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**Datasheet for the decision
of 6 December 2013**

Case Number: T 1223/10 - 3.2.07

Application Number: 02721700.9

Publication Number: 1381714

IPC: C23G1/08

Language of the proceedings: EN

Title of invention:

HYDROGEN PEROXIDE PICKLING SCHEME FOR STAINLESS STEEL GRADES

Patent Proprietor:

AK Steel Properties, Inc.

Opponent:

Aperam Stainless France

Headword:

Relevant legal provisions:

EPC Art. 56, 84, 108, 114(2), 123(2)

EPC R. 80

Keyword:

Admissibility of appeal - yes

Amendments - added subject-matter (new main request and second auxiliary request - yes)

Late submitted material - documents admitted (experimental report D7 - no; handbook D8 - yes)

Inventive step - problem not credible (new first auxiliary request)

Decisions cited:

Catchword:



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Case Number: T 1223/10 - 3.2.07

D E C I S I O N
of Technical Board of Appeal 3.2.07
of 6 December 2013

Appellant: Aperam Stainless France
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 26 March 2010
rejecting the opposition filed against European
patent No. 1381714 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman: H. Meinders
Members: H. Hahn
I. Beckedorf

Summary of Facts and Submissions

- I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division to reject the opposition against European patent 1 381 714.
- II. The following documents of the opposition procedure are considered relevant for the present decision:

D1 = EP-A-0 582 121

D2 = JP-A-11 269 676 (Patent Abstract of Japan and English machine translation)

D3 = US-A-5 800 694

D4 = US-A-5 554 235

while the following documents were submitted during the appeal proceedings:

D7 = Experimental report ("Pickling of steel strips according of the invention in a laboratory scale")

D8 = A Designers' Handbook Series No. 9001: "Cleaning and Descaling Stainless Steels"

D9 = WO-A-02/081777, the published application for the present patent

- III. The opposition had been filed against the patent under Article 100(a) EPC, for lack of novelty and inventive step, and under Article 100(b) EPC, that the patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by the person skilled in the art.

The Opposition Division considered that the invention was sufficiently disclosed and that the subject-matter of claim 1 of the patent as granted was novel over the disclosure of D1. Furthermore, it considered that

claim 1 involved inventive step with respect to a combination of the teachings of D1 and D2. Therefore it rejected the opposition.

IV. The decision to reject the opposition, dated 23 December 2009 - which crossed with a request of the patent proprietor for a cost decision submitted with letter of 9 December 2009 - was notified only to the opponent on 28 December 2009 after an (eventually unsuccessful) attempt to retrieve it from the EPO postal service before its sending off. The two parties were informed on 22 December 2009 by telephone by the formalities officer that the decision dated 23 December 2009 will be cancelled in view of said request for apportionment of costs. However, the same (unamended) decision, now dated 26 March 2010, was later sent to the patent proprietor on 30 March 2010 with an explanatory note that the request for apportionment of costs has not been dealt with since it arrived too late at the Opposition Division to take account of it. Only after receiving the copy of this letter to the patent proprietor the appellant submitted with letter dated 31 May 2010 its appeal and a corresponding statement of grounds and as an auxiliary measure requested re-establishment of rights under Article 122 EPC, paying both fees.

V. With a communication dated 18 July 2013 and annexed to the summons to oral proceedings the Board presented its preliminary opinion with respect to claims 1-15 of the patent as granted according to the single request.

The Board gave its opinion that the appeal was deemed to have been filed and reasoned in due time according to Article 108 EPC so that the appellant's request for re-establishment of rights according to Article 122 EPC

appeared to be superfluous and that it was intended to reimburse the respective fee paid by the appellant.

Amongst others it remarked that the issue of inventive step would be discussed taking account of the problem-solution approach based on the distinguishing feature(s) and its (their) effect(s), and whether or not the person skilled in the art, when starting from the uncontested closest prior art D1, would have any incentive to modify that teaching by combining it with the teaching of another prior art document such as D2, D3 or by additionally applying his common general knowledge, resulting thus in the subject-matter of claim 1 of the patent as granted.

VI. With letter dated 11 November 2013 the respondent submitted an amended main and an auxiliary request in combination with arguments concerning the basis of the amendments and with respect to patentability.

With letter of 16 November 2013 the respondent replaced these two requests by a new main and new first and second auxiliary requests, together with arguments concerning the basis of the amendments and with respect to patentability. Furthermore, it submitted the experimental report D7 and only pages 4 and 5 of document D8 to support its arguments.

With another letter dated 5 December 2013 the respondent questioned the legal status of the appellant.

VII. Oral proceedings before the Board were held on 6 December 2013. To start, the legal status of the appellant was discussed in view of the documents filed by it to prove the change of its business name to and

its legal status as Aperam Stainless France. As a consequence thereof the respondent withdrew its objections submitted with letter dated 5 December 2013. Thereafter the issue of the admissibility of the amendments made to the claims 1 of the main request, first auxiliary and second auxiliary requests dated 16 November 2013 with respect to Articles 84 and 123(2) EPC and Rule 80 EPC was discussed. As a result of this discussion the respondent filed a new main request, a new first and a second auxiliary request. These three (new) requests were then discussed for compliance with the requirements of Articles 84 and 123(2) EPC and Rule 80 EPC. Thereafter the issue of introducing the experimental test report D7 and document D8 into the proceedings (a complete version of the latter was additionally filed by the appellant at the oral proceedings) was discussed. Thereafter inventive step of the subject-matter of claim 1 of the (new) first auxiliary request was discussed in view of the closest prior art D1 in combination with document D8 (the latter also being evidence of the skilled persons standard technical knowledge) and of document D1 in combination with either document D4 or D3.

- a) The appellant requested that the decision under appeal be set aside and that the European patent be revoked.
- b) The respondent requested that in setting aside the decision under appeal the patent be maintained in amended form on the basis of one of the sets of claims filed as new main request and as new first and second auxiliary requests during the oral proceedings.

At the end of the oral proceedings the Board announced its decision.

VIII. Claim 1 of the new main request reads as follows (amendments as compared to claim 1 of the patent as granted are underlined with deletions in strikethrough, emphasis added by the Board):

"1. A process for pickling a stainless steel strip in a continuous fashion comprising ~~the steps of~~:

- a. a process step of immersing said strip in a pre-pickling tank, said tank containing a prepickling solution consisting of sulfuric acid and hydrofluoric acid maintained at a temperature of from 54°C to 77°C;
- b. a subsequent process step ~~immersing wherein~~ said strip is immersed in a pickling tank after step a, said tank consisting of a pickling solution of sulfuric acid, hydrofluoric acid and stabilized hydrogen peroxide; and
- c. ~~removing~~ heat is removed from the pickling solution of step b.

wherein said strip is scrubbed after step a and prior to immersion in said pickling tank."

IX. Claim 1 of the new first auxiliary request reads as follows (amendments as compared to claim 1 of the patent as granted are underlined with deletions in strikethrough, emphasis added by the Board):

"1. A process for pickling a stainless steel strip in a continuous fashion comprising ~~the steps of~~:

- a. a process step of immersing said strip in a pre-pickling tank, said tank containing a prepickling solution consisting of sulfuric acid and hydrofluoric

- acid maintained at a temperature of from 54°C to 77°C;
b. immersing said strip in a pickling tank after step a, said tank consisting of a pickling solution of sulfuric acid, hydrofluoric acid and stabilized hydrogen peroxide; and
c. removing heat from the pickling solution of step b.,-

wherein said strip is scrubbed after step a and prior to immersion in said pickling tank and is immersed in a de-smutting tank immediately prior to be scrubbed, said de-smutting tank consisting of a solution comprising hydrogen peroxide, sulfuric acid and hydrofluoric acid, and wherein further overflow solution from the pickling tank is channelled into the de-smutting tank."

- X. Claim 1 of the second auxiliary request reads as follows (amendments as compared to claim 1 of the patent as granted are underlined with deletions in strikethrough, emphasis added by the Board):

"1. A process for pickling a stainless steel strip in a continuous fashion comprising ~~the steps of:~~

- a. a process step of immersing said strip in a pre-pickling tank, said tank containing a prepickling solution consisting of sulfuric acid and hydrofluoric acid maintained at a temperature of from 54°C to 77°C;
b. a subsequent process step ~~immersing~~ wherein said strip is immersed in a pickling tank after step a, said tank consisting of a pickling solution of sulfuric acid, hydrofluoric acid and stabilized hydrogen peroxide; wherein a filtration device and a heat exchanger device are external to and coupled to said pickling tank, and the heat exchanger is arranged in a re-circulating loop so that at any time, a portion of the solution from said pickling tank is routed through

the heat exchanger and the resulting solution is deposited back into said pickling tank through at least one inlet located inside said pickling tank; and
c. ~~removing~~ heat is removed from the pickling solution of step b₁.

wherein said strip is scrubbed after step a and prior to immersion in said pickling tank and is immersed in a de-smutting tank immediately prior to be scrubbed, said de-smutting tank consisting of a solution comprising hydrogen peroxide, sulfuric acid and hydrofluoric acid, and wherein further overflow solution from the pickling tank is channelled into the de-smutting tank."

XI. The appellant argued, insofar as relevant for the present decision, essentially as follows:

The amendment "a **subsequent process step**" as step b of claim 1 of the new main request has not been addressed by the respondent in its letter dated 16 November 2013. This feature has neither an explicit basis in D9 nor can it be derived in a direct and unambiguous manner therefrom. "Subsequent" being mentioned for the step after step a is to be understood as being **immediately** after step a so that any step in-between these steps a and b is excluded. However, claim 1 contains at its end the definition that a scrubbing step shall be after step a and prior to step b, i.e. in-between steps a and b. Figures 2 and 3 of D9 also do not support this amendment. Finally, figures 2 and 3 do not disclose any scrubbing immediately after the pre-pickling step. Consequently, claim 1 of the main request contravenes Articles 84 and 123(2) EPC.

Although the wording of claim 1 of the new first auxiliary request is supported by Figure 2 of D9, after

this amendment it is even more unclear than the wording of claim 1 of the patent as granted.

The objections on "a subsequent step" under Articles 84 and 123(2) EPC apply identically to claim 1 of the second auxiliary request which contains the same wording as claim 1 of the new main request.

Novelty is not at stake.

The results of D7 have apparently not been published. They were filed about three weeks before the oral proceedings and are thus late filed. Consequently these results could not be verified. The data of D7 are also unclear. If these results were obtained during the development of the invention it should not have been a problem to file them in time. Document D7 therefore should not be admitted into the proceedings.

Since only a selection of two pages of the new document D8, which is a handbook and thus in any case represents the common general knowledge of the person skilled in the art, was filed by the respondent together with its new requests three weeks before the oral proceedings it should not be a problem to introduce a full version of this document into the proceedings.

Since it is clear that the pre-pickling solution cannot **"consist of** sulfuric acid and hydrofluoric acid" (i.e. excluding all other constituents) because it inevitably will contain metal ions from the stainless steel scale, the presence of hydrogen peroxide is not excluded from step a of claim 1 and therefore cannot be a distinguishing feature.

In any case, the respondent has not contested the findings in the Board's communication. Therefore the subject-matter of claim 1 of the patent as granted was distinguished from the process of D1 at most by the pre-pickling step not including hydrogen peroxide and the removal of heat in the pickling bath.

The removal of heat from the pickling bath is obvious to the skilled person since pickling is an exothermic reaction and automatic control is required (see D8, page 13, second paragraph from the bottom).

Remains the distinguishing feature of the absence of hydrogen peroxide in the pre-pickling bath.

There is no evidence in the patent in suit, nor presented in the appeal proceedings, of any technical effect obtained by this distinguishing feature. The examples in the patent do not show this, nor is it proven that actually, for the entire process, less hydrogen peroxide is required. If there is no technical effect proven, there is no technical problem solved, therefore no inventive step to be acknowledged.

Claim 1 of the new first auxiliary request contains, in comparison to claim 1 of the patent as granted, the additional features of a temperature control of the pre-pickling bath, a de-smutting step with the overflow from the pickling step after step a, and a scrubbing step after the de-smutting step and prior to the immersion in the pickling tank.

The overflow from the pickling tank has the identical composition and therefore the de-smutting is actually pickling, i.e. doubling the pickling by using two

pickling baths. The skilled person, if necessary, would foresee such further pickling tanks.

Scrubbing means a mechanical removal of scale (see patent in suit, paragraph [0012]) and serves to solve the problem of improving the removal of scale.

Scrubbing is, however, a well-known step in pickling (see D8, page bridging paragraph of pages 8 and 9). It is sometimes designated "abrasive brushing" (see D3, claim 11) or "brush-polishing" (see D4 column 3, lines 17 to 22 and column 6, lines 58 to 63) between several pickling tanks.

Temperature control of the pre-pickling bath is in any case necessary to control the pickling rate of the bath and thereby avoid over- and underpickling of the stainless steel strip. Automatic control of the temperature is also indicated to be required for maintaining it within specified limits (see D8, page 13, section "Control of Pickling Baths", first to third paragraphs). It is also indicated in D1 as a parameter to be controlled (see page 7, line 44).

Therefore claim 1 of the new first auxiliary request involves no inventive step in view of a combination of the teachings of D1 and D8 (representing the common general knowledge of the person skilled in the art) or D1 and D4, or D1 and D3.

The respondent has not properly applied the problem-solution approach by determining the technical effect obtained by the differing feature(s).

The consumption of less hydrogen peroxide as such a technical effect is not proven.

D1 discloses also a pre-pickling without any hydrogen peroxide (see table 4 and example 2.2). Compared to example 2.1 where both baths have hydrogen peroxide, there is no difference in consumption, therefore this effect cannot be acknowledged. Since claim 1 now includes a second bath using the pickling solution, namely the overflow from the pickling tank, example 2.2 of D1 acquires more relevance, since it employs two pickling baths preceded by a pre-pickling bath having no hydrogen peroxide.

The respondent's arguments based on a different mechanism cannot hold since claim 1 does not contain any corresponding features.

There exists no evidence for the technical effect alleged in its letter (see letter dated 16 November 2013, page 7, third paragraph). There are also no experimental data or comparative data concerning any difference in loosening scale between a pre-pickling bath of exclusively sulfuric acid (as in example 2.2 of D1) compared to a pre-pickling bath of sulfuric acid and hydrofluoric acid (as per claim 1). The presence of hydrogen fluoride, which likewise as sulfuric acid is a reducing acid, in any case has other reasons, such as its scale-removing property which does not result in pitting (see D8, page 5, second to eighth paragraphs). Consequently, it is not possible to define a technical problem based on these allegations. If there is no technical problem solved, one cannot acknowledge inventive step.

XII. The respondent argued, insofar as relevant for the present decision, essentially as follows:

The amendments made in the three requests serve to deal with the novelty and inventive step objections raised. The order of steps should be made clear by the steps a, b and c of claim 1 and the term "subsequent" merely means "after", i.e. it does not imply "**immediately** after", and the same common sense should be used by all parties where it concerns the wording of the claims. Therefore it is clear that there may be another step between steps a and b. The scrubbing step is taken from claim 5 of the patent as granted. The de-smutting and scrubbing steps are also disclosed in figures 2 and 3 of D9 which depict where this treatment takes place. The claims 1 of the new main, new first auxiliary request and the second auxiliary request therefore comply with Articles 84, 123(2) EPC and Rule 80 EPC.

Documents D7 and the two pages of D8 as filed with letter of 16 November 2013 should be introduced into the proceedings but not the full version of D8 which was filed by the appellant only at the oral proceedings and thus filed very late. There were difficulties in retrieving the test results of D7 since the inventor had left the company, therefore D7 could not be filed earlier.

As regards inventive step of claim 1 of the new first auxiliary request it is maintained that the claimed process saves hydrogen peroxide compared to that of D1. The consumption of hydrogen peroxide, as mentioned in the Board's communication, is an important feature. Furthermore, although not included in claim 1, the pre-pickling bath does **not** contain Fe^{3+} in the solution consisting of sulfuric acid and hydrofluoric acid, due to a different mechanism.

Actually step a of claim 1 represents the invention since the combination of sulfuric acid and hydrofluoric acid results in the removal of the scale in the pre-pickling step due to the complexing action of the fluoride which aids the formation of Fe^{2+} and which reduces the consumption of hydrogen peroxide in the later pickling step. The nascent hydrogen generated in the pre-pickling step suppresses the formation of Fe^{3+} (see letter dated 16 November 2013, page 4, penultimate paragraph to page 8, penultimate paragraph). There is no measurable concentration of Fe^{3+} in the pre-pickling bath. This pre-pickling step with these two reducing acids is much more effective than sulfuric acid alone.

The overflow of the pickling tank is used for de-smutting which is not a pickling step.

According to D1 air and hydrogen peroxide are continuously fed into the pickling baths (see page 8, lines 46 to 49; page 10, lines 15 to 18 and lines 35 to 38).

Therefore claim 1 of the new first auxiliary request involves inventive step.

Reasons for the Decision

1. *Admissibility of the appeal (Article 108 EPC)*
- 1.1 There cannot be any doubt that the Opposition Division, after having delivered its decision to the EPO postal service and after having it sent off to the opponent with the mailing date 23 December 2009, was not empowered to cancel its decision and to re-mail the decision with a new date (and surely not only) to the patent proprietor.

Consequently, the time limit for filing a notice of appeal and a statement of the grounds of appeal vis-à-vis the opponent expired two and four months, respectively, counting from the original mailing date of 23 December 2009, i.e. on 2 March 2010 and 3 May 2010, respectively.

- 1.2 The appellant filed both its notice of appeal and statement of grounds of appeal only on 31 May 2010, i.e. after the respective time limit had expired. For its opinion that its appeal nevertheless should be deemed as having been submitted in due time, it essentially relies on the principle of the protection of legitimate expectations which applies to all procedural actions taken by EPO employees vis-à-vis parties to proceedings (see Case Law of the Boards of Appeal, 7th edition 2013, section III.A.1).

In the present case the Opposition Division created confusion by informing, via its formalities officer, the parties by telephone and as documented in the EPO Patent Register, on 22 December 2009 that the decision already taken but not yet notified to (all) the parties will be cancelled and replaced by a new decision and by re-issuing the same decision again, with a new date (26 March 2010) to the patent proprietor (respondent) only, but with a copy to the opponent (appellant).

The Board has no reason to doubt that the appellant has been misled by the inappropriate actions on the part of the Opposition Division (see point IV above) and therefore waited for the issue of the proper decision. Since it did not receive itself a proper notification of the decision, but only as a copy of the notification

to the patent proprietor, it could only use this date as the date of notification.

- 1.3 Taking the date of the Opposition Division's copy (26 March 2010) as the date on which the appellant became aware of the apparently now valid decision, the time limits according to Article 108 EPC are considered to have expired on 7 June and 5 August 2010, respectively.

Consequently, the appellant's notice of appeal and its statement of grounds of appeal of 31 May 2010 are considered as having been submitted in due time.

- 1.4 The appellant's request for re-establishment of rights according to Article 122 EPC is therefore irrelevant and the respective fee has been paid by it without cause. This fee should therefore be reimbursed *ex officio*.

2. Admissibility of the amendments made in claims 1 (Articles 84 and 123(2) EPC)

New main request and second auxiliary request

- 2.1 Claim 1 of the new main request contains the features "b. **a subsequent process step** wherein said strip is immersed in a pickling tank after step a ..." and "wherein said strip is **scrubbed after step a** and prior to immersion in said pickling tank" (emphasis added by the Board; see point VIII above) which have **no** explicit basis in the application as originally filed underlying the patent in suit (which corresponds to the published document D9).

- 2.1.1 D9 only discloses that "said strip is scrubbed prior to immersion in said pickling tank" (see claim 5), or that "said strip is immersed in a de-smutting tank immediately prior to being scrubbed ..." (see claim 6) and "prior to immersing the steel strip in the pickling tank, the strip may be scrubbed, preferably using a scrubber-brush machine. In addition, the strip may also be immersed in a de-smutting tank immediately prior to being scrubbed" (see paragraph [0006]).
- 2.1.2 The basic scheme of the pickling process as shown in figure 1 does not reveal any scrubbing of the stainless steel strip between the pre-pickling tank and the pickling tank while figures 2 and 3 depict the same basic scheme of pre-pickling and pickling tanks with an intermediate treatment in a de-smutting tank followed by a scrubber-brush machine prior to the pickling tank (see also paragraphs [0008] to [0010] and [0012]).
- 2.1.3 Taking account of the above and giving the term "subsequent" its common meaning of "immediately after" it is apparent that the two definitions in claim 1 "b. a subsequent process step wherein said strip is immersed in a pickling tank after step a" and "said strip is scrubbed after step a and prior to immersion in said pickling tank" cannot be derived in a direct and unambiguous manner from the disclosure of D9, as is consistent case law (see Case Law of the Boards of Appeal, 7th edition 2013, section II.E.1.7.1) since they actually are inconsistent with each other. The respondent's arguments to the contrary therefore cannot hold, since for the specific addition of "subsequent" it would require an unusual interpretation.

Consequently, claim 1 of the new main request contravenes Article 123(2) EPC. The main request is therefore not allowable.

- 2.2 Claim 1 of the second auxiliary request contains the identical features "b. **a subsequent process step ...**" and "wherein said strip is **scrubbed after step a** and prior to immersion in said pickling tank" as claim 1 of the main request (see point X above).

The above conclusion concerning claim 1 of the new main request therefore applies *mutatis mutandis* to claim 1 of the second auxiliary request, which therefore also contravenes Article 123(2) EPC. The second auxiliary request is thus not allowable.

New first auxiliary request

- 2.3 The additional features of claim 1 of the new first auxiliary request (which is based on claim 1 of the patent as granted; see point IX above) are taken from claims 5 and 6 of D9 while the temperature range of the pre-pickling solution of from 54°C to 77°C is taken from paragraph [0005] thereof.

Claim 1 of the first auxiliary request therefore complies with Article 123(2) EPC.

- 2.3.1 The final feature of claim 1 of the first auxiliary request "wherein said strip is scrubbed after step a and prior to immersion in said pickling tank and is immersed in a de-smutting tank immediately prior to being scrubbed ..." is - contrary to the appellant's arguments - considered to be sufficiently clear.

Although this definition attempts to put the cart before the horse, it is nevertheless sufficiently clear from it that claim 1 defines that the strip, after the initial treatment in the pre-pickling tank according to step a, is then immersed in a de-smutting tank immediately prior to being scrubbed which is prior to the immersion of the strip in the pickling tank according to step b and that heat is removed from the pickling solution of step b.

2.3.2 Claim 1 of the new first auxiliary request is therefore considered also to comply with Article 84 EPC. Since the amendments were made in order to further distinguish the subject-matter of claim 1 of the new first auxiliary request from the process according to D1, i.e. in order to overcome a ground for opposition under Article 100(a) EPC, it also complies with Rule 80 EPC.

3. *Admissibility of late filed documents D7 and D8*

3.1 Document D8 (i.e. only the two pages 4 and 5) and D7, an experimental report of experiments made in accordance with the patent in suit, were submitted by the respondent with its letter of 16 November 2013 (see point VI above) after receipt of the Board's communication annexed to the summons to oral proceedings (see point V above). Both documents were thus filed about three weeks before the date of the oral proceedings which were arranged for 6 December 2013.

3.2 The appellant was informed about this new evidence by a fax dated 19 November 2013 subsequently confirmed by the communication of 22 November 2013. The appellant submitted a full version of document D8, which

represents a handbook of the relevant technical field, at the oral proceedings and requested that it should be admitted into the proceedings since it is evidence for the common general knowledge of the person skilled in the art.

The appellant further objected to the late filing of said experimental report D7 and questioned whether it comprised meaningful data. It requested that the report should not be admitted since it could not verify these tests due to their being filed so close to the oral proceedings.

3.3 It is established case law of the Boards of Appeal that late filed evidence might exceptionally be admitted at the appeal stage (see Case Law of the Boards of Appeal, 7th edition 2013, section IV.C.1.4). However, it is a primary requirement of *inter partes* proceedings, because of their judicial character, that all parties involved have the guarantee of a fair and equitable procedure and that facts and evidence are brought to the attention of the opposing parties and of the Board providing sufficient time for their consideration.

3.3.1 In the present case the respondent when asked by the Board with respect to the reasons for the late filing of D7 argued that there had existed problems in retrieving this experimental report since the inventor had left the patent proprietor's company.

This argument, however, cannot hold since the patent in suit and the underlying application D9, respectively, from the very beginning did not contain any experimental results concerning the effect of the absence of hydrogen peroxide in the pre-pickling bath nor comparative tests in this respect. Since that

absence of hydrogen peroxide has been the most important issue in the opposition proceedings, such an experimental report - the Board remarks by the way that D7 is undated and unsigned; the experimental data on pages 2-5 as such contain no explanations - should have been filed already at the opposition stage but at the subsequent appeal stage at least not later than with its reply to the statement of grounds of appeal.

Also the communication of the Board cannot be the reason, since it did not invite the respondent to do so, nor did it introduce new issues.

3.3.2 Considering further the fact that the appellant, due to the short period of time between the filing of said experimental report D7 and the oral proceedings, was **not** in a position to verify or repeat these experiments, the Board, in exercising its discretion according to Article 114(2) EPC, decides not to admit this experimental report into the proceedings.

3.3.3 Concerning D8 and in particular the full version of this handbook the Board, after having heard both parties, remarks that, if a party, here the respondent, files a number of pages of a document then it can be assumed that this party is aware of the rest of the content of this document. If that rest is quoted by the other party, here the appellant, that cannot be a surprise, particularly not if it is to deal with the arguments of the other side.

Since it is in any case a handbook filed as supporting evidence of the standard knowledge of the skilled person and additionally can be easily understood, the Board decides to admit the full version of D8 into the proceedings.

4. *Inventive step (Article 56 EPC)*

When asked by the Board at the oral proceedings the appellant stated that novelty of the subject-matter of claim 1 of the new first auxiliary request is no longer disputed.

- 4.1 The Opposition Division in its impugned decision acknowledged inventive step of claim 1 of the patent as granted on the basis of the objective problem, in view of the closest prior art D1, of providing an **alternative** efficient nitric acid free pickling scheme for stainless steel, leading to **high quality** pickled stainless steel and comparable production rates as obtained by pickling with nitric acid. It concluded on the basis of the compositions of the baths in both examples 1 and 2 of the patent in suit that this problem has been solved (see impugned decision, points 4.2 and 4.3 of the reasons).

However, the Board establishes that in the same reasoning it states that example 1 is not according to the invention, thus leaving only example 2. For example 2 the Board establishes that the patent in suit merely mentions that the process "produces **commercially acceptable** quality steel at production rates comparable to pickling systems that use nitric acid". However, this example 2 does not contain any data on quality nor on the obtained production rate; the patent in suit does not contain any comparative examples with corresponding quality data or production rates. The Opposition Division thus merely repeats an unsubstantiated allegation of the patent in suit.

As a result, the Board also cannot concur with the impugned decision's acknowledgement of a technical effect for the absence of hydrogen peroxide in the pre-pickling bath as mentioned at the end of point 4.4: "... could lead to a process able to **rapidly** provide **high quality** pickled stainless steel."

If there is not a technical effect to be acknowledged for claim 1 of the patent as granted, the Board cannot define a technical problem to be solved. In both above points the Board therefore agrees with the appellant.

- 4.2 In such a case, normally the problem to be solved is then defined in less ambitious terms, namely as: merely finding an alternative, nitric acid free, pickling scheme for stainless steels. This is what the impugned decision originally did before it contradicted itself by recognising the technical effect of **rapidly** providing **high quality** pickled stainless steel, i.e. recognising a technical problem as being solved.

As mentioned above, the Board cannot recognise such a technical problem on the basis of the facts and evidence underlying the impugned decision, but only the less ambitious problem of finding the above-mentioned alternative.

In this respect the Board establishes that D1 already proposes to the skilled person a pre-pickling bath without hydrogen peroxide, notably in table 4 and example 2.2. Contrary to the opinion of the Opposition Division, example 2.2 does not limit the use of such a pre-pickling bath to remove dust. Further, the skilled person, when reading these examples of D1 will not see the absence of hydrogen peroxide as inextricably linked with the absence of hydrogen fluoride (HF) (contrary to

the presence of HF as per the patent in suit), since the presence of HF has other reasons, notably improving the pre-pickling as such as evidenced also by D8, page 5, third paragraph.

Thus, D1 itself provides this alternative solution.

As a result, the Board can only conclude that the reasons of the impugned decision cannot be valid and that this decision in any case will have to be set aside.

4.3 Claim 1 of the new first auxiliary request differs from claim 1 of the patent as granted in that it now additionally specifies that

i) the temperature of the pre-pickling solution is maintained in the range of from 54°C to 77°C;

ii) that the strip is immersed in a de-smutting tank prior to being scrubbed, said de-smutting tank consisting of a solution comprising hydrogen peroxide, sulfuric acid and hydrofluoric acid, and wherein further overflow solution from the pickling tank is channelled into the de-smutting tank;

iii) the strip is scrubbed prior to immersion in said pickling tank.

4.4 The conclusion in point 4.2 has the result that it is now the respondent to convince the Board that the distinguishing features have as a consequence that the subject-matter of claim 1 of the new auxiliary request 1 involves inventive step.

In this respect, the respondent limited itself to the feature of the absence of hydrogen peroxide in the pre-pickling bath, not the above mentioned features i), ii) or iii), nor the removal of heat from the pickling bath (step c of claim 1 of the patent as granted).

4.5 The Board remarks in this context that indeed the respondent has **not** contested the appellant's arguments that

a) it is obvious to remove heat from the pickling tank since the pickling reaction is exothermic and the temperature has to be kept low within a certain range so that the hydrogen peroxide decomposition is avoided (see patent in suit, paragraph [0013]; see also D8, page 13, second paragraph from the bottom); this concerns step c of claim 1 of the patent as granted.

b) scrubbing of the strip is obvious to the skilled person in view of the typical procedure for a sulfuric acid pre-pickling bath using a solution of 8-10 wt.% sulfuric acid at 150-160°F (corresponding to about 65.5-71.1 °C). The pre-pickling is followed by scrubbing to remove the sludge and, after a rinsing step, the pickling of the strip is then carried out (see D8, page bridging paragraph of pages 8 and 9). Scrubbing is a well-known step in pickling (see that passage in D8). This scrubbing may also be designated "abrasive brushing" (see D3, claim 11) or "brush-polishing" (see D4 column 3, lines 17 to 22 and column 6, lines 58 to 63) between several pickling tanks and according to the patent in suit it is designated "scrubber-brush step" (see paragraph [0012]). This covers differing feature iii) in point 4.3 above.

From this typical pre-pickling procedure with sulfuric acid according to D8 it is also apparent that a temperature in the range of 65.5-71.1°C - which fully falls into the claimed broader range "of from 54°C to 77°C" according to claim 1 of the new first auxiliary request - is one which is usually applied by the person skilled in the art. Selecting the optimum temperature for the pre-pickling tank represents in fact another, partial problem, which will be solved by executing routine tests. Therefore also said distinguishing feature i) (see point 4.3) is considered to be obvious to the skilled person.

The respondent could also **not** make plausible that the de-smutting treatment in the de-smutting tank - which contains the overflow solution from the pickling tank, i.e. it contains the identical pickling solution including hydrogen peroxide as the pickling tank - would be something else than a second pickling tank. A second pickling tank with the same contents as the first pickling tank is part of the disclosure of D1, see example 2.2. This covers distinguishing feature ii) of point 4.3 above.

- 4.6 Taking account of the considerations in point 4.5 above, the Board concludes that for the discussion of inventive step it remains of primary importance that the pre-pickling tank according to step a of claim 1 of the first auxiliary request contains "a prepickling solution **consisting** of sulfuric acid and hydrofluoric acid", i.e. that hydrogen peroxide is absent. This distinguishes the claimed continuous pickling process over that of D1. This was confirmed by the respondent's writings and its argumentation at the oral proceedings.

- 4.6.1 At the oral proceedings the respondent stated that step a of claim 1 actually represents the invention since the combination of sulfuric acid and hydrofluoric acid results in the removal of the scale in the pre-pickling step due to the complexing action of the fluoride which aids the formation of Fe^{2+} and which reduces the consumption of hydrogen peroxide in the pickling step. The reduction of the consumption of hydrogen peroxide therefore was the technical problem to be solved.
- 4.6.2 However, there is no evidence, like tests to compare with the pickling processes of D1, on file which makes it credible that the alleged technical problem of saving hydrogen peroxide has actually been solved. The examples 1 and 2 of the patent in suit are not helpful in this context since example 1 is not according to the invention and example 2 has not been made in view of the disclosure of D1.
- 4.6.3 The objective technical problem as defined by the respondent is **not** plausible in view of the appellant's arguments based on the stainless steel pickling process of D1 with two pickling baths and a pre-pickling step in a solution containing only sulfuric acid (see D1, example 2.2). This conclusion is due to the fact that in both cases, be it with step a) of claim 1 of the new first auxiliary request or with the aforementioned pre-pickling according to example 2.2 of D1 with only sulfuric acid, the continuous pickling process of stainless steel with subsequent two pickling stages in tanks containing a pickling solution of sulfuric acid, hydrofluoric acid and hydrogen peroxide will be the same.

When comparing the results of the examples 2.1 and 2.2 in D1, where the only difference is the absence of

hydrogen peroxide in the pre-pickling bath (example 2.2) there is no noticeable difference in the consumption of hydrogen peroxide. In fact, for example 2.2 it is 2.2 kg/t treated metal and in example 2.1 it is 2.3 kg/t treated metal.

There further exists no evidence that the use of a solution of sulfuric acid and hydrofluoric acid instead of a solution of only sulfuric acid in the pre-pickling tank will result in a lower consumption of hydrogen peroxide, let alone a substantial one.

The appellant thus has strong arguments in contesting via said example 2.2 and table 4 of D1 that the non-use of hydrogen peroxide in the pre-pickling bath would lead to a substantial saving of hydrogen peroxide. The respondent has not been able to counter these arguments.

- 4.6.4 In view of this, the respondent's arguments concerning a different mechanism compared to a pre-pickling step with a solution containing sulfuric acid, hydrofluoric acid and hydrogen peroxide (e.g. based on example 2.1 of D1) which should lead to a substantive saving of hydrogen peroxide compared to a sulfuric acid pre-pickling bath lack supportive evidence.
- 4.6.5 The respondent's further arguments (see point XII) cannot hold since they concern features such as the chemical mechanism which in any case have no corresponding limitations in claim 1 of the new first auxiliary request, or they concern pre-pickling including a solution containing hydrogen peroxide which is not the disclosure of D1 that is considered by the Board as closest prior art.

4.6.6 Taking account of the above considerations the Board concludes that the technical problem as defined by the respondent (see point 4.6.1 above) has not been made credible by the respondent. Since the subject-matter of claim 1 of the new first auxiliary request cannot be considered to solve a technical problem and the respondent has not been able to define another such problem it does not involve inventive step (Article 56 EPC). The new first auxiliary request is therefore not allowable.

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:



G. Nachtigall

H. Meinders

Decision electronically authenticated