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**Datasheet for the decision  
of 8 January 2016**

**Case Number:** T 0562/12 - 3.2.07  
**Application Number:** 04729213.1  
**Publication Number:** 1630244  
**IPC:** C23C2/06, C23C2/26, B21D22/02  
**Language of the proceedings:** EN

**Title of invention:**

HOT PRESS FORMED PRODUCT AND METHOD FOR PRODUCTION THEREOF

**Patent Proprietors:**

Nippon Steel & Sumitomo Metal Corporation  
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Toyoda Iron Works Co., Ltd.

**Opponent:**

Benteler Automobiltechnik GmbH

**Headword:**

**Relevant legal provisions:**

EPC 1973 Art. 54(3), 54(4)  
EPC Art. 56, 83, 84, 123(2)  
RPBA Art. 12(4), 13(1), 13(3)

**Keyword:**

Novelty -

main request and first to fourth auxiliary requests (no) -

fifth auxiliary request (yes)

Third auxiliary request - admitted (yes)

Late-filed fifth auxiliary request - admitted (yes)

Inventive step - fifth auxiliary request (yes)

Sufficiency of disclosure - fifth auxiliary request (yes)

Amendments - fifth auxiliary request - clarity (yes) - added-  
subject-matter (no)

**Decisions cited:**

G 0001/03, G 0002/03, G 0002/10, G 0003/14

**Catchword:**



**Beschwerdekammern  
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Case Number: T 0562/12 - 3.2.07

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.07**  
**of 8 January 2016**

**Appellant II:**  
(Patent Proprietors )

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**Decision under appeal:**

**Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
2 January 2012 concerning maintenance of the  
European Patent No. 1630244 in amended form.**

**Composition of the Board:**

<b>Chairman</b>	H. Meinders
<b>Members:</b>	G. Patton
	C. Brandt

## **Summary of Facts and Submissions**

- I. Appellant I (opponent) lodged an appeal against the interlocutory decision maintaining European patent N° 1 630 244 in amended form.

Appellant II (patent proprietors) likewise lodged an appeal against this interlocutory decision.

- II. The opposition was filed against the patent as a whole and was based on Article 100(a) EPC (lack of novelty and/or inventive step), Article 100(b) EPC (insufficiency of disclosure) and Article 100(c) EPC (inadmissible amendments).

In the opposition proceedings, appellant II requested to maintain the patent on the basis of a main request (=patent as granted) or one of the three auxiliary requests filed with letter dated 21 October 2011. The Opposition Division held that the product of claim 1 of the main request and the first and second auxiliary requests did not fulfil the requirements of novelty with respect to document D4, state of the art pursuant to Article 54(3) EPC. The third auxiliary request was found to meet the requirements of the EPC.

- III. With its statement setting out the grounds of appeal appellant II requested the maintenance of a patent on the basis of the main request (=patent as granted) or of one of the first, second and third auxiliary requests underlying the impugned decision and filed again with this statement, or of the fourth auxiliary request filed with the reply to the appeal of appellant I. Oral proceedings were subsidiarily requested in case any of the requests would not be allowed.

Appellant I requested the revocation of the patent and, subsidiarily, oral proceedings.

- IV. The Board provided its preliminary non-binding opinion annexed to the summons for oral proceedings that the subject-matter of the independent claims of all requests could be lacking novelty vis-à-vis document D4 for the cited common Contracting States DE FR GB.

To the contrary, lack of inventive step objections based on D5/D5a as closest prior art were regarded as not convincing. In the absence of counter-argumentation from appellant II, the lack of inventive step objections based on D6/D6a as closest prior art could be followed.

The other grounds for opposition based on Articles 100(b) and (c) EPC seemed not prejudicial to the maintenance of the patent.

- V. In reaction, appellant II filed with letter dated 8 December 2015 new third, fourth, fifth and sixth auxiliary requests. The newly filed third auxiliary request corresponded to the former fourth auxiliary request filed with the reply and the newly filed fourth auxiliary request corresponded to the former third auxiliary filed with the statement setting out the grounds of appeal.

During the oral proceedings held on 8 January 2016, the following issues, *inter alia*, were discussed:

Main request (patent as granted) and first and second auxiliary requests:

- Novelty of the subject-matter of claim 1 over the teaching of D4.

Third auxiliary request:

- Admissibility in the proceedings;  
- Fulfilment of the requirements of Article 123(2) EPC;  
and  
- Novelty of the subject-matter of claim 1 over the teaching of D4.

Fourth auxiliary request (patent as maintained by the opposition division):

- Novelty of the subject-matter of claim 1 over the teaching of D4.

Fifth auxiliary request:

- Admissibility in the proceedings;  
- Fulfilment of the requirements of Article 123(2) EPC;  
- Sufficiency of disclosure;  
- Clarity objection to claim 1;  
- Novelty of the subject-matter of claim 1 over the teaching of D4; and  
- Inventive step of the subject-matter of claim 1.

Appellant II filed an adapted description for the fifth auxiliary request (pages 4 and 11) to which neither appellant I nor the Board had objections.

VI. At the end of the oral proceedings, before announcing the present decision, the requests were as follows:

Appellant I requested that the decision under appeal be set aside and that the European patent No. 1 630 244 be revoked. Appellant I further requested that the appeal of appellant II be dismissed.

Appellant II requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request (patent as granted), or, alternatively, on the basis of any of the first or second auxiliary request filed with the statement setting out the grounds of appeal dated 30 April 2012, or on the basis of any of the third to sixth auxiliary request filed with letter dated 8 December 2015. Appellant II further requested that the appeal of appellant I be dismissed.

VII. The following documents of the opposition proceedings are of relevance for the present decision:

D3: WO-A-03/035922;

D4: EP-A-1 439 240;

D5: JP-A-2000 054161 (Patent Abstracts of Japan and full publication);

D5a: Computer translation in English of D5, 10 pages;

D6: JP-A-2001 353548 (Patent Abstracts of Japan and full publication); and

D6a: Computer translation in English of D6, 7 pages.

VIII. Claim 1 of the **main request** (=patent as granted) reads as follows:

"A hot press-formed article formed by hot press forming of a zinc-based plated steel material, the formed article having on its surface a zinc-based plating layer which comprises an iron-zinc solid solution phase and which has a thickness of at least 1  $\mu\text{m}$  and at most 50  $\mu\text{m}$ , and a zinc oxide layer atop the zinc-based plating layer, having an average thickness of at most 2  $\mu\text{m}$ , other than such an article from which the zinc oxide layer has been removed by shot blasting."



Claim 4 of the **main request** (=patent as granted) reads as follows:

"A method of manufacturing a hot press-formed article according to claim 1 including a step of heating to 700 to 1000°C and then hot press forming a zinc-based plated steel material to form a hot press-formed article having a zinc-based plating layer comprising an iron-zinc solid solution phase and a zinc oxide layer atop it, and a step of reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is the outermost layer of the resulting hot press-formed article is at most 2 µm, other than removing the zinc oxide layer by shot blasting."

Claim 1 of the **first auxiliary request** reads as follows (in bold the amendments with respect to claim 1 of the main request; emphasis added by the Board)

"A hot press-formed article formed by hot press forming of a zinc-based plated steel material, the formed article having on its surface a zinc-based plating layer which comprises an iron-zinc solid solution phase and which has a thickness of a least 1 µm and at most 50 µm, and a zinc oxide layer atop the zinc-based plating layer, having an average thickness of at most 2 µm, other than such an article **from which obtainable by removing** the zinc oxide layer **has been removed** by shot blasting."

Claim 4 of the **first auxiliary request** is identical to claim 4 of the main request.

Claim 1 of the **second auxiliary request** reads as follows (in bold the amendments with respect to claim 1 of the main request; emphasis added by the Board):

"A hot press-formed article ~~formed by hot press forming of a zinc-based plated steel material, the formed article~~ having on its surface a zinc-based plating layer which comprises an iron-zinc solid solution phase and which has a thickness of at least 1  $\mu\text{m}$  and at most 50  $\mu\text{m}$ , and a zinc oxide layer atop the zinc-based plating layer, having an average thickness of at most 2  $\mu\text{m}$ , ~~other than such an article from which the zinc oxide layer has been removed by shot blasting wherein the hot press-formed article is obtainable by hot press forming a zinc-based plated steel material to form a hot press-formed article having a zinc-based plating layer comprising an iron-zinc solid solution phase and a zinc oxide layer atop it, and a step of reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is the outermost layer of the resulting hot press-formed article is at most 2  $\mu\text{m}$ , other than removing the zinc oxide layer by shot blasting.~~"

Claim 4 of the **second auxiliary request** is identical to claim 4 of the main request.

Claim 1 of the **third auxiliary request** reads as follows (in bold the amendments with respect to claim 1 of the main request; emphasis added by the Board)

"A hot press-formed article formed by hot press forming of a zinc-based plated steel material, the formed article having on its surface a zinc-based plating layer which comprises an iron-zinc solid solution phase and which has a thickness of at least 1  $\mu\text{m}$  and at most

50  $\mu\text{m}$ , and a zinc oxide layer atop the zinc-based plating layer, having an average thickness of at most 2  $\mu\text{m}$ , other than such an article from which the zinc oxide layer has been removed ~~by shot blasting.~~"

Claim 4 of the **third auxiliary request** reads as follows (in bold the amendments with respect to claim 4 of the main request; emphasis added by the Board)

"A method of manufacturing a hot press-formed article according to claim 1 including a step of heating to 700 to 1000°C and then hot press forming a zinc-based plated steel material to form a hot press-formed article having a zinc-based plating layer comprising an iron-zinc solid solution phase and a zinc oxide layer atop it, and a step of reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is the outermost layer of the resulting hot press-formed article is at most 2  $\mu\text{m}$ , other than removing the zinc oxide layer ~~by shot blasting.~~"

Claim 1 of the **fourth auxiliary request** (as maintained by the opposition division) reads as follows (in bold the amendments with respect to claim 4 of the main request; emphasis added by the Board):

"A method of manufacturing a hot press-formed article ~~according to claim 1~~ **having on its surface a zinc-based plating layer which comprises an iron-zinc solid solution phase and which has a thickness of at least 1  $\mu\text{m}$  and at most 50  $\mu\text{m}$ , and a zinc oxide layer atop the zinc-based plating layer, having an average thickness of at most 2  $\mu\text{m}$ , the method** including a step of heating to 700 to 1000°C and then hot press forming a zinc-based plated steel material to form a hot press-formed

article having a zinc-based plating layer comprising an iron-zinc solid solution phase and a zinc oxide layer atop it, and a step of reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is the outermost layer of the resulting hot press-formed article is at most 2  $\mu\text{m}$ , other than removing the zinc oxide layer by shot blasting."

Claim 1 of the **fifth auxiliary request** reads as follows (in bold the amendments with respect to claim 1 of the fourth auxiliary request; emphasis added by the Board):

"A method of manufacturing a hot press-formed article having on its surface a zinc-based plating layer which comprises an iron-zinc solid solution phase and which has a thickness of at least 1  $\mu\text{m}$  and at most 50  $\mu\text{m}$ , and a zinc oxide layer atop the zinc-based plating layer, having an average thickness of at most 2  $\mu\text{m}$ , the method including a step of heating to 700 to 1000°C and then hot press forming a zinc-based plated steel material to form a hot press-formed article having a zinc-based plating layer comprising an iron-zinc solid solution phase and a zinc oxide layer atop it, and a step of reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is the outermost layer of the resulting hot press-formed article is at most 2  $\mu\text{m}$ , other than removing the zinc oxide layer ~~by shot blasting.~~"

In view of the present decision the wording of claim 1 of the sixth auxiliary request is irrelevant.

IX. Appellant I argued in substance essentially as follows:

*Main request (patent as granted)*

D4 discloses all features of the product of claim 1 and also to remove the zinc oxide layer "by shot blasting or the like".

The disclaimer of claim 1: "other than such an article from which the zinc oxide layer has been removed by shot blasting" does, however, not establish novelty of the subject-matter of claim 1 vis-à-vis D4.

No feature can be identified on the surface of the disclaimed articles which would enable to distinguish them unambiguously from the remaining claimed subject-matter.

Further, the disclosure "...or the like" of D4 specifies to the skilled reader that the articles obtained by the process of D4 will not mandatorily be shot blasted to remove the zinc oxide layer. Since not disclaimed, the products of D4 in which the zinc oxide layer is removed by such other known methods are also novelty destroying, as the method for their production is not recognisable on the final products.

*First and second auxiliary requests*

The reasons given for claim 1 of the main request also apply to the claims 1 of the first and second auxiliary requests.

*Third auxiliary request*

The third auxiliary request should not be admitted in the proceedings since it could have been filed during the opposition proceedings. Its filing in appeal would amount to an abuse of the procedure. Complex discussions with respect to Article 123(2) EPC are to be held for the first time in appeal. The third auxiliary request would in any case diverge from the higher ranked requests.

The step of claim 1 to reduce the thickness of the zinc oxide layer does not specify any lower limit for the thickness after the reducing step, encompassing reducing close to zero. Hence, claim 1 of the third auxiliary request encompasses articles with a zinc oxide layer having a thickness close to zero.

However, disclaimed articles for which the zinc oxide layer has been removed "by shot blasting or the like" (in accordance with D4) also comprise an unavoidable re-grown zinc oxide layer at a thickness in the order of nanometers, i.e. also close to zero.

Therefore, the disclaimer of claim 1 still does not enable to distinguish the remaining subject-matter from the disclosure of D4.

*Fourth auxiliary request (patent as maintained by the opposition division)*

The claimed step of reducing the thickness of the zinc oxide layer does not specify any lower limit for the thickness after the reducing step. Therefore, it also encompasses reducing down to zero since removing the said zinc oxide layer by other methods than shot

blasting, such as "...or the like" as disclosed in D4, is not excluded from claim 1. Therefore, the subject-matter of claim 1 of the fourth auxiliary request is not novel over D4.

*Fifth auxiliary request*

The fifth auxiliary request should not be admitted in the proceedings since it was filed late, necessitating a discussion of new complex issues for the first time, late in appeal. There was not enough time to react to appellant II's corresponding new arguments.

The new disclaimer introduced in claim 1 excludes all existing removing means. However, "shot blasting or the like" disclosed in D4 does not cover all existing removing means so that the new disclaimer removes more than required, contravening Article 123(2) EPC.

Claim 1 is unclear due to the inconsistency between the reducing step of the zinc oxide layer, which includes reducing it down to zero, i.e. *de facto* a removing step, and the disclaimer which excludes such a removing step.

The skilled person is not able to perform the invention since he cannot recognize whether a method would fall within the claim or not.

Document D6/D6a can be regarded as the closest prior art for the subject-matter of claim 1. D6/D6a discloses all features of claim 1 except the step of "reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is the outermost layer of the resulting hot press-formed

article is at most 2  $\mu\text{m}$ , other than removing the zinc oxide layer".

In view of its associated technical effects, the problem to be solved can be seen as to provide a method for producing articles exhibiting improved coating adhesion and post-coating corrosion resistance.

The skilled person will think of the only solution at his disposal as also taught in D5/D5a to provide thinner zinc oxide layers. Applying this teaching to the method of D6/D6a he will obviously arrive at the claimed subject-matter.

D5/D5a could also be considered as a plausible closest prior art for claim 1. D5/D5a does not disclose hot press forming, nor the reducing step of the thickness of the zinc oxide layer. However, it is clear from D6/D6a that the steel sheet of D5/D5a is suitable for being hot press-formed. Further, the hot press forming step of D6/D6a inevitably provides a zinc oxide layer. Therefore, the combination of the teachings of D6/D6a and D5/D5a would lead to the claimed subject-matter in an obvious manner.

X. Appellant II argued in substance essentially as follows:

*Main request (patent as granted)*

The disclosure of D4 "...or the like" should not be taken into consideration for assessing novelty as the skilled person will not be able to directly and unambiguously derive any technical teaching from this vague wording.



The disclaimed articles covered by the disclaimer in claim 1 have identifiable structural features resulting from the process feature: "shot blasting". These features result from the impacts of the beads and provide an increase in hardness and the formation of dimples at the surface, which are not present on the articles of the remaining subject-matter, which is not shot-blasted. Since the skilled person knows how to measure these two structural features using known and usual techniques, he will be able to distinguish the articles remaining in the claim from those disclaimed. Thus, the disclaimer establishes novelty of the subject-matter remaining in claim 1 vis-à-vis D4.

*First and second auxiliary requests*

Novelty of the subject-matter of claims 1 of the first and second auxiliary requests should be acknowledged for the same reasons as given for claim 1 of the main request.

*Third auxiliary request*

The third auxiliary request was filed as a reaction to new arguments presented for the first time in appellant I's grounds of appeal. Therefore, it could not have been filed during the opposition proceedings. It was filed at the earliest stage possible in the appeal proceedings, so that there is no abuse of the procedure.

Appellant I could have brought forward its new objection with respect to admissibility in the meantime instead of waiting till the oral proceedings. It further had had sufficient time to prepare itself for

discussing the claimed subject-matter, i.e. the new disclaimer, at the oral proceedings.

The third auxiliary request is convergent with the main request and the first and second auxiliary requests.

For these reasons, the third auxiliary request should be admitted in the proceedings.

The new disclaimer now excludes from claim 1 articles obtained by the other methods as defined by "...or the like" in D4. In fact, any article obtained by a removing step is excluded from claim 1 so that only the following articles fall within the claimed range:

a) those for which the zinc oxide oxide layer lies directly within the claimed thickness range of at most 2  $\mu\text{m}$  after the hot press-forming step, by for instance controlling the parameters of the hot press forming step; and

b) those for which the zinc oxide oxide layer is reduced to within the claimed thickness range of at most 2  $\mu\text{m}$  after the hot press-forming step, but not removed.

The reasons given for claim 1 of the main request for novelty still apply for claim 1 of the third auxiliary request: the disclaimed articles obtained by "shot blasting or the like" comprise recognisable structural features not present on the remaining claimed articles. Even "...or the like" will provide recognisable features on the treated article, such as an influence on the surface properties due to abrasion.

*Fourth auxiliary request (patent as maintained by the opposition division)*

The issue discussed for the previous requests relating to the question of recognisable features between claimed and disclaimed articles does not apply any longer since claim 1 of the fourth auxiliary request concerns a method. D4 discloses a removing step, i.e. a complete removal of the zinc oxide layer, to be distinguished from a reducing step as claimed.

The disclosure of "...or the like" of D4 should not be considered for the discussion of novelty as it does not convey any direct and unambiguous technical information to the skilled person.

Therefore, novelty of the claimed subject-matter over D4 should be acknowledged.

*Fifth auxiliary request*

Regarding admissibility of the fifth auxiliary request in the proceedings, the same reasons as given for the third auxiliary auxiliary apply. The subject-matter of claim 1 was already on file more than three years ago. Enough time was available to appellant I for considering it.

The disclosure of D4 "shot blasting or the like" covers all existing removing means. As a consequence, the new disclaimer, which excludes any removing step and aims at establishing novelty vis-à-vis D4, does not remove more than necessary.

The subject-matter remaining in the claim is also directly and unambiguously derivable from the application as originally filed.

Taking account of the disclaimer, the claimed reducing step cannot reduce the zinc oxide layer thickness down to zero. In fact, the subject-matter remaining in claim 1 was already present in the claims of the patent as granted. Therefore, the new disclaimer does not introduce a non-compliance with Article 84 EPC which would not be already present in the claims of the patent as granted.

Regarding the alleged insufficiency of disclosure, the arguments put forward by appellant I relate to litigation issues, which are not relevant for assessing whether the skilled person is able to perform the claimed invention or not.

Novelty is no longer an issue. In particular, the new disclaimer enables to establish novelty vis-à-vis D4.

D6/D6a can be regarded as the closest prior art for the subject-matter of claim 1. The reducing step of the thickness of the zinc oxide layer is a distinguishing feature over D6/D6a. In view of its technical effects, the problem to be solved can be seen as to provide a method for producing articles exhibiting improved coating adhesion and post-coating corrosion resistance. The skilled person will find in D6/D6a neither the solution nor any incentive for looking for a solution. None of the available prior art documents discloses or renders obvious the claimed solution. D5/D5a does not teach towards thinner zinc oxide layers. In fact, the skilled person will think of other solutions, such as to adapt the zinc oxide layer through pretreatment and/

or to solve any possible material incompatibilities between the zinc oxide layer and the coating to be applied. Should he still consider to reduce the zinc oxide layer, he still would not have any reason to reduce it to below 2  $\mu\text{m}$ . As a result, starting from D6/D6a the skilled person will not obviously arrive at the claimed subject-matter.

D5/D5a cannot be regarded as the closest prior art since it does not concern hot press forming. Further, like D6/D6a, D5/D5a does not disclose the step of reducing the thickness of the zinc oxide layer. Thus, starting from D5/D5a the skilled person using the teaching of D6/D6a and/or his common general knowledge will not obviously arrive at the claimed subject-matter.

Inventive step should hence be acknowledged for the subject-matter of claim 1.

## **Reasons for the Decision**

### 1. *Effective date of the contested patent*

Appellant II filed a translation in English of the earliest priority document JP-A-2003-118903 (PRIO-1). The Board shares appellant II's view, not contested by appellant I, that the claimed subject-matter of the granted patent is directly and unambiguously derivable by the skilled person from PRIO-1.

As a consequence, the earliest effective date of all claimed subject-matter of the granted patent is the filing date of PRIO-1 of 23 April 2003.

This also applies to all the requests dealt with in the present decision, since they are based on subject-matter of the claims of the patent as granted.

2. *Applicable law*

Since the filing date of the contested patent is 23 April 2004 and the date of the decision of grant 5 June 2009, the application was pending on 13 December 2007, the date of entry into force of EPC 2000.

According to Article 7(2) of the Revision Act of 29 November 2000 (OJ EPO 2001, Special Edition No. 4, 50), Article 1.1 of the decision of the Administrative Council of 28 June 2001 on the transitional provisions under Article 7 of the said Revision Act (OJ EPO 2007, Special Edition No. 1 of OJ EPO 2007, 197) and Article 2 of the decision of the Administrative Council of 7 December 2006 amending the Implementing Regulations to the EPC 2000 (OJ EPO 2007, Special Edition No. 1, 89), Articles 54(3) and (4) of the version of the convention EPC 1973 in force before revision are applicable in the present case. The same applies to the Implementing Regulations of these Articles.

3. *Documents D3 and D4*

The PCT application D3 was published on 1 May 2003, i.e. after the effective date of 23 April 2003 of the contested patent, and filed on 23 October 2002, i.e. before said earliest effective date of the contested patent. It designates the EPO.

Similarly, European patent application D4 was published on 21 July 2004, i.e. after the effective date of

23 April 2003 of the contested patent, and filed on 23 October 2002, i.e. before said earliest effective date of the contested patent.

Document D4 represents the continuation in the European phase of the PCT application D3. As it appears from a file inspection of D4, D4 is declared to be a translation in English of the Japanese language PCT application D3 (see file of D4, letter of 12 December 2003, point 3, and form 1200 dated 10 December 2003).

D3 has, hence, been supplied to the European Patent Office in one of its official languages and the national fee provided for in Article 22(1) PCT or Article 39(1) PCT has been paid. The requirements of Article 158(2) EPC 1973 are thus fulfilled.

Regarding D4, the designation fees for DE, FR and GB have been paid in accordance with Rule 23a EPC 1973.

The content as filed of both documents D3 and D4 is therefore considered to be comprised in the state of the art relevant to the question of novelty, pursuant to Articles 54(3) and (4) EPC 1973 for the designated common contracting States DE, FR and GB.

Since D4 is, uncontested by appellant I, considered to be a true translation of D3, their contents are regarded as being identical. Hence, only D4 is considered in the following and any conclusion in view of D4 would also apply in view of D3.

4. *Main request (patent as granted)*

4.1 Since the Board considers that the subject-matter of claim 1 of the main request lacks novelty (see below) there is no need in this decision to deal with the question whether the main request complies with the other requirements of the EPC.

4.2 Novelty - Product claim 1

4.2.1 Appellant I contests the novelty of the subject-matter of claim 1 vis-à-vis D4.

4.2.2 D4 discloses an article formed by hot press forming of a zinc-based plated steel material, the formed article having on its surface a zinc-based plating layer and a zinc oxide layer atop the zinc-based plating layer. D4 further discloses a method of manufacturing said hot press-formed article including a step of heating to 700 to 1000°C and then hot press forming the zinc-based plated steel material (paragraphs [0032], [0046]-[0050], [0057], [0063], [0066]-[0067], [0088]-[0090], [0105], [0121]-[0122]; claims 1-3 and 6-7).

The zinc-based plating layer in the disclosure of D4 inevitably comprises an iron-zinc solid solution phase and further exhibits a thickness falling within the claimed range of at least 1 µm and at most 50 µm, taking into consideration the conversion of the disclosed coating weight expressed in g/m<sup>2</sup> into a corresponding coating thickness expressed in µm (see for instance Table 5, runs 14-17; claim 7).

According to paragraph [0105] of D4, the zinc oxide layer is removed "**by shot blasting or the like**" after the hot press forming step. The zinc oxide layer,



however, unavoidably re-grows at a thickness in the order of nanometers, i.e. within the claimed range of at most 2  $\mu\text{m}$  (contested patent, [0036]).

The above analysis of the disclosure of D4 has not been contested by the parties (see also the impugned decision, points 3.1.3 and 3.1.4).

4.2.3 The only disputed issue between the parties resides in whether the disclaimer of claim 1:

"other than such an article from which the zinc oxide layer has been removed by shot blasting"

establishes novelty of the claimed subject-matter vis-à-vis D4.

As agreed to by the parties, the term "removed" used in the claims and in D4 is to be interpreted as a **complete** removal of the layer.

4.2.4 On the expression "...or the like" found in paragraph [0105] of D4, as an alternative for removing the zinc oxide layer by shot blasting, appellant II considers that it is unclear and does not convey any technical information. Since the skilled person would not be able to directly and unambiguously derive any teaching from this vague expression, it should be disregarded in view of assessing novelty. As a consequence, it would not be necessary to also exclude this from claim 1 by a disclaimer.

4.2.5 As mentioned under point 4.2.2 above, a layer of zinc oxide with a thickness in the order of nanometers inevitably re-grows on the zinc-based plating layer of

the article of D4 after the removal by shot-blasting of the zinc oxide layer.

For appellant II this would still not lead to the situation that the disclaimed articles resulting from the process of D4 would not be distinguishable from the remaining subject-matter, in view of the surface characteristics induced by shot blasting.

Appellant II considers that the articles disclaimed from claim 1 would comprise identifiable structural features resulting from the process feature: "shot blasting". These features would concern an increase in hardness and the formation of dimples at the surface of the zinc-based plated steel material (see "surface characteristics" shown on figure C, page 6 of the statement setting out the grounds of appeal of appellant II). Articles defined by such a step of the manufacturing process would, hence, be disclaimed in claim 1.

4.2.6 As also put forward at the oral proceedings, appellant II further considers that, taking account of the disclaimer, the subject-matter remaining in product claim 1 is threefold:

a) articles for which the zinc oxide oxide layer lies directly within the claimed thickness range of at most 2  $\mu\text{m}$  after the hot press-forming step, by for instance controlling the parameters of the hot press forming step;

b) articles for which the zinc oxide oxide layer is reduced to within the claimed thickness range of at most 2  $\mu\text{m}$  after the hot press-forming step, but not removed; and

c) articles for which the zinc oxide oxide layer is removed other than by shot blasting so that its thickness after re-growth lies within the claimed range of at most 2  $\mu\text{m}$ .

4.2.7 For appellant II, shot blasting to remove the zinc oxide layer implies impacting the surface of the zinc-based plated steel material. These impacts would provide a measurable increase in hardness as well the formation of dimples at its surface. The skilled person would know how to establish these two structural features using known and usual techniques, such as surface roughness measurements, optical microscopy and/or micro-hardness measurements. Since the methods of manufacturing the three types of articles a), b) and c) remaining in the claim do not comprise shot blasting, said claimed articles would be exempt from such impacts and, hence, would not comprise said measurable structural features. As a consequence, the skilled person would be able to distinguish the articles remaining in the claim from those disclaimed. Therefore, the disclaimer would enable to establish novelty of the subject-matter remaining in claim 1.

4.2.8 The Board, however, concurs with appellant I's view and the findings of the opposition division that no **unambiguous** feature can be identified on the surface of the disclaimed articles which would enable to distinguish them from the remaining claimed subject-matter (see also impugned decision, point 3.1.8.4).

The final surface characteristics of the disclaimed articles indeed depend on the parameters applied when shot blasting.

As argued by appellant I, the expression "shot blasting" is broad and encompasses a method in which smaller beads are applied, for instance at the finishing pass, in order to smoothen the surface. Hence, contrary to appellant II's view, the surface obtained by shot blasting will not necessarily result in nicely closely-packed recognisable dimples as shown in figure C of appellant's II grounds of appeal.

Further, the shot blasting beads can be of a "soft" material, for instance softer than metal, such as ice, possibly also plastics, which would not inevitably form impacts on the surface of the zinc-based plated steel. The blast force can also be adapted in order to avoid forming such impacts. Therefore, the removal of the zinc oxide layer by shot blasting will not inevitably result in recognisable and measurable surface characteristics such as dimples or specific surface roughness on the surface of the zinc-based plated steel.

The Board also shares appellant I's view that the above also applies for the increase in hardness of the surface of the zinc-based plated steel material. In addition, as argued by appellant I at the oral proceedings, hardening of the surface also occurs during the hot press forming step so that it would not be possible to distinguish an increase in hardness specifically due to shot blasting, if any, from one resulting from the hot press forming step, the latter being in any case performed for the three types of articles a), b) and c) remaining in the claim.

Therefore, the Board is of the opinion that no unambiguous structural feature will be recognisable and measurable on the surface of the disclaimed shot

blasted articles which would enable to distinguish them from the three types of articles a), b) and c) remaining in the claim. Novelty of the claimed subject-matter is hence not given vis-à-vis D4.

- 4.2.9 The Board further shares appellant I's view that the disclosure "...or the like" of paragraph [0105] of D4 informs the skilled reader that the articles obtained by the process of D4 will not mandatorily be shot blasted to remove the zinc oxide layer. Other known methods will come to mind, such as mechanical or chemical ones, as expressed by "...or the like" can be applied. This teaching of D4 cannot be simply ignored.

As a consequence, the articles of D4 need not necessarily comprise any of the (in any case unspecified) surface characteristics alleged by appellant II (roughness, increase in hardness and formation of dimples on the surface). For this reason, the products of D4 in which the zinc oxide layer is removed by such other known methods, is also novelty destroying, since the performance of this method is not (no longer) recognisable on the final product.

- 4.2.10 It is further noted that, contrary to appellant II's view, the Board cannot see any discrepancy between the specific present case and the compliance with the requirements set out in G 1/03, OJ EPO 2004, 413 and G 2/03, OJ EPO 2004, 448. Disclaiming articles defined by features of their manufacturing process is possible in case of documents according to Article 54(3) EPC 1973 as long as novelty of the remaining subject-matter is established. This could for instance result from process features leading to unambiguously identifiable features on said disclaimed articles. This is, however, presently not the case for the reasons given above.

5. *First and second auxiliary requests*

5.1 Since the Board considers that the subject-matters of the claims 1 of the first and second auxiliary requests lack novelty (see below) there is no need in this decision to deal with the question whether said requests comply with the other requirements of the EPC.

5.2 Novelty - Product claim 1

As put forward in the annex to the summons for oral proceedings, point 6, the Board cannot see in which respect the specific amendments to the claims 1 of these requests render the claimed subject-matters novel over D4.

The disclaimed articles in claim 1 of the first auxiliary request are not rendered more unambiguously identifiable by the expression "obtainable by".

The process features added to claim 1 of the second auxiliary request do not lead to unambiguously identifiable features (positive structural features) on the surface of the claimed article which would enable to distinguish it from the articles obtained by D4, i.e. the disclaimer.

Appellant II has not provided any further arguments at the oral proceedings in this respect.

Hence, the subject-matters of the claims 1 of the first and second auxiliary requests are not novel over D4 for the same reasons as those given above for claim 1 of the main request.

6. *Third auxiliary request*

6.1 Admissibility

6.1.1 The third auxiliary request was filed for the first time as the fourth auxiliary request with the reply to appellant I's statement of grounds of appeal, dated 11 September 2012. Therefore, as mentioned in the annex to the summons for oral proceedings, point 8, its admission in the procedure is subject to the application of Article 12(4) RPBA.

6.1.2 For appellant I, as argued at the oral proceedings, the third auxiliary request should not be admitted in the proceedings since it could have been filed during the opposition proceedings. Its filing for the first time in appeal would amount at an abuse of the procedure. The new disclaimer introduced in claim 1 would lead to complex discussions with respect to Article 123(2) EPC, in particular whether it is actually based on the disclosure of D4, to be held for the first time in appeal. Further, the third auxiliary request would diverge from the higher ranking requests.

6.1.3 The Board cannot share appellant I's view for the following reasons, as given by appellant II at the oral proceedings.

The third auxiliary request was filed as a reaction to the new arguments in appellant I's grounds of appeal, point VII, based on the disclosure of "...or the like" in D4, paragraph [0105]. Such disclosure of D4 was not an issue during the opposition proceedings as is apparent from the impugned decision, point 6.4.1, maintaining a patent with claims comprising the disclaimer in accordance with the patent as granted.

The new disclaimer aims hence at taking these new arguments into account so that the request could not have been filed during the opposition proceedings. It was filed at the earliest possible stage of the appeal proceedings. Therefore, there is no abuse of the procedure.

Further, the third auxiliary request was filed as fourth auxiliary request in 2012, i.e. more than three years before the oral proceedings. Thus, appellant I could have brought forward its new objection with respect to admissibility in the meantime, instead of waiting till the oral proceedings. It clearly had sufficient time to prepare itself for discussing the claimed subject-matter, i.e. the new disclaimer, at the oral proceedings.

Finally, since the new disclaimer is broader than that of the main request and first and second auxiliary requests, the remaining subject-matter in claim 1 of the third auxiliary request is inevitably narrower than that of the claims 1 of the main request and the first and second auxiliary requests, so that the requests are convergent.

- 6.1.4 For these reasons, the third auxiliary request is admitted into the proceedings.
  
- 6.2 Since the Board considers that the subject-matter of claim 1 of the third auxiliary request lacks novelty (see below) there is no need in this decision to deal with the question whether the third auxiliary request complies with the other requirements of the EPC.



6.3 Novelty - Product claim 1

6.3.1 The Board agrees with appellant II that the new disclaimer introduced in claim 1 now also excludes articles obtained by other methods as encompassed by "...or the like" in D4, paragraph [0105] (see points 4.2.4 and 4.2.9 above).

6.3.2 However, as discussed during the oral proceedings, the claimed step of "reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is...at most 2  $\mu\text{m}$ ", which is one step of the non-disclaimed method for obtaining the product of claim 1 as appearing from method claim 4, does not specify any lower limit for the thickness after the reducing step. Therefore, it also encompasses reducing it to **close to zero**. Hence, claim 1 of the third auxiliary request encompasses articles with a zinc oxide layer having a thickness close to zero.

Taking into account the discussion for the main request with respect to the features implied or not on the articles obtained by the process of D4 ("shot blasting or the like"), no difference could then be made between the remaining claimed articles for which the zinc oxide layer is reduced to close to zero after the hot press-forming step and the disclaimed articles which after removal of the zinc oxide layer "by shot blasting or the like" in accordance with D4 have an unavoidable re-grown zinc oxide layer at a thickness in the order of nanometers, i.e. also close to zero (see point 4.2.2 above).

6.3.3 Consequently, the subject-matter of claim 1 of the third auxiliary request is still not novel over D4.

7. Fourth auxiliary request (patent as maintained by the opposition division)

7.1 Since the Board considers that the subject-matter of claim 1 of the fourth auxiliary request lacks novelty (see below) there is no need in this decision to deal with the question whether the fourth auxiliary request complies with the other requirements of the EPC.

7.2 Novelty - Method claim 1

7.2.1 According to appellant II, the issue discussed for the previous requests related to the recognisable features between claimed and disclaimed articles need not be considered any longer since claim 1 of the fourth auxiliary request concerns **a method**. D4, paragraph [0105], discloses a removing step, i.e. a complete removal of the zinc oxide layer, to be distinguished from the reducing step as claimed.

Referring to the wording "...or the like" in paragraph [0105] of D4, which is not in the disclaimer, appellant II maintains its arguments already given in the discussion of the main request (see point 4.2.4 above) that the "...or the like" should not be considered for the discussion of novelty as it does not convey any direct and unambiguous teaching to the skilled person.

Therefore, novelty of the claimed subject-matter over D4 should be acknowledged.

7.2.2 The Board, however, cannot share appellant II's view for the following reasons, also given by appellant I at the oral proceedings (see also the annex to the summons for oral proceedings, point 5.1.9).

In view of the above discussion under point 4.2.9 for the main request with respect to the expression "...or the like" disclosed in D4, novelty of the method of claim 1 of the fourth auxiliary request is not given.

Indeed, the claimed step of "reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is...at most 2  $\mu\text{m}$ " does not specify any lower limit for the thickness after the reducing step. Therefore, contrary to appellant II's view, it also encompasses reducing **down to zero** in accordance with the method to produce the articles of the type c) under point 4.2.6 above, i.e. removing the said zinc oxide layer by other removing methods than shot blasting, such as encompassed by "...or the like". Such other removing methods are indeed not excluded from claim 1 by the disclaimer.

Therefore, the subject-matter of claim 1 of the fourth auxiliary request is also not novel over D4.

## 8. Fifth auxiliary request

### 8.1 Admissibility

8.1.1 The fifth auxiliary request was filed by appellant II with its letter dated 8 December 2015, i.e. after oral proceedings have been arranged. Its admission in the proceeding is hence subject to the discretion of the Board pursuant to Articles 13(1) and (3) RPBA.

8.1.2 For appellant I, as argued at the oral proceedings, the fifth auxiliary request should not be admitted in the proceedings since it was filed late in the procedure, with a new disclaimer implying new complex issues with respect to Article 123(2) EPC to be discussed for the

first time in appeal. In view of its filing shortly before oral proceedings, there was not enough time left to react to appellant II's new arguments relating to this request.

8.1.3 The Board cannot share appellant I's view for the same reasons as those already given under point 6.1.3 above. Further, as put forward by appellant II, the subject-matter of claim 1 of the fifth auxiliary request corresponds to claim 4 of the third auxiliary request filed more than 3 years ago. Appellant I had therefore enough time to consider this subject-matter, including the new disclaimer. As a result, the Board is of the opinion that an adjournment of the oral proceedings is not necessary to deal with the new subject-matter, which is further not regarded as being complex.

8.1.4 Consequently, the fifth auxiliary request is admitted into the proceedings.

## 8.2 Amendments

8.2.1 With respect to claim 4 of the patent as granted the only substantial amendment made in claim 1 of the fifth auxiliary request concerns the disclaimer which now reads:

"other than such an article obtainable by removing the zinc oxide layer"

and excludes any removing step from claim 1 (see point VIII above).

8.2.2 Since the new disclaimer is broader than the disclaimer of claim 4 of the patent as granted, the remaining subject-matter is narrower so that the requirements of

Article 123(3) EPC are fulfilled. This was not contested by appellant I.

- 8.2.3 The Board shares the parties' view put forward during the oral proceedings that the wording "...or the like" of D4, paragraph [0105], is to be interpreted as encompassing any mechanical abrasive means the skilled person would be thinking of for removing the zinc oxide layer, but also chemical means.

Considering the fact that no other means than mechanical or chemical means can directly be thought of, the disclosure of D4 "shot blasting or the like" is seen as comprising all possible removing means known to the skilled person. Appellant I's allegation that "shot blasting or the like" would not represent all possible removing means could not be followed by the Board since no means were ever mentioned other than mechanical or chemical.

As a consequence, the new disclaimer excluding from claim 1 any removing step is in accordance with the disclosure "shot blasting or the like" of D4. It is hence regarded as not removing more than necessary as discussed in G 1/03 (*supra*, Headnote 2.2). Therefore, the disclaimer does not contravene Article 123(2) EPC.

It is further noted that for the reasons given under point 8.3 below the new disclaimer does not render the claim unclear so that it is allowable (G 1/03, *supra*, point 2.1.3).

- 8.2.4 As also put forward by appellant II at the oral proceedings, the new disclaimer covers embodiments which were originally part of the original invention (see application as originally filed, paragraphs

[0022], [0024], [0060] and [0064]; claims 2, 7). The conditions of G 2/10 (OJ EPO 2012, 376) are fulfilled since the subject-matter remaining in the claim after the introduction of the disclaimer is directly and unambiguously derivable by the skilled person using his common general knowledge, in the application as filed. They are in fact disclosed in the application as originally filed, see for instance claim 5 and paragraphs [0022] and [0059]) ("regulate the thickness of the zinc oxide layer", "reducing the average thickness", "removing [...] a portion"). Taking account of the disclaimer, the methods for obtaining the articles of the types a) and b) as mentioned under point 4.2.6 above remain in the claim.

8.2.5 The fifth auxiliary request fulfils therefore the requirements of Article 123(2) EPC.

### 8.3 Clarity

8.3.1 Appellant I argued at the oral proceedings that claim 1 of the fifth auxiliary would be unclear in view of the contradiction between the reducing step which includes reducing to zero, i.e. *de facto* comprises a removing step, and the disclaimer which excludes such a removing step.

8.3.2 The Board, however, cannot share this view for the reasons given by appellant II that the "reducing" step cannot reduce the zinc oxide layer thickness down to zero as it would otherwise become a "removing" step which is excluded from claim 1.

In fact, as already mentioned, the subject-matter remaining in claim 1 concerns the methods to obtain the two types ( a) and b) ) of articles recited under point

4.2.6 above which were already present in the claims of the patent as granted (see claim 4). The absence of a lower limit for the reducing step was indeed already in the claims of the patent as granted. The new disclaimer of claim 1 merely excludes the method to obtain articles of the type c). Therefore, the new disclaimer does not introduce non-compliance with Article 84 EPC which was not already present in the claims of the patent as granted.

As a result, the claims of the fifth auxiliary request may not be examined for compliance with the requirements of Article 84 EPC in accordance with G 3/14 (not yet published, Order).

#### 8.4 Sufficiency of the disclosure (Articles 100(b), 83 EPC)

8.4.1 In its statement of grounds, point III.b, not further completed during the oral proceedings, appellant I argues that it would not be possible for the skilled person to perform the invention since he would not recognize whether or not a method would fall within the claim.

8.4.2 The Board cannot follow appellant I's view since its arguments relate to litigation issues and not to sufficiency of disclosure. Consequently, the Board cannot see any reason to deviate from the reasoning and conclusion of the opposition division given in the impugned decision, point 6.3. Thus, the grounds based on Article 100(b) EPC do not prejudice the maintenance of the patent on the basis of the fifth auxiliary request.

## 8.5 Novelty (Article 54 EPC)

Since any removing step is now excluded from the method of claim 1, the disclosure of D4, which comprises such a removing step ("by shot blasting or the like"), is no longer novelty destroying.

As none of the other available prior art documents discloses all the features of claim 1 in combination, novelty of the claimed subject-matter is to be acknowledged (Article 54 EPC).

This was not contested by appellant I at the oral proceedings.

## 8.6 Inventive step

8.6.1 The Board agrees with the parties, as discussed at the oral proceedings, that document D6/D6a can be regarded as the closest prior art for the subject-matter of claim 1 of the fifth auxiliary request. As a matter of fact, D6/D6a relates to a method of producing hot press-formed articles, like claim 1.

As also discussed and agreed upon by both parties, D5/D5a does not relate to hot press forming as claimed but rather to cold press forming. This is already sufficient to exclude D5/D5a as a plausible closest prior art, see also point 8.6.7 below.

8.6.2 D6/D6a discloses a method of manufacturing a hot press-formed article having on its surface a zinc-based plating layer which comprises an iron-zinc solid solution phase, which has a thickness of for instance 10 to 15  $\mu\text{m}$ , i.e. within the claimed range of at least 1  $\mu\text{m}$  and at most 50  $\mu\text{m}$ , the method including a step of



heating to 950°C, i.e. within the claimed range of 700 to 1000°C and then hot press forming a zinc-based plated steel material to form a hot press-formed article having a zinc-based plating layer comprising an iron-zinc solid solution phase and, unavoidably, a zinc oxide layer atop it (paragraphs [0028], [0029] and [0031]; claims 1, 3 and 5).

8.6.3 The step of "reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is the outermost layer of the resulting hot press-formed article is at most 2 µm, other than removing the zinc oxide layer" is therefore the only distinguishing feature of claim 1 over the method of D6/D6a.

8.6.4 Its technical effects are to improve the coating adhesion and the post-coating corrosion resistance (contested patent, paragraph [0023]).

As put forward by the parties at the oral proceedings, the technical effects are confirmed by comparing in table 1 of the contested patent run 6, which can be seen as representing D6/D6a in the sense that the zinc oxide layer is left untreated after hot press forming, with runs 1 and 2 according to the claimed invention.

8.6.5 The problem to be solved is, hence, to modify the known method so that articles are produced with improved coating adhesion and post-coating corrosion resistance.

8.6.6 The Board shares appellant II's view that the skilled person will find in D6/D6a neither the solution nor any incentive for looking for a solution to the problem, since D6/D6a explicitly teaches to keep the zinc oxide layer untreated after the hot press-forming step

(paragraphs [0025] and [0029]; "pickling ... is unnecessary").

Further, should the skilled person be looking for a solution to the above problem, none of the available prior art document discloses or renders obvious the claimed solution. In particular, contrary to appellant I's allegations, D5/D5a does not teach to provide the articles with thinner zinc oxide layers. As argued by appellant II, the paragraphs [0010] and [0020] referred to by appellant I do not provide such a teaching. In paragraph [0010], last sentence, even more zinc oxide is taught. The crystal grain of paragraph [0020] concerns the Zn-based plating layer, not the zinc oxide layer, so that this disclosure does not apply to the latter.

In fact, the skilled person will have at his disposal many known solutions for solving the above technical problem. As argued by appellant II, he would certainly primarily think of adapting the zinc oxide layer through pretreatment and/or solving any possible material incompatibilities between the zinc oxide layer and the coating to be applied. Finally, should he still think of reducing the zinc oxide layer, he would have no reason to reduce the zinc oxide layer to below 2  $\mu\text{m}$ . Higher thicknesses could indeed be found already satisfactory.

As a result, starting from D6/D6a the skilled person using the teaching of D5/D5a and/or his common general knowledge would not obviously arrive at the claimed subject-matter.

8.6.7 Inventive step objections starting from D5/D5a as a possible closest art were also considered by appellant

I in its written submission, but not further completed at the oral proceedings.

As put forward in the annex to the summons for oral proceedings, point 5.4.2, according to D5/D5a, the steel sheet generally presents a zinc oxide film of 20 to 60 mg/m<sup>2</sup> after the hot dip galvanizing step. In order to improve the press-molding slidability of the steel sheet by retaining the lubricating oil on its surface, the coating weight of the film is increased to 100-1000 mg/m<sup>2</sup> by heat treatment at a temperature between 490 and 550°C (PAJ abstract, paragraphs [0010], [0015] and [0016]; claims 1-2).

The steps of "hot press forming" and "reducing the thickness of the zinc oxide layer so that the average thickness of the zinc oxide layer which is the outermost layer of the resulting hot press-formed article is at most 2 µm, other than removing the zinc oxide layer" are distinguishing features of claim 1 over the method of D5/D5a.

Appellant I has not provided any reasons why by additionally applying in the method of D5/D5a the heat treatment and hot-press forming in accordance with the process disclosed in D6/D6a, i.e. heat treatment at a temperature above 700°C in an uncontrolled atmosphere, the average thickness of the zinc oxide layer on the final article would fall within the claimed range (see paragraphs [0014] and [0021]; claim 5). A thickness of the zinc oxide layer is not disclosed in D6/D6a, nor any removing or reducing step of the zinc oxide layer after such hot press-forming. Hence, the application of this teaching of D6/D6a to the method of D5/D5a does not lead to the claimed thickness of the zinc oxide layer of claim 1, nor makes it obvious.

As a result, starting from D5/D5a the skilled person using the teaching of D6/D6a and/or his common general knowledge would not obviously arrive at the claimed subject-matter.

8.6.8 In view of the above, inventive step is acknowledged for the subject-matter of claim 1 of the fifth auxiliary request (Article 56 EPC).

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent on the basis of claims 1 to 4 according to the fifth auxiliary request filed with letter dated 8 December 2015 as well as amended pages 4 and 11 of the description as filed during the oral proceedings on 8 January 2016 and pages 3 and 5 to 10 of the description as filed on 23 November 2011 and figures 1 and 2 as granted.

The Registrar:

The Chairman:



G. Nachtigall

H. Meinders

Decision electronically authenticated