated that the project would not be implemented with an IRR of 10.98% (notified project without aid), and that it would be realised with an IRR of 14.6% (aid scenario), which corresponds to a payback period below 10 years. Salzgitter GmbH has submitted internal financial guidelines, which are a transparent document applied by the beneficiary to its investment projects, demonstrating that the beneficiary refuses investments whose IRR is below 14%. The German authorities also presented examples of approved investment projects with IRR above 14% over the 2006-8 period. In the case at hand, involving a new production technology, which cannot easily be compared with other investments usually realized by the beneficiary, the Commission can accept the 14.6% estimated profitability as a rate below which it can be assumed that Salzgitter GmbH will not realize the notified investment. Additionally, the Commission considers that this rate does not significantly differ from profitability rates applied in the steel industry. Therefore, on the basis of the available information and for the case at hand, the Commission considers that the 14% threshold corresponds to a relevant internal investment threshold and that the aid results in the beneficiary being able to reach it, thus allowing the investment to go through.

60. In the profitability calculations, the Commission notes that, following the approval of a revised EU ETS Directive for the period after 2013, where a tighter CO2 cap aims to implement the EU emissions reduction target of 20% reduction of CO2 emissions as compared with year 1990, a EU CO2 allowance price of EUR 30 per tCO2 for the period as from 2013 was assumed in a cost efficient reference scenario with redistribution of non-ETS targets and with the impact of JI CDM credits. This price which is significantly above the prevailing CO2 price at the moment of this decision was part of the modeling results for the policy options in the Commission's impact assessment accompanying the Commission's proposal of the revised EU ETS. In the view of lack of persistent spot market data regarding CO2 price after 2013, the assumption of EUR 30 per tCO2 is deemed to be most consistent with the analyzed options that were put in place in the view of the EU ETS Directive and most resembles the actual legislation that has been adopted. However, in the case at hand, the impact of EU ETS allowance savings is limited (e.g. on the profitability), since the total corresponding costs are EUR 0.7 and 4.4 million over the whole lifetime of the DSC and ESR investments respectively (2011-21), as compared to total operating costs of EUR 193.0 and 258.1 million respectively.

61. The German authorities also underlined that aid would enable the payback period project to go below 10 years; so is the normal lifetime of the installation as well. The Commission considers that it is likely that the aid is necessary for the project to have a payback period below its lifetime and thus materialise.

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9 See N 450/2009 – Top Gas Recycling (TGR) Project - Aid to Arcelor Mittal Eisenhüttenstadt GmbH.
10 Further options included cost efficient reference scenario with EUR 39 per tCO2, redistribution of non ETS targets, no CDM credits scenario with EUR 43 per tCO2 and redistribution of the non ETS targets, no CDM + redistribution of the renewables targets scenario no RES trade with EUR 47 per tCO2. The purpose of the modeling was not to estimate the carbon price, but the impacts from different policy options. For details see [http://ec.europa.eu/energy/climate_actions/doc/2008_res_ia_en.pdf](http://ec.europa.eu/energy/climate_actions/doc/2008_res_ia_en.pdf).
11 Different analysts have different expectations about the market price of EU allowances for CO2 emissions and the price of EUR 30 per tCO2 is not inconsistent with some of this expectations.
12 This cost calculation is conservative as it considers the EUR 30 per tCO2 price as from 2011, therefore even before the third EU ETS trading period starts in 2013, and is likely to overestimate the EU ETS allowance price before 2013. A calculation including the EUR 30 per tCO2 assumption only as from 2013 would have resulted in a lower impact of EU ETS allowance savings on profitability.
62. Taking into account point 146 (a) and 172 (a) of the EAG, the Member State must prove that without the aid, in the counterfactual situation, the more environmentally friendly alternative would not have been retained\(^{13}\). For this purpose, it must provide information demonstrating that the counterfactual situation is credible. In absence of aid, the German authorities have indicated that the beneficiary would not invest in the DSC but in the ESR technology. According to the German authorities, the ESR production technology will deliver an IRR of 54.9% and NPV of EUR 41.0 million, while taking into account the costs of EU ETS certificates. The counterfactual situation appears as credible since it even generates a higher rate of return as compared to the notified investment, even after taking aid to the notified investment into account. It also seems that the counterfactual investment would comply with the regulatory framework in place for this kind of steel production.

63. The notified project will increase the level of environmental protection as compared to the counterfactual scenario, since the DSC production process will generate significant energy savings as compared to the ESR process. Therefore there is an expected environmental effect linked to the change in behaviour, in line with point 172(b)(i) of the EAG.

64. As for the production advantages, the above mentioned profitability calculations do not include a valuation of the time advantage which the aid may grant to SZFG over its competitors in case the technology is successful. It does not include either the image value attached to an environmentally friendly production process. Therefore, the investments include some advantages which are not taken into account in the calculation of NPV. However, the beneficiary specified that the residual value of the project is equal to zero after its 10-year lifetime, and that further investment will be needed after this demonstration period. Overall, the Commission takes the view that there will not be any significant production advantage linked to the notified projects in terms of increased capacity (the project represents less than 1% of the beneficiary's total steel production capacity), productivity, cost reductions or quality for the beneficiary (the notified demonstration project will only concern HSD steels and is not likely to improve the conventional steel production). Therefore the incentive effect does not seem to be lower due to production advantages (point 172(c) of the EAG).

65. Competitive pressure to maintain a high level of environmental protection, due to product image and the labelling of production methods, does not appear very strong in the steel industry currently since the environmentally friendly image normally does not play a strong role yet for steel products. Although steel is an energy intensive sector and is therefore incentivised to develop energy saving production processes, the notified project is innovative and only involves the testing of a new technology at a limited scale in terms of steel production. Therefore the aid seems to result in a higher level of environmental

\(^{13}\) Point 81(b) of the EAG reads: *The correct counterfactual is the cost of a technically comparable investment that provides a lower degree of environmental protection (corresponding to mandatory Community standards, if they exist) and that would credibly be realised without aid ('reference investment'). Technically comparable investment means an investment with the same production capacity and all other technical characteristics (except those directly related to the extra investment for environmental protection). In addition, such a reference investment must, from a business point of view, be a credible alternative to the investment under assessment*.  
Point 146(a) of the EAG reads: *[the Member State concerned must provide information demonstrating] a) that the counterfactual situation is credible*.  
Point 172(a) of the EAG reads: *counterfactual situation: evidence must be provided about the specific action(s) that would not have been taken by the undertaking without the aid, for instance, a new investment, a more environmentally friendly production process and/or a new product that is more environmentally friendly*.  

35
protection as compared to normal behaviour in the steel market, in line with point 172(d) of the EAG.

66. The Commission has commissioned a study which will examine potential eco-design requirements for industrial furnaces, which results may be taken into account in a future Eco-design Regulation. However, the Commission is not aware of possible future mandatory standards which the notified project would already seek to target. Therefore the incentive effect is not reduced by this aspect (point 172(e) of the EAG).

67. The notified investment runs the risk of being less profitable than expected, as shown in particular by the significant production losses under the DSC process as compared to the ESR process (30% versus 20% during the first year of operations), which results in the incentive effect of the aid being higher (point 172(f) of the EAG).

68. The level of profitability over the lifetime over which the project is fully depreciated (10 years) is not negative but will be 10.98%, i.e. below the 14% internal investment threshold without aid, as indicated above for those advantages taken into account in the NPV calculations. With the aid, the profitability will be above the 14% threshold (14.6%). This reinforces the incentive effect (point 172(g) of the EAG).

69. It appears that the less environmentally friendly alternative, the counterfactual or "business as usual" scenario, would provide a better performance in terms of IRR and NPV. However, other elements which are not taken into account in the profitability calculations may explain why the beneficiary would still opt for the notified HSD project. For example, as mentioned above the notified project may provide a green image to the beneficiary, would require less monitoring to achieve a high quality level and may allow developing a certain know-how, which positive effects are not possible to quantify.

70. On balance, the project without the aid is not sufficiently profitable over the lifetime of the investment. However, the aid provides the necessary incentive for carrying out the more environmentally friendly project instead of a conventional process. Accordingly, it can be concluded that aid is necessary and provides an incentive effect.

iv. Proportionality of aid

71. It order to declare the aid proportional the Commission first conducts the analysis of eligible extra investment costs necessary to achieve a higher level of environmental protection and calculated for the first five years of operating of the plant, net of all operating benefits and of all operating savings related to the extra investment as described in points 80 to 82 of chapter 3 of the Guidelines. The definition of operating benefits (point 70(20) applicable to chapter 3 of the Guidelines) establishes that the proceeds from the CO2 certificates under EU ETS do not need to be taken into account when establishing the eligible costs. In the next step the aid amount established on the basis of points 80 to 82 needs to be re-assessed in respect to its accuracy as required by the detailed assessment of point 174, chapter 5 of the EAG.

72. With regard to the calculation of eligible costs, the Commission will only consider the costs related to the implementation of the first phase of the project without the Inline Rolling technology. Indeed, the notified investment is a stand-alone project which will result in HSD steels being put on the market, irrespective of a potential introduction of Inline Rolling later on. Additionally, according to Germany, the upgrade and expansion of
the process through Inline Rolling could not be directly implemented since it requires additional investment of at least of EUR 200 million.

Assessment of proportionality under chapter 3 of the EAG

73. On the basis of calculations pursued in accordance with points 80 to 82 of the Guidelines, Germany showed that the net extra costs of the more environmentally friendly installation amount to EUR 58.7 million of additional investment costs and with regard to the operational cost and benefits to an additional EUR 7.7 million for the first five years of operations (including CO2 cost savings). This makes in total EUR 48.8 million environmental net extra costs as calculated on the basis of points 80 to 82 of the EAG.

74. Taking into account the large amount of extra cost, not undertaking the investment in the DSC but introducing the ESR, appears to be a credible alternative in the meaning of point 81 of the EAG. Although the ESR does not fully consist in a technically comparable investment - the ESR may result in a slightly lower quality of the end product - it comes rather close to a comparable investment, which however provides a substantially lower degree of environmental protection. Based on the cost calculation, it appears that this counterfactual investment would credibly be realised, if the aid was not granted.

75. Whereas the maximum aid intensity for measures targeting energy saving may achieve up to 60% for large enterprises, the envisaged aid amount of EUR 19.1 million equals only 44% of the net extra costs of EUR 43.0 million. Consequently the aid intensity appears to be in line with the thresholds set in point 96 of the EAG.

Assessment of proportionality under chapter 5 of the EAG – detailed assessment

76. To further conclude that the aid is proportional, the aid amount of 19.1 million Euro needs to be examined in a detailed assessment to analyse if the eligible costs have been accurately calculated and the aid is limited to the minimum (point 174 of the EAG).

77. The calculation of the eligible costs seems accurate on the basis of the information available, as the German authorities provided detailed evidence about the costs and their calculations (see point 174(a) of the EAG).

78. On the basis of the information available, the project does not appear to exclude companies that may compete with projects to address the same environmental objective (see point 174(b) of the EAG). However, on the negative side of the balancing, it should be noted that Germany did not select this project via an open selection process.

79. The aid intensity of 44% appears to be in line with the maximum aid intensity set in the EAG. Furthermore, Germany has submitted evidence that the IRR will not significantly be above the threshold necessary for the approval of the projects and that as a result aid will guarantee a payback period slightly below 10 years, which corresponds to the lifetime of the investment. The Commission acknowledges that the profitability calculations depend on several assumptions and lead to approximated results. However, based on the information submitted and taking these uncertainties into account, the Commission considers that the aid is limited to the minimum in line with point 174(c) of the EAG.
80. Accordingly, on balance, the Commission considers that the aid is proportional.

v. Effects on competition and trade

81. As regards the relevant product market, in the case at hand it could be defined as the total steel market, since conventional steel and HSD steel are substitutes from the point of view of end users (e.g. car manufacturers). Alternatively, a narrower market could be defined for high-alloy steel, of which HSD steel would be a segment. HSD steels are an innovative product which has not been put on the market yet. Although future substitution patterns can not yet be defined with absolute certainty, the information available does not suggest that HSD steels would form a relevant product market in themselves.

82. As for the relevant geographic market, the Commission could either consider the worldwide steel market since steel sales take place on a worldwide basis, or the EU steel market in order to assess the effects on intra Community trade. Additionally, the beneficiary's activities focus on the German market. The Commission will assess competition distortions in particular for the high-alloy steel market in the EU, as it corresponds to a narrow market definition where the competition effects are likely to be the most significant and as it will display potential effects at the EU level in the framework of the State aid assessment. The Commission will nevertheless also assess the competition effects with alternative market definitions.

83. The Commission mainly considered the competitive position of Salzgitter AG, which is the mother company of the beneficiary, Salzgitter Flachstahl GmbH. Salzgitter GmbH only is producing high-alloy steel within the Salzgitter AG group.

84. As for the likelihood that the beneficiary will increase or maintain sales as a result of the aid (see point 177 of the EAG), the Commission notes that the product is not yet offered to potential customers and that it is still uncertain how the demand for HSD steels may develop. So far, the project is only at a testing stage and will result in limited steel quantities being produced. Only if it turns out that HSD steel consumers use and buy this new product, which still needs to be demonstrated, effects on the beneficiary's sales (and production unit costs) may appear. The Commission also considers that the quality of steel will only slightly change due to the different technology used for its production i.e. with DSC or with ESR. Therefore the costs savings resulting from the aid will only have a small impact on the beneficiary's profits and no significant impact on production unit costs is expected as required by point 177 (a).

85. Additionally, steel consumers do not seem to mainly rely on a more environmentally-friendly production process (see point 177(b) of the EAG).

86. Finally, the beneficiary may gain a first-mover advantage (see point 177(c) of the EAG), but other competitors already develop similar sophisticated steels; moreover, the Salzgitter technology, if successful, will be licensed to other competitors by the company which constructs the Salzgitter production line.

Dynamic incentives/crowding out

87. When assessing the aid in line with point 178 of the EAG, the Commission considers that the aid will not crowd out investments in other Member States or distort dynamic
incentives because other steel producers are trying to develop similar concepts to produce special steels containing high quantities of manganese, which may compete with HSD steels. Although no further details are available, according to Germany, these installations would be less environmentally friendly. However, the risk of distorting dynamic incentives and crowd out competitors seems limited as the HSD technology developed by the beneficiary would be licensed to other market players by the company building the Salzgitter production line (points 179(g) and 179(i) of the EAG).

88. As for the other points:

− The aid amount is fairly limited as compared to the beneficiary's activities (see point 179(a) of the EAG)
− It is a one-off investment aid (see points 179(b), (c) and (d) of the EAG);
− It is not meant to meet new Community standards expected to be adopted in the foreseeable future (see point 179(e) of the EAG);
− There is no mandatory requirement concerning this production technology (see point 179(f) of the EAG);
− The risk of cross-subsidisation is fairly limited since the project would involve the production of 25,000 t steel a year to be compared with Salzgitter GmbH 2007 steel production of 4,300,000 tons (see point 179(g) of the EAG);

Maintaining inefficient firms afloat

89. According to the information provided, Salzgitter GmbH, a subsidiary of the Salzgitter AG group, does not seem to be a firm with a low level of efficiency, or to be in poor financial health. In any case, the notified aid would not allow the firm to adapt to more environmentally standards (see point 180 of the EAG).

Market power/exclusionary behaviour

90. According to point 181 of the EAG, it is unlikely that competition concerns related to market power arise in markets where each aid beneficiary has a market share below 25% and in markets whose HHI is below 2,000\(^{14}\). The 2008 or 2009 market shares of Salzgitter AG group are below 1%, 4% and 17% in the worldwide, European and German steel markets respectively, and below 5% and 10% in the European and German high-alloy steel markets respectively, as indicated above. Additionally, an estimate of the HHI for high-alloy steels in the European market is between 1200 and 1350\(^{15}\). Therefore the Commission can take the view that it is not a concentrated market.

91. The aid is not likely to prevent new entry on the market since the beneficiary is a small market player on the high-alloy or total steel markets (see point 182(b) of the EAG) and does not benefit from a dominant position (see point 182(a) of the EAG), be it at German, EU or worldwide levels.

\(^{14}\) See section 5.2.2.3 of the EAG.
\(^{15}\) The HHI is not fully accurate because it is based on 70% of the market. However, since the other market players would all have a market share below 5%, the total HHI cannot be superior to 1200 + 6*25 = 1350.
92. Product differentiation (point 182(c) of the EAG) to the detriment of consumers could occur through HSD steels, but the volumes are fairly limited and the buyer power of the main consumers (e.g. car manufacturers) significant. Therefore negative effects are unlikely in this respect.

93. Similarly, the strong buyer power\(^\text{16}\) of the car manufacturers limits the possibilities of the high-alloy flat steel producers to adopt discriminative pricing strategies or to implement exclusionary behaviour. In the Commission's view, it is unlikely that SZFG could obtain a dominant position on the high-alloy flat steel market as a result of the aid (see point 182(d) of the EAG).

Effects on trade and location

94. The Commission notes that aid is only granted to one beneficiary and will not result in the Salzgitter territory benefitting from more favourable production conditions, thus incentivizing other companies to relocate in the same territory (see point 183 of the EAG).

95. In addition, there is no evidence that the beneficiary considered other locations for its investment, and that overall the project represents a very minor share of the beneficiary's production activities, thus having limited effects on trade and competition (see points 184 and 185 of the EAG).

\subsection*{d. Balancing and conclusion}

96. The Commission considers that the aided project has environmental benefits. The distortion of competition is expected to be limited and the aid has an incentive effect. Further the aid meets the formal criteria of proportionality. The aid intensity of 44% is below the maximum aid intensity allowed of 60% of the eligible costs (with EU ETS allowance savings not being accounted for in line with chapter 3 of the EAG). When subject to a detailed assessment of proportionality, the Commission notes that the IRR of the aided project (including EU ETS allowance cost savings) is close to the minimum threshold requested by the beneficiary (i.e. 14%), which would not have been reached without the aid. Even though the counterfactual investment offers a higher profitability level, it is credible that the beneficiary will invest in the aided project with a view to market potential and further potential for process improvement.

97. On the basis of the information available, the effects on trade and location seem limited, since in the counterfactual scenario the beneficiary would have invested in an alternative production process resulting in a similar capacity at the same location (Section 5.2.2.4 EAG). Regarding the distortive effects of the aid, the Commission finds that the negative effects of the measure on competition and trade are outbalanced by the positive effects of the aid so that the overall balance of the measure is positive.

98. Accordingly, the Commission considers that the aid to Salzgitter Flachstahl GmbH for energy saving for light steel production by direct strip casting technology for light steel (DSC) is compatible with Article 107 (3) (c) TFEU.

\textsuperscript{16} See point 182 d) of the EAG.
4. **DECISION**

99. The Commission has accordingly decided not to raise objections to the notified measure, because the aid can be found compatible with the internal market in accordance with Article 107 (3) (c) TFEU and Article 61 (3) (c) of the EEA Agreement.

100. The Commission reminds the German authorities that, in accordance with Article 108 (3) TFEU, plans to refinance, alter or change this aid have to be notified to the Commission pursuant to provisions of the Commission Regulation (EC) No 794/2004 implementing Council Regulation (EC) No 659/1999 laying down detailed rules for the application of Article 93 of the EC Treaty (now Article 108 TFEU) (OJ L 140, 30.4.2004, p.1).

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Your request should be sent by registered letter or fax to:

- European Commission
- Directorate-General for Competition
- Directorate for State Aid
- State Aid Greffe
- B-1049 Brussels
- Fax No: (0032) 2-296.12.42

For the Commission

- **Joaquín ALMUNIA**
- Vice-President of the Commission