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**Datasheet for the decision
of 2 November 2022**

Case Number: T 2771/19 - 3.2.03

Application Number: 13744215.8

Publication Number: 2811042

IPC: B22D21/04, C22C21/02,
C22C21/08, C22F1/00, C22F1/043,
C22F1/05

Language of the proceedings: EN

Title of invention:
ALUMINIUM ALLOY FORGED MATERIAL

Patent Proprietor:
Kabushiki Kaisha Kobe Seiko Sho

Opponents:
C-TEC Constellium Technology Center /
Constellium Singen GmbH
Otto Fuchs KG
Bharat Forge Aluminiumtechnik GmbH

Headword:

Relevant legal provisions:

EPC Art. 54(1), 56, 123(2)
EPC R. 80
RPBA 2020 Art. 12(4), 13(2)
RPBA Art. 12(4)

Keyword:

Late-filed evidence - could have been filed in first instance proceedings (no)
Novelty - (yes)
Inventive step - (no)
Amendments - extension beyond the content of the application as filed (yes)
Amendment occasioned by ground for opposition - (no)
Prohibition of the reformation in peius (yes)
Amendment after summons - cogent reasons (no)

Decisions cited:

G 0009/92, G 0004/93, G 0001/99, T 1843/09

Catchword:



Beschwerdekammern

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Case Number: T 2771/19 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 2 November 2022

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
9 September 2019 concerning maintenance of the
European Patent No. 2811042 in amended form.**

Composition of the Board:

Chairman C. Herberhold
Members: G. Patton
D. Prietzel-Funk

Summary of Facts and Submissions

- I. European patent No. 2 811 042 B1 (hereinafter "the patent") relates to an aluminium alloy forged material and a method for its manufacture.
- II. Three oppositions were filed. They were directed against the patent as a whole and were based on Article 100(a) EPC (lack of novelty and inventive step), Article 100(b) EPC (insufficiency of disclosure) and Article 100(c) EPC (unallowable amendments).

The Opposition Division held that the then main request and the then auxiliary requests 1 to 4 did not fulfil the requirements of Article 123(3) EPC and that the then auxiliary request 5 did fulfil the requirements of the EPC.

Each of the three opponents 1, 2 and 3 filed an appeal against the Opposition Division's decision to maintain the patent according to the then auxiliary request 5 filed during the oral proceedings of 16 July 2019.

- III. The Board provided its preliminary, non-binding opinion to the parties in a communication dated 21 September 2021 pursuant to Article 15(1) RPBA 2020 annexed to the summons to oral proceedings.
- IV. At the end of the oral proceedings held on 2 November 2022, opponents 1, 2 and 3 (hereinafter "appellants III, II and I", respectively) requested that the decision under appeal be set aside and that the patent be revoked.

The patent proprietor (hereinafter "the respondent") requested that the appeals be dismissed, or that the patent be maintained in amended form on the basis of auxiliary requests 1 to 13 submitted with the reply to the statements setting out the grounds of appeal or on the basis of auxiliary request 14 submitted as new auxiliary request 3 during the oral proceedings before the Board.

V. Claim 1 of the **main request** reads as follows, with the feature lettering added by the Board:

- (a; F1) An aluminum alloy forged material
- (b; F1) having a portion whose thickness is 10 mm or less comprising:
 - (c; F1.1) Mg: 0.60 - 1.80 mass%;
 - (d; F1.2) Si: 0.80 - 1.80 mass%;
 - (e; F1.3) Cu: 0.20 - 1.00 mass%;
 - (f; F1.4) Fe: 0.05 - 0.40 mass%;
 - (g; F1.5) Ti: 0.001 - 0.15 mass%;
 - (h; F1.6) B: 1 - 500 ppm;
 - (i; F1.7) further comprising at least one element selected from Mn: 0.10 - 0.60 mass%, Cr: 0.10 - 0.40 mass% and Zr: 0.10 - 0.20 mass%;
 - (F1.8) the remainder being Al and inevitable impurities, wherein
 - (j; F1.9) the electrical conductivity measured at the surface of the aluminum alloy forged material at 20°C is more than 42.5 % IACS but not more than 46.0 % IACS,
 - (k; F1.10) the 0.2 % proof stress is 360 MPa or more, and
 - (l; F1.11) the Charpy impact value is 6 J/cm² or more.

With respect to claim 1 of the main request, claim 1 of **auxiliary request 1** further comprises the following features (m) to (s) at the end of the claim:

- (m) wherein the aluminum alloy forged material is obtainable by a method comprising:
- (n) a melting step of melting the aluminum alloy into a molten metal,
- (o) a casting step of casting the molten metal at a cooling rate of 10°C/sec or more to form an ingot,
- (p) a homogenizing heat treatment step of subjecting the ingot to heating at a rate of 5°C/min or less, and to a homogenizing heat treatment at 450-550°C,
- (q) a forging step of subjecting the ingot having been subjected to the homogenizing heat treatment to forging at 460-540°C of the forging start temperature, and
- (r) after the forging step, a solution heat treatment step of subjecting the forged material to a solution heat treatment at 520-570°C, and
- (s) an artificial aging treatment step of subjecting the forged material to an artificial aging treatment at 170-200°C for 4-9 hours.

With respect to claim 1 of auxiliary request 1, features (q) and (r) have been replaced by the following features (q') and (r') in claim 1 of **auxiliary request 2**:

- (q') a forging step of subjecting the ingot having been subjected to the homogenizing heat treatment to forging at 460-540°C of the forging start temperature, wherein the forging finish temperature is 350-540°C, and
- (r') after the forging step, a solution heat treatment step of subjecting the forged material to a

solution heat treatment at 520-570°C for 20 minutes to 20 hours, wherein the mean heating rate of the solution heat treatment is 100°C/hr or more, and thereafter a quenching step, wherein the cooling rate is 40°C/sec or more, and

With respect to claim 1 of auxiliary request 2, feature (r') has been replaced by the following feature (r'') in claim 1 of **auxiliary request 3**:

(r'') after the forging step, a solution heat treatment step of subjecting the forged material to a solution heat treatment at 520-570°C for 20 minutes to 20 hours, wherein the mean heating rate of the forged material from the temperature when the solution heat treatment is started up to the holding temperature is 100°C/hr or more, and thereafter a quenching step, wherein the cooling rate is 40°C/sec or more.

Claim 1 of each of **auxiliary requests 4, 5 and 6** corresponds to claim 1 of auxiliary requests 1, 2 and 3, respectively, but with the following features (a'; F1') and (m') replacing features (a; F1) and (m) (amendments in bold, deletions in strikethrough):

(a'; F1') **A method for manufacturing** an aluminum alloy forged material
(m') wherein the ~~aluminum alloy forged material is obtainable by a method comprising:~~

Claim 1 of each of **auxiliary requests 7, 8 and 9** corresponds to claim 1 of auxiliary requests 4, 5 and 6, respectively, but with the following feature (o') replacing feature (o) (amendments in bold, deletions in strikethrough):

(o') a casting step of casting the molten metal at a cooling rate of 10 **to 20**°C/sec ~~or more~~ to form an ingot,

Claim 1 of each of **auxiliary requests 10, 11 and 12** corresponds to claim 1 of auxiliary requests 4, 5 and 6, respectively, but with the following feature (o'') replacing feature (o) (amendments in bold; deletions in strikethrough):

(o'') a casting step of casting the molten metal at a cooling rate of ~~10-20~~°C/sec ~~or more~~ to form an ingot,

Claim 1 of **auxiliary request 13** corresponds to claim 1 of auxiliary request 12, but with the following features (p13), (q13), (r13) and (s13) replacing features (p), (q'), (r'') and (s) (amendments in bold; deletions in strikethrough):

(p13) a homogenizing heat treatment step of subjecting the ingot to heating at a rate of 5°C/min, and to a homogenizing heat treatment at ~~450-550~~°C **for 4 hours**,

(q13) a forging step of subjecting the ingot having been subjected to the homogenizing heat treatment to forging at 460-540°C of the forging start temperature, wherein the forging finish temperature is ~~350-540~~**380-460**°C, and

(r13) after the forging step, a solution heat treatment step of subjecting the forged material to a solution heat treatment at ~~520~~**550**-570 °C for ~~20 minutes to 20 hours~~**1 hour**, ~~wherein the mean heating rate of the forged material from the temperature when the solution heat treatment is~~

~~started up to the holding temperature is 100°C/hr or more,~~ and thereafter a **water** quenching step, wherein the cooling rate is 40°C/sec or more, and (s13) an artificial aging treatment step of subjecting the forged material to an artificial aging treatment at 170-200°C for 4-~~95~~ hours.

Claim 1 of **auxiliary request 14** corresponds to claim 1 of auxiliary request 9, but with the following additional feature (t) at the end of the claim:

(t) wherein the mass ratio of Si/Mg is 1 or more in the aluminum alloy

VI. The following documents considered in the opposition proceedings are relevant to the present decision:

- D1 : JP 2007 009273 A
- D1a: English translation of D1
- D13: JP 2004 292937 A
- D13a: English translation of D13, patent translate powered by EPO and Google, 17 pages
- D14: US 2009/000705 A
- D17: JP 2004 043907 A
- D17a: English translation of the description of D17, patent translate powered by EPO and Google, 14 pages
- D17b: English translation of the claims of D17, patent translate powered by EPO and Google, 2 pages

Appellants II and III filed the following documents D26, D27, D27a and D28 for the first time with their statements setting out the grounds of appeal:

- D26: Curriculum vitae of Mrs Franziska Ahrens, 2 pages;

- D27: Expert opinion of Mrs Franziska Ahrens, MQ Engineering GmbH, report number 51 101-1 of 19 December 2019, 43 pages;
- D27a: Translation into English of D27, 24 pages;
- D28: J.R. Davis, "Aluminum and Aluminum alloys" ASM International®, fourth printing, March 1998, Materials Park, Ohio, United States of America, ISBN 0-87170-496-X, pages 587-598.

Appellant I also referred to D27 in its statement setting out the grounds of appeal.

Appellant II filed the following document D27b for the first time with its letter dated 28 July 2020:

D27b: Front page of D27 with signature of Mrs Franziska Ahrens.

VII. As far as relevant to the present decision, the appellants essentially argued as follows:

Admittance - late-filed documents D26, D27, D27a, D27b and D28

Documents D27 and D27a were merely intended to support the appellants' arguments in discussions which had already been conducted before the Opposition Division. As evidenced by document D27b, D27/D27a represented the views of Mrs Ahrens, who was selected as an expert having regard to her curriculum vitae (see D26). Hence, documents D27/D27a should be admitted into the proceedings as well as documents D26 and D27b.

Main request

The subject-matter of claim 1 of the main request lacked novelty over the disclosure of D14.

D14 did not explicitly disclose the claimed electrical conductivity measured at the surface of the aluminium alloy forged material (feature (j; F1.9)).

However, the starting material and all the process parameters disclosed in D14 were identical to those of the contested patent, i.e. the aluminium-alloy composition specified in claim 1 of the main request and the process parameters as defined in claim 4 of the patent as granted, including the forging start temperature, the cooling rate in the casting step and the cooling rate in the homogenising heat treatment step. Hence, the final product in D14 inevitably corresponded to the claimed one, i.e. also with respect to feature (j; F1.9).

D27, page 20, penultimate paragraph, proved that the forging start temperature exceeded the forging finish temperature by 80 to 100°C. In view of the disclosed forging finish temperatures in D14, for instance 400°C in Table 2, see also paragraph 104, the forging start temperature in D14 was inevitably within the claimed range.

D14, paragraph 8, disclosed a forging start temperature range of from 450 to 570°C corresponding to the claimed range. Even though the range disclosed in D14 concerned the prior-art documents cited therein, the skilled person would inevitably operate the invention of D14 within this temperature range.

To achieve the forging finish temperature of more than 350°C disclosed in D14 the forging start temperature had to be high enough. D13, which was cited as document 9 in D14 (see paragraphs 8 and 17), reflected what had to be applied in D14, i.e. more than 480°C for the forging start temperature (see D13a, page 4, second paragraph). As a consequence, the skilled person would immediately and directly derive therefrom that the forging start temperature in D14 fell within the range of claim 4 of the patent as granted, leading inevitably to the claimed electrical conductivity range.

Taking D14 as the closest prior art, only feature (j; F1.9) of claim 1 of the main request could be seen as a distinguishing feature.

In view of the technical effect of the distinguishing feature, the objective technical problem was to secure the manufacturing method disclosed in D14 (contested patent, paragraph 9).

The skilled person would consider D1 since it related to Al-Mg-Si-Cu aluminium alloy forged materials for a motor car part, as did claim 1 of the main request and D14.

Faced with the above-mentioned problem, the skilled person would consider examples 1 to 5 and 8 to 12 according to the invention of D1 exhibiting high hardness, high strength and good corrosion resistance in a stable manner. They would select the parameters of the process of D1 for these examples, which are not specified in the process of D14, in particular the forging start temperature of 530°C. They would encounter no technical difficulties in applying this forging start temperature in the process of D14,

thereby arriving in an obvious manner at a method according to claim 4 of the patent as granted. As a consequence, the product of claim 1 obtained by the non-inventive method of claim 4 did not involve an inventive step.

Auxiliary requests 1 to 6

The process features inserted into claim 1 of auxiliary requests 1 to 3 did not further define the claimed material. Changing a product claim to a method claim as in auxiliary requests 4 to 6 represented an inappropriate amendment that should be rejected.

Auxiliary request 7

The omissions performed in claim 1 of auxiliary request 7 with respect to method claim 4 of the patent as granted were not occasioned by a ground for opposition, contrary to the requirements of Rule 80 EPC.

Auxiliary request 10

No argument was provided for this request with respect to Rule 80 EPC.

Auxiliary requests 8 and 11

The definition of the mean heating rate was omitted in the solution heat treatment step of claim 1 of auxiliary requests 8 and 11. This was not occasioned by a ground for opposition.

Auxiliary request 9

Claim 1 of auxiliary request 9 corresponded almost verbatim to claim 1 of the then auxiliary request 4 filed in opposition proceedings and on which the decision under appeal was based. The Opposition Division held that this claim did not fulfil the requirements of Article 123(3) EPC. As the patent proprietor did not appeal, it was not entitled to defend this claim again in appeal proceedings due to the principle of prohibition of *reformatio in peius*.

Auxiliary request 12

Claim 1 of auxiliary request 12 corresponded to claim 4 of the then auxiliary request 2, which had been found not allowable in the decision under appeal. As a consequence, the principle of prohibition of *reformatio in peius* applied for the same reasons as those given for auxiliary request 9.

Auxiliary request 13

With respect to method claim 4 of the patent as granted, the mean heating rate of the solution heat treatment was deleted in feature (r13) of method claim 1 of auxiliary request 13. Since the amendment was not occasioned by a ground for opposition, auxiliary request 13 did not fulfil the requirements of Rule 80 EPC.

Auxiliary request 14

Auxiliary request 14 was filed during the oral proceedings before the Board. The limitation of claim 1 thereof to the preferred embodiment of claim 2 of

auxiliary request 9 represented an amendment to the respondent's appeal case to be considered under Article 13(2) RPBA 2020 for its admission into the proceedings.

The objection against auxiliary request 9 on the basis of the prohibition of *reformatio in peius* had already been raised by appellant II with its letter dated 28 July 2021.

The Board's preliminary opinion put forward in the communication dated 21 September 2021 on the principle of prohibition of *reformatio in peius* in relation to auxiliary request 9 could thus not represent exceptional circumstances justifying the late-filing of auxiliary request 14. Boards' preliminary opinions were in general not binding already by their nature.

The respondent should have reacted prior to the Board's communication or, at the latest, prior to the oral proceedings. In the absence of exceptional circumstances justified by cogent reasons, auxiliary request 14 should not be admitted into the proceedings.

VIII. As far as relevant to the present decision, the respondent essentially argued as follows:

Admittance - late-filed documents D26, D27, D27a, D27b and D28

Documents D27 and D27a were not *prima facie* relevant to prejudice the maintenance of the contested patent and they were not signed by the author, Mrs Ahrens, who could not be considered as a qualified expert either. The filing of D27/D27a could not be regarded as a direct reaction to the oral proceedings before the

Opposition Division or to the decision under appeal. Hence, documents D27/D27a should not be admitted into the proceedings. The same applied to documents D26 and D27b, which related to D27/D27a.

Main request

D14 did not disclose an aluminium alloy forging material with feature (j; F1.9).

There was no explicit disclosure in D14 of the forging start temperature. There was also no evidence that the forging start temperature inevitably exceeded the forging finish temperature by 80 to 100°C, contrary to the appellants' allegations based on D27/D27a.

Paragraph 8 of D14 concerned the disclosure of the prior-art documents, not the disclosure of D14 itself. There was no clear and unambiguous disclosure in D14 that the forging start temperature to be applied was that disclosed in D13 (document 9 in D14). The generic disclosure on page 4 of D13a that the forging start temperature was between 480 and 520°C did not change the specific teaching of D13 in Table 2 regarding the relationship between forging start and forging finish temperatures, which did not match with the allegations in D27/D27a.

The cooling rate in the casting step of D14 was 100°C/sec or more (see paragraph 97). The examples of the contested patent showed, however, that the cooling rate in the casting step had to be much lower in order to obtain the properties of the claimed product. Hence, it could not be concluded that the product of D14 inevitably exhibited the claimed electrical conductivity.

Similarly, the contested patent, paragraph 29, taught that the cooling rate of the ingot in the homogenising heat treatment step affected the electrical conductivity of the aluminium alloy forged material. Since the cooling rate disclosed in D14 was much higher than in the examples of the contested patent it could not be concluded, also for this reason, that the product of D14 exhibited the claimed electrical conductivity.

Therefore, the subject-matter of claim 1 of the main request was novel over D14.

D14, taken as the closest prior art, did not disclose feature (j; F1.9).

The distinguishing feature enabled a forged material to be provided with an improved stress corrosion cracking (SCC) resistance while maintaining good mechanical properties.

The SCC resistance tests in the contested patent and in D14 were performed according to the same standard ASTM G47.

Since D14 and the contested patent were from the same company and the same inventor, it had to be concluded that the loading direction for the evaluation of SCC resistance was the same in the contested patent as in D14.

The conditions used for the SCC resistance tests in the contested patent and in D14 differed merely in that the stress to be applied related, on the one hand, to 75% of the yield stress in LT direction and, on the other

hand, to 75% of the yield stress in L direction. However, a suspension arm in which a cast bar was forged, as in the contested patent and in D14, had almost the same yield stress in the L direction as in the LT direction.

Accordingly, the results of the SCC resistance tests could be compared between the contested patent and D14. The comparison showed that the SCC resistance of the Al alloy forged material according to the claimed subject-matter was higher than that of D14.

Thus, it appeared that, by controlling the manufacturing conditions to ensure that the surface electrical conductivity was more than 42.5% IACS but not greater than 46.0% IACS, a forged material with 0.2% proof stress of 360 MPa or more and high toughness while having improved corrosion resistance could be stably produced, even if the thickness of the material was reduced.

The objective technical problem should then be formulated as the provision of an Al alloy forged material comprising an excess amount of Si and a large quantity of strength-increasing elements, which should stably have improved SCC resistance and mechanical strength, even if the forged Al alloy material is reduced in thickness.

Taking the objective technical problem defined by the appellants to secure the manufacturing method disclosed in D14, the skilled person would not find the solution in D1.

D1 did not teach the controlling of the electrical conductivity at the surface of the material as such,

but, rather, the analysis of a peak ageing time and the measuring of the electrical conductivity change. This was a different approach from that in the contested patent or in D14. Thus, for this reason alone, there was no incentive for the skilled person to target the values given in Tables 2 or 3 of from 43.9 to 44.4 % IACS for examples 1 to 5 or 8 to 12 according to the invention of D1.

The skilled person also knew that the alloy composition had a strong influence upon the electrical conductivity. For this reason as well, they would not think of targeting the electrical conductivity values provided in Tables 2 and 3 of D1. Indeed, the electrical conductivity values in D1 were provided for a single-alloy composition (see alloy A in Table 1), whereby that single alloy differed from those of alloys A and C in Table 1 of D14, i.e. having, *inter alia*, a higher Cu content.

Therefore, D1 did not give any hint to the skilled person to adjust the electrical conductivity on the surface of an Al alloy forged material to be within the range defined in claim 1 of the main request.

Applying the forging start temperature of 530°C as disclosed in D1 to the processes in the examples of document D14, which fulfil the other process requirements according to claim 4 of the impugned patent, would lead to a forging start temperature being 130°C or even 160°C higher than the forging finish temperature used in these examples. This contradicted the appellants' assertion of the difference between the forging start and the forging finish temperature always being between 80 and 100°C on the basis of D27/D27a.

This demonstrated a discrepancy in the appellants' arguments.

Figure 7 of D1 taught that the maximal yield strength of the material was reached for electrical conductivity values below 42 IACS%, i.e. below the claimed range. Thus, the skilled person aiming to obtain high mechanical strength would target electrical conductivity values below 42 IACS%. In doing so, they would be working outside the claimed subject-matter.

In view of the above, the skilled person starting from D14 and combining it with the teaching of D1 would not arrive at the subject-matter of claim 1 of the main request in an obvious manner.

Auxiliary requests 1 to 6

As discussed in writing, the considerations provided for claim 1 of the main request applied to claim 1 of auxiliary requests 1 to 6. Furthermore, D14 did not disclose the claimed forging start temperature specified in claim 1 of auxiliary requests 1 or 4 of 460-550°C, and nor did it disclose the forging finish temperature of 350-540 °C, the holding duration of the solution heat treatment of from 20 minutes to 20 hours, the mean heating rate of the solution heat treatment of 100°C/hr or more or the quenching step at a cooling rate of 40°C/sec or more of claim 1 of auxiliary requests 2, 3, 5 or 6.

Auxiliary request 7

The amendments performed in claim 1 of auxiliary request 7 were intended to overcome the objections of lack of novelty and inventive step raised by the

appellants, in particular by having a method claim with a narrower scope than the product claim 1 of the main request. This should be allowed pursuant to Rule 80 EPC.

Auxiliary request 10

No argument was provided for this request as far as the requirements of Rule 80 EPC were concerned.

Auxiliary requests 8 and 11

The amendment performed in the solution heat treatment step of claim 1 of auxiliary requests 8 and 11 was based on the corrected translation from Japanese of paragraph 62 of the original description (see WO 2013/114928 A) filed with letter dated 29 August 2018, page 7. The requirements of Article 123(2) EPC should therefore be considered to be fulfilled.

Auxiliary request 9

Claim 1 of auxiliary request 9 differed from claim 1 of the then auxiliary request 4 of the decision under appeal in that feature (r'') specified "started **up**" while the claim of the opposition proceedings only comprised "started".

Furthermore, the auxiliary request as a whole had to be taken into consideration for application of the principle of prohibition of *reformatio in peius*. Since auxiliary request 9 further comprised a dependent claim 2 in comparison with the then auxiliary request 4, the principle of prohibition of *reformatio in peius* did not apply.

Auxiliary request 12

The set of claims according to auxiliary request 12 did not correspond to the set of claims of the then auxiliary request 2 underlying the impugned decision. Hence, as in the case of auxiliary request 9, the principle of prohibition of *reformatio in peius* did not apply.

Auxiliary request 13

The amendments performed in claim 1 of auxiliary request 13 were based on the example of the contested patent (paragraphs 71 and 73). The mean heating rate of the solution heat treatment was then not necessary as it was not disclosed therein. The amendments were performed on the basis of the product claim 1 of the main request with a view to overcoming the objections of lack of novelty and inventive step raised by the appellants. Thus, auxiliary request 13 fulfilled the requirements of Rule 80 EPC.

Auxiliary request 14

The decision reached by the Board during the oral proceedings against auxiliary request 9 on the basis of the prohibition of *reformatio in peius* was a surprise as it was contrary to the Board's preliminary opinion.

The subject-matter of claim 1 of auxiliary request 14 corresponded to claim 2 of auxiliary request 9, which had been filed with the reply to the statements of grounds. Thus, the subject-matter could not be seen as a surprise by the appellants and did not represent a change in the respondent's appeal case and, therefore, Article 13(2) RPBA 2020 did not apply. It was not an

undue burden for the appellants as they had already considered this subject-matter.

Auxiliary request 14 was clearly allowable in view of the decision of the Board provided orally at the oral proceedings on all other objections apart from that based on the principle of prohibition of *reformatio in peius* against auxiliary request 9. As the subject-matter of claim 1 of auxiliary request 14 had not been discussed in the decision under appeal, the reasons provided against auxiliary request 9 on the basis of the prohibition of *reformatio in peius* no longer applied.

For these reasons, auxiliary request 14 should be admitted into the proceedings.

Reasons for the Decision

1. Admittance - late-filed documents D26, D27, D27a, D27b and D28

The reasons below were provided to the parties with the Board's preliminary opinion in the communication dated 21 September 2021, point 6.2. As this has subsequently not been commented on or contested by the parties, either in writing or orally at the oral proceedings, during which they referred to their written submissions, the Board sees no reason to change its preliminary assessment of this issue after reconsidering all relevant submissions.

- 1.1 The revised Rules of Procedure of the Boards of Appeal (RPBA 2020) entered into force on 1 January 2020. Subject to the transitional provisions

(Article 25 RPBA 2020), the revised version also applies to appeals pending on the date of entry into force, as in the present case.

1.2 The statements setting out the grounds of appeal of appellants I and II were filed before 1 January 2020 and the respondent's reply thereto was filed in due time. Thus, Article 12(4) to (6) RPBA 2020 does not apply and, instead, Article 12(4) RPBA 2007 applies to said grounds of appeal and the reply (Article 25(2) RPBA 2020). The statement setting out the grounds of appeal of appellant III was filed on 10 January 2020 and, therefore, the transitional provisions according to Article 25(2) RPBA 2020 do not apply to said statement.

1.3 Appellants II and III filed documents D26, D27, D27a and D28 for the first time with their statements setting out the grounds of appeal.

Document D27b was filed by appellant II for the first time with its letter dated 28 July 2020 as a reaction to the respondent's reply.

1.4 The admission into the appeal proceedings of document D27 late-filed by appellant II is subject to the conditions set out in Article 12(4) RPBA 2007 (see point 1.2 above). Although the conditions according to Article 12(4) RPBA 2020 apply to D27a late-filed by appellant III, the Board considers that, since the content of D27a (translation of D27 into English) is, *de facto*, identical to that of D27, the same conclusions as those drawn for D27 apply to D27a.

1.5 The respondent contested the admission of D27 and D27a into the appeal proceedings, arguing that they were,

prima facie, not relevant to prejudice the maintenance of the contested patent.

The respondent also considered that documents D27/D27a could not be taken into account as an expert opinion since those documents have not been signed by Mrs Ahrens. Furthermore, Mrs Ahrens could not be considered as a qualified expert for evaluating the content of the contested patent in view of the questions posed, and she was not objective in answering said questions. Several statements in D27/D27a were not reasonable and lacked verifiable basis.

Finally, still for the respondent, the filing of D27/D27a could not be seen as a direct reaction to the Opposition Division's reasoning given during the oral proceedings or to the impugned decision.

1.6 The Board does not share the respondent's view.

Firstly, Article 12(4) RPBA 2007 does not comprise the criteria of *prima facie* relevance.

Secondly, as put forward by the appellants, documents D27/D27a are not used in order to create a fresh case with new objections or issues which had never been raised or discussed during the first-instance proceedings. They are merely intended to support the appellants' arguments in discussions which had already been conducted before the Opposition Division. D27/D27a reflect, therefore, a continuation of the discussions held in the first-instance proceedings.

Finally, D27/D27a represent the views of Mrs Ahrens, who has been selected by the appellants as their expert

in the present case. In this respect, the parties are free in their selection of evidence or experts, in the same way as the respondent is free to contest any of the expert's statements that it considers to be incorrect. As far as the signing of D27/D27a by Mrs Ahrens is concerned, the Board has no reason to believe that said documents do not represent her actual views. This has been confirmed by D27b, which was filed in a reaction to the alleged deficiency.

As a result, the Board sees no reason not to admit D27/D27a into the proceedings. The same applies to D26 (Mrs Ahrens's curriculum vitae) and D27b (Mrs Ahrens's signature), which are non-technical documents associated with D27/D27a.

- 1.7 The respondent has not contested the admission into the proceedings of D28, which was filed by appellant III, and the Board sees no reason not to admit this document, which concerns the skilled person's common general knowledge (Article 12(4) and (6) RPBA 2020).
- 1.8 As a consequence, documents D26, D27, D27a, D27b and D28 are admitted into the proceedings.
2. Main request
 - 2.1 Novelty
 - 2.1.1 The appellants contested the view that the subject-matter of claim 1 of the main request was novel over the disclosure of D14.

The only point in dispute among the parties concerned whether D14 implicitly disclosed an aluminium alloy forging material in which the **electrical conductivity**

measured at the surface of the aluminium alloy forged material at 20°C is more than 42.5% IACS but not more than 46.0 % IACS (feature (j; F1.9), hereafter also referred to as the "electrical conductivity").

2.1.2 Document D14 (paragraphs 26, 28, 40, 61, 95 to 116; claim 7) discloses the production of an aluminium alloy forged material having a portion of which the thickness is 10 mm or less, by the following steps (see also impugned decision, point II.5.4):

- casting at an average cooling rate of 100°C/sec or more an aluminium alloy melt having a composition containing, by mass%, 0.5 to 1.25% of Mg, 0.4 to 1.4% of Si, 0.01 to 0.7% of Cu, 0.05 to 0.4% of Fe, 0.001 to 1.0% of Mn, 0.01 to 0.35% of Cr, 0.005 to 0.1% of Ti, Zr controlled to less than 0.15%, and the balance composed of Al and inevitable impurities. Reference is made in particular to **alloys A and C in Table 1** according to the invention of D14, the compositions of which fall completely within that of the claimed alloy, with their respective properties fulfilling features (k; F1.10) and (l; F1.11)) (see Table 4);
- homogenising the cast ingot by heating in a temperature range of 460-570°C at a heating rate of 10 to 1500°C/hr and maintaining the ingot in the temperature range for 2 hours or more;
- cooling the ingot to room temperature at a cooling rate of 40°C/hr or more;
- reheating the ingot to a hot-forging start temperature;
- performing hot die-forging to form an aluminium alloy forging material, the forging finish temperature being 350°C or more;
- performing solution heat treatment by maintaining the material in the temperature range of from

530-570°C for 20 minutes to 8 hours, wherein the heating rate is 100°C/hour or more;

- hardening the material at an average cooling rate in the range of from 200 to 300°C/sec; and
- performing artificial age hardening at temperature and duration conditions falling within the claimed ranges (see Tables 2 and 3).

2.1.3 Thus, undisputed by the parties, D14 does not **explicitly** disclose the claimed electrical conductivity measured at the surface of the aluminium alloy forged material (feature (j; F1.9)).

This feature represents a specific property of the claimed material linked to its microstructure resulting from the **combination of**, on the one hand, the aluminium alloy composition specified in claim 1 of the main request and, on the other hand, the process parameters as defined in claim 4 of the patent as granted.

In view of the disclosure of D14 as discussed under point 2.1.2 above, the only process parameter of the method of claim 4 of the patent as granted not specified in the method according to the invention of D14 is the forging start temperature.

As far as the cooling rate in the casting step is concerned, the Board considers that, since claim 4 of the granted patent does not specify any upper limit, the cooling rate of 100°C/sec or more disclosed in D14, paragraph 97, falls within the range specified in said claim 4 of 10°C/sec **or more**. The examples of the contested patent cannot change this essential requirement of claim 4, contrary to the respondent's view. In this respect, no conclusion can be drawn from the comparative example 23 of the contested patent,

since the cooling rate in the casting step of 5°C/sec (see contested patent, Table 2, page 13) is not representative of the cooling rates applied in the process of D14.

As put forward by the respondent, it is disclosed in paragraph 29 of the contested patent that, *inter alia*, the cooling rate of the ingot in the homogenising heat treatment step would affect the electrical conductivity of the aluminum alloy forged material (feature (j; F1.9)). This, however, does not change the fact that, among the essential parameters specified in claim 4 of the patent as granted, no limit or range for such a cooling rate is specified. Hence, the cooling rate of 40°C/hr or more disclosed in D14 (100°C/hr in Table 2) cannot be seen as departing from the process of manufacturing according to claim 4 of the patent as granted. The examples provided in the contested patent do not change this fact.

The discussion among the parties focused therefore on whether D14 disclosed the forging start temperature.

As a matter of fact, should this be the case, the final product of D14 would then be seen as corresponding to the claimed product, i.e. including with regard to feature (j; F1.9).

On the contrary, as shown by the comparative example 26 of the contested patent, if the forging start temperature is less than 460°C (e.g. 420°C), i.e. if it is outside of the claimed range, the electrical conductivity of the aluminium alloy forged material would be less than the lower limit of 42.5% IACS defined in claim 1 of the main request, i.e. outside of the claimed range, even if the other process parameters

including the finish temperature of the hot forging (such as 350°C) are as required by claim 4 of the patent as granted.

- 2.1.4 The Board follows the respondent's view that D14 discloses neither explicitly nor implicitly the **forging start temperature of 460 to 540°C** as defined in granted claim 4 of the patent as granted, for the following reasons.

Document D14 merely describes in paragraph 105 that the

*"finish temperature of the hot forging is 350°C or more, and the forging **start** temperature is a temperature which allows the finish temperature to be set to 350 °C or more depending on the number of times of hot forging which is performed several times without reheating. [...] if the hot forging **start** temperature is less than 350°C, it is difficult to secure a high finish temperature of 350°C or more"* (emphasis by the Board).

In the examples of D14, the forging start temperature is not specified either.

Hence, there is no explicit disclosure in D14 of the forging start temperature.

- 2.1.5 As put forward by the appellants at the oral proceedings, paragraph 8 of D14 discloses a forging start temperature range of from 450 to 570°C. This disclosed range concerns, however, the prior-art documents cited in D14, i.e. not the disclosure of D14 itself. These prior-art documents of D14 relate to Japanese patent applications, which cannot be regarded as representing the inevitable and only practice in the

technical field, not even reflecting the skilled person's common general knowledge. Furthermore, as put forward by the respondent, the disclosed forging start temperature range is broader than that of claim 4 of the patent. Hence, for these reasons it cannot be concluded that the skilled person would derive from the disclosure of paragraph 8 of D14 that the forging start temperature in D14 would inevitably fall within the claimed forging start temperature range.

- 2.1.6 The Board further follows the respondent's view that there is no evidence that a forging start temperature would **inevitably** exceed by 80 to 100°C the forging finish temperature, contrary to the appellants' allegations based on D27/D27a (see page 20 of D27, penultimate paragraph).

Reference is made, for instance, to D13, Table 2, in which the difference between the forging start and finish temperatures is 40°C (see embodiments 1 to 6, for instance). Applying said difference to the forging finish temperature of 400°C used in Example 1 with alloy A of D14 would result in a forging start temperature of 440°C, which is below the lower limit of 460°C specified in claim 4 of the patent as granted. In the case of Example 3 with alloy C of D14, this would result in a forging start temperature of 410°C, likewise below 460°C (see Table 2).

The more generic disclosure on page 4, penultimate paragraph, of D13a, referred to by the appellants at the oral proceedings, according to which the forging start temperature would have to be chosen between 480 and 520°C, i.e. with a possible difference of 100°C from the forging finish temperature of 380°C or more, does not change the specific teaching of D13 in Table 2

regarding the relationship between forging start and forging finish temperatures. This specific teaching does not match with the expert opinion of D27/D27a.

- 2.1.7 The appellants also put forward during the oral proceedings that, for achieving the forging finish temperature of more than 350°C in D14, the forging start temperature of the material had to be high in view of the multiple forging steps without reheating and the complex structure of the die into which the material had to be deformed (see paragraphs 105 and 123). D13, which was cited as document 9 in D14, paragraphs 8 and 17, reflected what had to be applied in D14, i.e. more than 480°C for the forging start temperature (see D13a, page 4, second paragraph). Furthermore, the maximum forging start temperature was inevitably the temperature at which the second phases started melting (see contested patent, paragraph 59). As a consequence, the skilled person would have immediately and directly derived therefrom that the forging start temperature in D14 fell within the range of claim 4 of the patent as granted, leading inevitably to the claimed electrical conductivity range.

The Board does not share the appellants' view. As a matter of fact, there is no clear and unambiguous disclosure in D14 that the forging start temperature to be applied is that disclosed in D13 (document 9 in D14). As already mentioned above, paragraph 8 of D14 concerns the disclosure of the prior-art documents and D14 does not contain any hint that the teaching of the prior-art documents would have to be applied. The only indication in D14 for the forging start temperature is that "*when the hot forging start temperature is less than 350°C, it is difficult to secure a high finish temperature of 350°C or more*" (see paragraph 105).

Hence, the skilled person would not directly and unambiguously derive therefrom a lower limit for the forging start temperature of 460°C or 480°C, as alleged by the appellants. Thus, the appellants' arguments are not convincing.

2.1.8 As a result of the above, it cannot be concluded that D14 implicitly discloses the forging start temperature of claim 4 of the patent as granted, which would mean that feature (j; F1.9) would be inherently present in the material disclosed in D14. As a consequence, the subject-matter of claim 1 of the main request is novel over the disclosure of D14 (Article 54(1) EPC).

2.2 Inventive step

The appellants contested the view that the subject-matter of claim 1 of the main request involved an inventive step in view of D14 taken as the closest prior art in combination with the teaching of D1.

2.2.1 Closest prior art

Like claim 1 of the main request, D14 lies within the technical field of Al-Mg-Si-Cu alloy forged materials and is aimed at providing structural members of motor cars (contested patent, paragraph 1; D14, claim 1, paragraph 140). Therefore, D14 represents a suitable closest prior art for claim 1 of the main request, as also agreed upon by the parties (see also decision under appeal, point II.6.1).

2.2.2 Distinguishing feature

As a result of the novelty discussion under point 2.1 above, the subject-matter of claim 1 of the main

request differs from the disclosure of D14 only in feature (j; F1.9), i.e. in that the electrical conductivity is more than 42.5 % IACS but not more than 46.0 % IACS.

2.2.3 Technical effect

According to the impugned decision, points II.6.5 and II.6.6, the distinguishing feature would enable a forged material to be provided with an improved SCC resistance while maintaining good mechanical properties.

The appellants contest this finding, arguing that the effect on SCC resistance would not be present in comparison with the results provided in D14. According to the appellants the test conditions applied in D14 for assessing SCC resistance were stricter than those of the opposed patent.

As conceded by the respondent, the test for evaluating SCC resistance applied in the contested patent is indeed different from that used in document D14.

Thus, the Board considers that, for this reason alone, it appears inappropriate to compare the results provided in D14 with those of the contested patent.

In particular, the respondent's assumption that the loading direction for the evaluation of SCC resistance would be the same in the contested patent as in D14, since D14 and the contested patent are from the same company and the same inventor, cannot supplement the missing disclosure of D14.

Similarly, when referring to the applied stress, it cannot be assumed that the yield strength in the L direction would inevitably be close to the yield strength in the LT direction, even though the tests concern a suspension arm in which a cast bar is forged.

Thus, an improved SCC resistance of the claimed material compared to that of D14 cannot be directly and unambiguously derived.

Furthermore, examples 19, 22, 26, 28 and 29 in Table 2 of the contested patent show a "good" SCC resistance at the same time as having an electrical conductivity outside of the claimed range. In contrast, examples 11, 13, 20 and 21 show a "not very good" SCC resistance while having an electrical conductivity falling within the claimed range. Hence, a direct relationship between the distinguishing feature and the SCC resistance does not appear to be unambiguously derivable from the results of the contested patent.

In fact, the Board follows the appellants' opinion that, in view of the results provided in Table 2 and the general disclosure in paragraphs 19, 20 and 23 of the contested patent, the technical effect of a specific electrical conductivity in a range of from 42.5 % IACS to 46.0 % IACS can be seen as enabling an aluminium alloy forged material to be **stably** produced with a 0.2% proof stress of 360 MPa or more.

2.2.4 Objective technical problem

As a result, the objective technical problem can then be seen as being to secure the manufacturing method disclosed in D14 (see also contested patent, paragraph 9).

By the same token, the problem mentioned under point 2.2.3 above, which was put forward in the decision under appeal, cannot be regarded as the objective technical problem, contrary to the respondent's view.

2.2.5 Inventiveness of the claimed solution

The skilled person would come across document D1 and consider its teaching since, like claim 1 of the main request and D14, D1 relates to Al-Mg-Si-Cu aluminium alloy forged materials for a motor car part (see, for instance, paragraphs 1, 50 and 61 and claim 1; see also point 2.2.1 above.)

D1 discloses aluminium alloy forged materials having an electrical conductivity measured at the surface falling completely within the claimed range. Disclosed values are from 43.9 to 44.4 % IACS in Table 2 for examples 1 to 5 according to the invention of D1 and from 42.8 to 43.4 % IACS in Table 3 for examples 8 to 12 according to the invention of D1. Notwithstanding this explicit disclosure, the Board shares the respondent's view that D1 does not teach the controlling of the electrical conductivity at the surface of the material as such. As a matter of fact, D1 discloses the analysing of a peak ageing time and the measurement of the electrical conductivity **change** (claim 1), which is a different approach from that in the contested patent or in D14.

The Board is, however, of the opinion that the skilled person would immediately and directly derive from the teaching of D1 that there is a relationship between 0.2% proof stress, corrosion resistance and electrical conductivity for a given alloy (see D1a, for instance paragraphs 11, 33, 37, 40, 41, 42, 43, 44, 54 and 126).

In particular, paragraph 11 states: "...it has been known that the conductivity of the surface of the aluminium alloy material...closely correlates with the hardness and strength of the aluminium alloy material."

It is known to the skilled person that, for a given alloy, these properties depend on the process parameters for obtaining the product. Thus, the skilled person faced with the above-mentioned objective technical problem would immediately consider the process parameters in D1 leading to improved results.

In this respect, the Board follows the respondent's view that the skilled person, knowing that the alloy composition also has a strong influence on the electrical conductivity, would not think of targeting the electrical conductivity values provided in Tables 2 and 3 of D1 per se. The electrical conductivity values in D1 are indeed provided for a single-alloy composition (see alloy A in Table 1), whereby that single alloy differs from those of alloys A and C in Table 1 of D14, i.e. having, *inter alia*, a higher Cu content.

However, the Board is of the opinion that the skilled person would consider examples 1 to 5 and 8 to 12 according to the invention of D1, which exhibit high hardness, high strength and good corrosion resistance in a stable manner (see also paragraph 42). In doing so, they would select in the first place in an obvious manner the parameters of the process of D1 for these examples, which are not specified in the process of D14.

In D1 the aluminum alloy ingots are cast by a hot top casting method with a casting temperature of $750\pm 50^{\circ}\text{C}$

and a casting speed of 240 ± 50 mm/min; the ingots are subsequently homogenised at 470°C for 6 hours; the obtained ingots are heated to 530°C and hot-forged to automobile suspension arm parts; the hot-forged parts are then subjected to a solution treatment at 530°C for 4 hours, water-quenched to 60°C , followed by ageing at 180°C for 2 to 15 hours or at 200°C for 0.5 to 12 hours (see D1a, paragraphs 114 to 117).

Among the parameters provided in D1, the skilled person would then immediately notice the forging start temperature of 530°C , as the other process parameters are consistent with those of D14 (see point 2.1.2 above). In view of this consistency between the disclosures of D1 and D14, the skilled person would encounter no technical difficulties in applying this forging start temperature of D1 in the process of D14. They would thereby arrive in an obvious manner at a method falling completely within the method of claim 4 of the patent as granted, since the forging start temperature is the only process parameter of the method of claim 4 of the patent as granted that is not disclosed in D14 (see point 2.1.3 above). As a consequence, with the composition and the process arrived at in an obvious manner from the disclosure of D14 and D1 in the range of claims 1 and 4 as granted, the electrical conductivity will inevitably be within the claimed range, and the product of claim 1 of the main request obtained by the non-inventive method of claim 4 of the patent as granted is also not inventive.

The fact that the forging start temperature of 530°C would be 130°C and 160°C , respectively, higher than the forging finish temperature used in the examples of document D14 would not be seen by the skilled person as a technical difficulty, contrary to the respondent's

view. As a matter of fact, as put forward by the appellants (see point 2.1.7 above), the forging start temperature in D14 has to be high enough in order to achieve the forging finish temperature of more than 350°C in view of the multiple forging steps without reheating, and no maximum temperature is suggested in D14 for the forging start temperature. Furthermore, the range given in D27/D27a of 80-100°C is not considered to be necessarily applied in D14 (see point 2.1.6 above).

Figure 7 of D1, referred to by the respondent during the oral proceedings, is irrelevant to the above reasoning, as it concerns the prior art of D1. As put forward by the appellants, Figure 7 of D1 corresponds to Figure 1 of D17 cited as document 4 in D1 (see paragraphs 11 and 12).

2.2.6 In view of the above, the skilled person starting from D14 and combining it with the teaching of D1 would arrive at the subject-matter of claim 1 of the main request in an obvious manner (Article 56 EPC).

3. Auxiliary requests 1 to 6

The reasons below for auxiliary requests 1 to 6 were provided to the parties with the Board's preliminary opinion in the communication dated 21 September 2021, point 8. As this has subsequently not been commented on or contested by the parties, either in writing or orally at the oral proceedings, the Board sees no reasons to change its preliminary assessment of this issue after reconsidering all relevant submissions. In view of the fact that the requests are found not to be allowable (see below), a discussion of their admissibility is deemed unnecessary.

3.1 Claim 1 of auxiliary requests 1 to 3 is drafted as a product-by-process claim. As such, the claimed products themselves need to be novel and inventive.

The product features of claim 1 of auxiliary requests 1 to 3 are the same as those of claim 1 of the main request. Since it has not been shown that the process features inserted into said claim 1 of auxiliary requests 1 to 3 (features (m) to (s) for claim 1 of auxiliary request 1; features (m) to (p), (q'), (r') and (s) for claim 1 of auxiliary request 2; features (m) to (p), (q'), (r'') and (s) for claim 1 of auxiliary request 3) would lead to any new **inevitable** recognisable feature(s) in the claimed products in comparison with the product of claim 1 of the main request, the same reasoning and conclusion as for the patentability of claim 1 of the main request apply for the subject-matters of claim 1 of auxiliary requests 1 to 3 (Article 56 EPC). Reference is also made to point 2.1.2 above, which shows that D14 discloses all the process features of claim 1 of auxiliary requests 1 to 3 apart from the forging start temperature, as in the case of claim 4 of the patent as granted discussed under point 2.2.5 above.

3.2 As to auxiliary requests 4 to 6, claim 4 of the patent as granted is narrower than the method claim 1 of auxiliary requests 4 to 6 due to the amendments performed in the latter (see point V above and, more particularly, features (q) and (r) of claim 1 of auxiliary request 4, features (q') and (r') of claim 1 of auxiliary request 5 and feature (r'') of claim 1 of auxiliary request 6, in which parameters are omitted in comparison with the corresponding features of claim 4 of the patent as granted). Hence, the above-mentioned

objection of lack of inventive step, discussed under point 2.2, against claim 1 of the main request, which also includes a discussion concerning claim 4 of the patent as granted, holds *mutatis mutandis* against the method claim 1 of auxiliary requests 4 to 6 (Article 56 EPC).

4. Auxiliary request 7

In view of the fact that auxiliary request 7 is found not to be allowable (see below), a discussion of its admissibility is deemed unnecessary.

4.1 With respect to method claim 4 of the patent as granted, method claim 1 of auxiliary request 7 no longer comprises the forging finish temperature of the forging step, and nor does it comprise the mean heating rate, duration or quenching rate of the solution heat treatment (see method features (m'), (n), (o'), (p), (q), (r) and (s)).

The deletion of these features leads to a method claim with a forging step and a solution heat treatment step having broader scopes than those of the granted method claim 4. The amendments, which obviously do not overcome the objection of lack of inventive step discussed under points 2.2 and 3.2 above in view of distinguishing feature (j; Fl.9) and the forging start temperature, cannot be considered as being occasioned by a ground for opposition, contrary to the requirements of Rule 80 EPC. As a consequence, auxiliary request 7 is not allowable.

4.2 The respondent argued at the oral proceedings that the amendments performed concerned, *inter alia*, a change of claim category with respect to claim 1 of the main

request. They were intended to overcome the objections of lack of novelty and inventive step raised by the appellants, in particular by having a method claim with a narrower scope than product claim 1 of the main request. This should be seen as allowable pursuant to Rule 80 EPC.

4.3 The Board does not share the respondent's view.

Rule 80 EPC relates to the opposition procedure and, hence, to the European patent. In this respect, the amendments carried out in order to overcome the raised objections are to be analysed with respect to the set of claims of the European patent. In the present case, the set of claims of the patent as granted comprises a method claim 4. Thus, when reverting with auxiliary request 7 to a method claim as is currently the case, the requirements of Rule 80 EPC have to be examined with respect to method claim 4 of the patent as granted.

A patent proprietor is not allowed to freely reformulate a new method claim even though the requirements of Article 123(3) EPC could be regarded as fulfilled in view of product claim 1 of the patent as granted. Having this freedom would imply that any new method for manufacturing the aluminum forged material according to claim 1 as granted with different steps and/or different parameters from those of method claim 4 of the patent as granted could be claimed, meaning, *de facto*, that a complete examination of a new method claim would have to be carried out for the first time in opposition proceedings or even in appeal proceedings, i.e. possibly also with respect to documents which had been used in the examination proceedings. As discussed above, it is incomprehensible

how the omission of various features from a granted independent claim could be seen as occasioned by the grounds of opposition under Article 100(a) EPC in combination with Articles 54 and 56 EPC, as argued by the respondent.

5. Auxiliary request 10

Claim 1 of auxiliary request 10 comprises the same amendments (i.e. omissions) in method features (m'), (n), (o'), (p), (q), (r) and (s) as claim 1 of auxiliary request 7. Hence, auxiliary request 10 is not allowable pursuant to Rule 80 EPC for the same reasons as those provided under point 4 above for auxiliary request 7. This was pointed out in the Board's communication dated 21 September 2021 (point 8, page 34, last paragraph). The respondent did not provide any specific argument for auxiliary request 10 beyond those provided for auxiliary request 7.

Thus, as in the case of auxiliary request 7, a discussion of its admissibility into the proceedings is deemed unnecessary.

6. Auxiliary requests 8 and 11

The reasons below for auxiliary requests 8 and 11 were provided to the parties with the Board's preliminary opinion in the communication dated 21 September 2021 (point 8, page 35, first paragraph). As this has subsequently not been commented on or contested by the parties, either in writing or orally at the oral proceedings, the Board sees no reasons to change its preliminary assessment of this issue after reconsidering all relevant submissions.

The amendment performed in the solution heat treatment step (feature (r')) of claims 1 of auxiliary requests 8 and 11 is not based on the corrected translation from Japanese of paragraph 62 of the original description (see WO 2013/114928 A) filed by the respondent with its letter dated 29 August 2018, page 7. As a matter of fact, the starting temperature of the mean heating rate of the solution treatment is no longer defined ("*a mean heating rate from the temperature when the solution heat treatment is started up*") in feature (r') of claims 1 of auxiliary requests 8 and 11. This infringes Article 123(2) EPC. As a consequence, auxiliary requests 8 and 11 are not allowable and a discussion of their admissibility into the proceedings is deemed unnecessary.

7. Auxiliary request 9

7.1 In the present case the opponents are the sole appellants against the interlocutory decision of the Opposition Division to maintain the patent in amended form, meaning that the principle of prohibition of *reformatio in peius* applies in their favour.

In this respect, as stated in G 9/92, OJ EPO 1994, 875, reasons 16, "[B]y not filing an appeal, he [the patent proprietor] has indicated that he will not contest the maintenance of the patent in the version accepted by the Opposition Division in its decision. He is therefore **primarily limited to defending this version**. Any amendments he proposes in the appeal proceedings **may be rejected by the Board of Appeal if they are neither appropriate nor necessary**, which is the case if the amendments do not arise from the appeal" (emphasis by the Board; see also G 4/93, headnotes II).

Furthermore, G 9/92, reasons 12, states that "*the idea that, irrespective of whether the opposing party appeals, an appellant might have to take the risk of its appeal endangering the **result** which it achieved before the first instance, is ... not found in the EPC*" (emphasis by the Board).

- 7.2 Claim 1 of auxiliary request 9 corresponds in substance to claim 1 of the then auxiliary request 4 filed in opposition proceedings with letter dated 14 May 2019 and underlying the decision under appeal. It is noted that, as conceded by the parties at the oral proceedings, feature (o') of the claim is wrongly recited in the decision under appeal, page 6.

A decision was reached in the first-instance proceedings on this claim. The Opposition Division held that claim 1 of the then auxiliary request 4 did not fulfil the requirements of Article 123(3) EPC due to feature (r'') (see decision under appeal, point II. 2.3).

G 9/92, reasons 10, states that "*[I]f a party does not appeal against a decision of the first instance within the time limit for appeal, that party cannot claim the right, without limit of time, to **submit requests having the same scope as an appellant's request**, and thus, in response to an appeal by the opposing party, effectively to **assume the status of an appellant***" (emphasis by the Board).

Although the Board judges the question of extension of scope of protection (Article 123(3) EPC) differently from the Opposition Division, the Board considers that reverting now in appeal proceedings to the same claim which had already been settled in the opposition

proceedings leads, *de facto*, to the respondent assuming the status of an appellant. The respondent wishing to defend this claim in the appeal proceedings should have filed an appeal. Otherwise, the appellants being confronted again with the same claim would create a situation in which the result achieved in their favour during the first-instance proceedings would be endangered by the filing of the appeal.

For these reasons, the Board considers that the filing of auxiliary request 9 is neither appropriate nor necessary. Hence, auxiliary request 9 is not admitted into the proceedings in application of the principle of prohibition of *reformatio in peius*.

- 7.3 At the oral proceedings before the Board, the respondent argued that claim 1 of auxiliary request 9 differed from claim 1 of the then auxiliary request 4 in that feature (r'') specified "started **up**" while the claim of the opposition proceedings only comprised "started".

Furthermore, the respondent held the view that the auxiliary request as a whole had to be taken into consideration for application of the principle of prohibition of *reformatio in peius*. Auxiliary request 9 was narrower in scope than the patent as granted (due to the broader scope of device claim 1) and thus in accordance with Article 123(3) EPC. Furthermore the request comprised a dependent claim 2 in comparison with the then auxiliary request 4. The request was thus different from the one pursued in opposition proceedings, and the principle of prohibition of *reformatio in peius* did not apply.

- 7.4 The Board does not share the respondent's view.

The wording used in the claims of "started up" or "started" does not impart a difference in the feature interpretations, and the respondent has not pointed out any difference either. Hence, claim 1 of auxiliary request 9 is considered to be the same in substance as claim 1 of the then auxiliary request 4.

Furthermore, the Opposition Division also decided on the exact wording of "started up" of feature (r'') of the present claim 1 of auxiliary request 9 as appearing in the decision under appeal (point II.2.3.8.4) for claim 4 of the then main request. It drew the same conclusion for claim 1 of the then auxiliary request 4 (see decision under appeal, point II.2.3.8.5).

The principle of prohibition of *reformatio in peius* does neither apply to requests as a whole, nor separately to each point or issue decided, but to subject-matters according to the established case law. As illustrated in Case Law of the Boards of Appeal, 10th edition, 2022, V.A.3.1.4, in the case where the patent proprietor would be the sole appellant, a board could no longer review any part of a set of claims included in a new set of claims also containing additional claims if the opposition division had already held the first set of claims to be EPC-compliant and the additional claims did not alter how it was to be interpreted. In a similar manner, in a case where the patent proprietor and sole appellant appealed only in respect of some of the claims held allowable in the opposition division's interlocutory decision, neither the board nor the opponent as respondent can challenge the claims not questioned by the appellant.

By analogy with the present case, the fact that auxiliary request 9 contains a dependent claim 2 does not alter the fact that neither the board nor the patent proprietor as respondent may challenge the conclusion of the opposition division on the (non-)allowability of the subject-matter of claim 1 of the then auxiliary request 4, a decision which was in favour of the appellants.

Moreover, the fact that the method claim of the present auxiliary request is narrower in scope than claim 1 as granted does not change the fact that admittance of said method claim into the appeal proceedings would indeed jeopardise the result obtained by the appellants before the Opposition Division. In this context the Board understands the term "**result**" in G 9/92, reasons 12 (*supra*) in the sense of "a particular claimed subject-matter is or is not allowable".

During the oral proceedings the respondent further mentioned T 1843/09, OJ EP 2013, 508, which concerns exceptions to the principle of prohibition of *reformatio in peius*. According to this decision, exceptions are a matter of equity in order to protect the non-appealing patent proprietor against procedural discrimination in circumstances where that **prohibition would impair the legitimate defence of its patent**. Exceptions to the prohibition of *reformatio in peius* would not be limited to the situation specifically dealt with in G 1/99, EPO OJ 2001, 381, where an error of judgement by the opposition division occurred concerning an amendment inserted into the version of the patent as maintained by the decision under appeal (headnote, point 2.4.4 of the reasons).

The respondent has, however, not explained how this decision would apply to the present case and the Board is of the opinion that it does not. As a matter of fact, the respondent chose deliberately, in the opposition proceedings, to delete the method claims so that the patent was maintained on the basis of a set of claims comprising only product claims. The Board considers that the respondent was not prevented by the prohibition of *reformatio in peius* from adequately defending its patent by further limiting the scope of the product claims of the set of claims which had been maintained by the decision under appeal. It was not necessary to revert to method claims (see Case Law of the Boards of Appeal, 10th edition, 2022, V.A.3.1.5).

Moreover, there is a further fundamental difference between the situation underlying T 1843/09 or G 1/99 and the present case:

In those two cases, an amendment by the patent proprietor had been found allowable by the opposition division. As the patent proprietors were satisfied with the result achieved there was no reason for them to appeal against this particular result.

In the present case, however, the method claim now to be reintroduced was found not allowable. If the patent proprietor had not been satisfied with this result and wanted to further pursue the case on the basis of this claim, it would have been possible and indeed appropriate for it to file an appeal against the decision. This would also not have endangered the result later achieved with respect to a lower-ranking auxiliary request (such as auxiliary request 5 in the present opposition proceedings). Although the Board in the present case does indeed judge the fulfillment of

the requirements of Article 123(3) EPC differently from the Opposition Division, the reconciliation of the adequate protection of the rights and interests of the sole appellants/opponents with the legitimate defence of the patent by the non-appealing patent proprietor does not warrant an exception to the principle of prohibition of *reformatio in peius*. In fact, the legitimate defence of the patent proprietor in order to achieve maintenance on the basis of the method claim now to be reintroduced, in the circumstances of the present case, would have been to appeal the decision of the Opposition Division. Not following this path was a deliberate decision on the part of the respondent, with the implication of accepting the Opposition Division's decision also in respect of those parts with which the respondent did not and still does not agree.

8. Auxiliary request 12

As discussed during the oral proceedings and conceded by the respondent, claim 1 of auxiliary request 12 corresponds to claim 4 of the then auxiliary request 2, which was found not allowable in the decision under appeal as it infringed the requirements of Article 123(3) EPC (see points II.2.3.8 and 2.3.9).

As a consequence, auxiliary request 12 is not admitted into the proceedings for the same reasons as those given under point 7 above for auxiliary request 9 on the basis of the principle of prohibition of *reformatio in peius*.

9. Auxiliary request 13

9.1 With respect to method claim 4 of the patent as granted, the mean heating rate of the solution heat

treatment has been deleted in feature (r13) of method claim 1 of auxiliary request 13 (see point V above).

Hence, auxiliary request 13 is not allowable pursuant to Rule 80 EPC for the same reasons as those given under point 4 above for auxiliary request 7. Therefore, a discussion of its admissibility into the proceedings is deemed unnecessary.

9.2 During the oral proceedings the respondent argued that the amendments performed in claim 1 of auxiliary request 13 were based on specific conditions provided in the example of the contested patent, paragraphs 71 and 73. For this reason, the mean heating rate of the solution heat treatment was not necessary in the method claim. As in the case of auxiliary request 7, the amendments were performed on the basis of the product claim 1 of the main request with a view to overcoming the objections of lack of novelty and inventive step raised by the appellants. Auxiliary request 13 should therefore be seen as fulfilling the requirements of Rule 80 EPC.

9.3 The Board does not share the respondent's view, already for the reasons given under points 4.1 and 4.3 above for auxiliary request 7.

Furthermore, as put forward by the appellants during the oral proceedings, the mean heating rate is an essential parameter in order to achieve the desired properties of the material, such as the 0.2% proof stress (see contested patent, paragraph [0064]). Its deletion in claim 1 of auxiliary request 13 cannot be considered as being justified by any of the other process parameters inserted.

10. Auxiliary request 14

The respondent filed auxiliary request 14 as new auxiliary request 3 during the oral proceedings before the Board. Thus, the Board had to decide on the admission of this request based on the provisions of Article 13(2) RPBA 2020.

- 10.1 The respondent argued that it was surprised by the decision reached by the Board during the oral proceedings against auxiliary request 9 on the basis of the prohibition of *reformatio in peius*. The decision was surprisingly contrary to the positive preliminary view of the Board on this issue in the communication dated 21 September 2021, point 8.

The subject-matter of claim 1 of auxiliary request 14 consisted of claim 2 of auxiliary request 9, as a result of the deletion of claim 1 of said auxiliary request 9. Thus, the subject-matter could not be seen as a surprise by the appellants as it had already been filed with the reply to the statements of grounds and could not represent an undue burden for the appellants. In this respect, it did not represent a change in the respondent's appeal case and Article 13(2) RPBA 2020 did not therefore apply.

As the subject-matter of claim 1 of auxiliary request 14 had not been discussed in the decision under appeal, the reasons provided against auxiliary request 9 on the basis of the prohibition of *reformatio in peius* no longer applied. Thus, auxiliary request 14 was clearly allowable in view of the positive conclusion of the Board provided orally at the oral proceedings on all other objections against auxiliary request 9.

For these reasons, auxiliary request 14 should be admitted into the proceedings.

10.2 The Board does not share the respondent's view.

The limitation of claim 1 of auxiliary request 14 to a preferred embodiment represented by claim 2 of auxiliary request 9 constitutes an amendment to the respondent's appeal case. The specific features of claim 2 of auxiliary request 9, e.g. the patentability thereof, did not have to be considered, particularly by the appellants in the appeal proceedings, until the oral proceedings. The admittance of the late-filed auxiliary request 14 is therefore subject to the conditions set out in Article 13(2) RPBA 2020.

In this respect the Board's preliminary opinion put forward in the communication dated 21 September 2021 on the prohibition of *reformatio in peius* in view of auxiliary request 9 and the change of its view in the oral proceedings cannot represent exceptional circumstances which could justify the late-filing of auxiliary request 14. As a matter of fact, boards' preliminary opinions are not binding pursuant to Article 17(2) RPBA 2020. A board is entitled to change its preliminary assessment - otherwise oral proceedings would be meaningless.

In addition, the objection based on the prohibition of *reformatio in peius* was not put forward for the first time by the Board in its preliminary opinion. In fact, it had been raised by appellant II with its letter dated 28 July 2021 (see in particular point 1, page 2 and paragraph bridging pages 10 and 11) in a reaction to the filing of the respondent's auxiliary requests.

As a consequence, it appears that the respondent waited until a negative decision of the Board on the objection relating to the prohibition of *reformatio in peius* had been reached before it reacted instead of doing so in a diligent manner prior to the Board's communication or, at the latest, before the oral proceedings. In the absence of exceptional circumstances justified by cogent reasons, auxiliary request 14 is not admitted into the proceedings pursuant to Article 13(2) RPBA 2020, even though the conditions set out in Article 13(1) RPBA 2020 could possibly be fulfilled. The latter conditions would have been exclusively applied, irrespective of those of Article 13(2) RPBA 2020, if auxiliary request 14 had been filed before notification of the summons to oral proceedings dated 21 September 2021, but this was not the case.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



C. Spira

C. Herberhold

Decision electronically authenticated