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Datasheet for the decision of 16 March 2015

Case Number: T 1840/13 - 3.2.07

Application Number: 06793677.3

Publication Number: 1954848

IPC: C23C8/00, C21D1/00, C21D9/00

Language of the proceedings: EN

Title of invention:
A PROCESS FOR RAISING THE TEMPERING RESISTANCE OF A STEEL WORK PIECE

Applicant:
ROBERT BOSCH GMBH

Headword:

Relevant legal provisions:
EPC Art. 111(1), 113(1), 109(1)
EPC R. 111(2), 103(1)(a)

Keyword:
Right to be heard - opportunity to comment (no)
Appealed decision - reasoned (no)
Substantial procedural violations - (yes)
Reimbursement of appeal fee -
substantial procedural violation (yes)
Interlocutory revision should have been given

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

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Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 1840/13 - 3.2.07

D E C I S I O N
of Technical Board of Appeal 3.2.07
of 16 March 2015

Appellant: (Applicant)
ROBERT BOSCH GMBH
Postfach 30 02 20
70442 Stuttgart (DE)

Decision under appeal:
Decision of the Examining Division of the European Patent Office posted on 17 April 2013 refusing European patent application No. 06793677.3 pursuant to Article 97(2) EPC.

Composition of the Board:

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

Summary of Facts and Submissions

I. The applicant lodged an appeal against the decision of the Examining Division to refuse the European patent application No. 06 793 677.3.

II. The appellant requested to set aside the decision and to grant a patent on the basis of the claims 1-14 as originally filed (corresponding to the published WO-A-2007/039468), i.e. the claims 1-14 underlying the impugned decision. The appellant additionally requested the reimbursement of the appeal fee and, as an auxiliary request, oral proceedings.

III. In the present decision the following documents of the examination procedure are cited:

D1 = WO-A-01/68933
D2 = GB-A-2 397 071
D3 = FR-A-2 847 591
D4 = DE-A-100 21 583

IV. Claim 1 of the application as originally filed reads as follows:

"1. A process for raising the tempering resistance of a steel work piece, which comprises the following steps: vacuum carburization (1) of the work piece, carrying out a quenching process in a gaseous medium, characterized in that the quenching in the gaseous medium is carried out with the heat transfer coefficient between the steel work piece and the gaseous medium being higher than 1500 W/m^2K, whereas the gaseous medium with said heat transfer coefficient is provided by means of high-pressure gas."

V. The first communication dated 26 May 2010 contained the following passage concerning D4:

"*(3) The present application does not meet the criteria of Article 52 EPC, because the subject-matter of claim 1 is not new in the sense of Article 54(2) EPC.*
Document D4 discloses (see passages cited in the European Search report):
a process for treating a steel work piece, which comprises the following steps:
- vacuum carburisation of the work piece,
- carrying out a quenching process in a gaseous medium,
The subject-matter of claim 1 can therefore not be considered as novel with regard to document D4 (Article 54(2) EPC."

Similar arguments concerning lack of novelty of claim 1 were presented with respect to D1 and D3.

VI. The appellant argued in its reply dated 3 December 2010 that the claimed heat transmission coefficient describes the heat transfer between the work piece to be hardened and the surrounding gas. According to the invention this coefficient should be higher than 1500 W/m^2K in order to raise the temper resistance. According to the search report this feature is allegedly disclosed amongst others in documents D1 and D3 ("unter anderem in den Schriften D1 ... und D3 ... offenbart sein"). However, when checking these documents the applicant could not find any passage disclosing such a heat transfer coefficient, nor one which would have rendered the same obvious. Likewise, in the communication of the Examination Division no passage is cited which would disclose such a heat transfer coefficient ("Auch im Prüfungsbescheid wird keine Offenbarungsstelle genannt, die diesen

Wärmeübergangskoeffizienten zeigt"). Therefore it is not apparent to the applicant why the cited documents ("die zitierten Dokumente") should be considered novelty destroying for claim 1.

VII. The Examining Division stated in its impugned decision that in its first communication lack of novelty objections had been raised against claim 1 on the basis of D1, D3 and D4 but that the applicant in its reply dated 3 December 2010 did not contest the lack of novelty on the basis of D4. Furthermore, it remarked that the applicant did not request oral proceedings (see points 3.1 to 3.3 of the facts and submissions). The Examining Division held in the impugned decision that the subject-matter of claim 1 of the single request lacks novelty over D4 by stating:

"*Document D4 discloses (see passages cited in the European Search Report):*
a process for treating a steel work piece, which comprises the following steps:
- vacuum carburisation of the work piece,
- carrying out a quenching process in a gaseous medium.

It is clear from the description that (see description p. 4, l. 13-17):
"a heat transfer coefficient higher than 1500 W/m^{2}K can be achieved by a mixture of gases (...) but the gas should be injected under a pression [sic] *of at least 2000 kPa (i.e. 20 bar). In addition to the pressure the gas should be at speed of at least 15 m/s for achieving the required coefficient of heat transfer, such speed and pressure can be reached with equipment designed for this purpose, for example circulation turbine."*

Document D4 explicitly discloses quenching with a mixture of gases, at pressures of up to 50 bar (exemplarily 20 bar) and using circulation turbine ("Umwälzgebläse") (see document D4, p. 5, l. 54-59; p. l. 28-30). The subject-matter of claim 1 can therefore not be considered as novel with regard to document D4 (Article 54(2) EPC)."

Taking account of this reasoning the Examining Division concluded in its impugned decision "*As the subject matter of claim 1 is not novel in the sense of article 52(1) and 54(EPC, the application has to be refused with respect to article 97(2) EPC.*"

VIII. The appellant argued that its right to be heard (Article 113(1) EPC) has been violated. The first communication contained no complete reasoning with respect to D1, D3 and D4 and the lack of novelty objections concerning the subject-matter of claim 1 based thereon.

According to the appellant's analysis the subject-matter of claim 1 contains the following features:

A) A process for raising the tempering resistance of a steel work piece, which comprises:
B) vacuum carburization of the work piece
C) carrying out a quenching process in a gaseous medium
D) the quenching in the gaseous medium is carried out with the heat transfer coefficient between the steel work piece and the gaseous medium being higher than 1500 W/m^2K
E) the gaseous medium with said heat transfer coefficient is provided by means of high-pressure gas.

Even though the Examining Division mentioned only some steps of the process of claim 1 in its first and only communication it nevertheless considered that claim 1 lacks novelty over D1, D3 and D4. The appellant argued in its letter of reply that D1 and D3 are not anticipating claim 1 since the features D and E are not disclosed therein and that the Examining Division has not quoted any passage disclosing these features. The appellant did not submit any argument concerning D4. However, the Examining Division refused the application in its second communication [*sic,* the decision was issued without any further communication] on the basis of D4 without considering the appellant's arguments. This refusal of the application therefore violates the right to be heard for two reasons.

Firstly, a refusal can only be based on grounds on which the applicant had an opportunity to present its comments. Although the appellant in its letter of reply did not submit any arguments *expressis verbis* concerning D4 this did not happen intentionally. According to the Guidelines for Examination C-VI, 4.3 (at that time already C-IV, 3 in the version 2012), if there are manifestly incomplete or inconsistent submissions of the applicant the Examining Division should have given the opportunity to overcome these deficiencies. This is also apparent from the principles of procedural efficiency and the principle of good faith which govern the relationship between the EPO and the applicant. It is not known why the Examining Division deviated from this suggested procedure. Documents D1, D3 and D4 were presented as novelty destroying using similar reasons. Since the appellant argued with respect to two of these documents it is obvious that this was not intentionally since it was evident that the applicant's arguments submitted with

respect to D1 and D3, namely that they do not disclose all features of claim 1, applied *mutatis mutandis* to D4. Therefore it should have been clear to the Examining Division that the appellant erroneously did not submit arguments concerning D4. It would have been possible and reasonable for the Examining Division to phone the applicant and to indicate this deficiency or to issue a second communication. In view of the principle of good faith, an evident omission on the part of the appellant should not result in a refusal of the application. This holds the more true in view of the fact that the communication's reasoning concerning D4 was very short and did not take account of all features of claim 1. The lack of novelty objection was therefore also not comprehensible.

Secondly, the Examining Division based the impugned decision on new arguments in order to provide a more comprehensible reasoning to which the appellant had not been able to present any comments. In the objections of 26 May 2010 only features A, B and C had been dealt with as disclosed in D4 and that claim 1 would lack novelty. The communication did not give any explanations regarding features D and E in this respect. Only in the refusal decision passages of D4 were quoted which would implicitly disclose the features D and E. For this purpose a passage of the present application was quoted and compared with passages of D4. Only with these new arguments there is a comprehensible reasoning why the Examining Division believes that D4 discloses the features D and E. These additional reasons were obviously essential for the refusal of the application. However, since the appellant had no opportunity to present its comments on these new arguments it was deprived of its right to be heard.

IX. On 27 August 2013 the Examining Division decided not to rectify its decision (see EPO form 2701), with the result that the appeal was submitted to the Board.

X. With a communication dated 13 October 2014 the Board gave its preliminary and non-binding opinion and expressed the view that the decision of the Examining Division violated the applicant's right to be heard (Article 113(1) EPC) and additionally was deficient in that it was not reasoned as required by Rule 111(2) EPC. Furthermore, the Board intended to remit the case to the Examining Division for further prosecution and to reimburse the appeal fee. The appellant was asked whether or not it maintained its request for oral proceedings.

XI. With letter dated 20 November 2014 the appellant withdrew its auxiliary request for oral proceedings.

Reasons for the Decision

1. *Violation of the right to be heard (Article 113(1) EPC) - first substantial procedural violation*

1.1 Claim 1 in question reads as follows (subdivision added by the Board):

A "1. A process for raising the tempering resistance of a steel work piece, which comprises the following steps:
B vacuum carburization (1) of the work piece,
carrying out a quenching process in a gaseous medium,
C characterized in that the quenching in the gaseous medium

D is carried out with the heat transfer coefficient between the steel work piece and the gaseous medium being higher than 1500 W/m^2K,
E whereas the gaseous medium with said heat transfer coefficient is provided by means of high-pressure gas."

1.1.1 Taking account of **all** features A to E as comprised in the subject-matter of claim 1 (see above) it is already evident that the first communication of the Examining Division does **not** comply with Rule 71(2) EPC since it does **not** contain a **reasoned statement** as to lack of novelty in comparison with D4.

1.1.2 In fact, as regards D4, the communication states:

"Document D4 discloses (see passages cited in the European Search report):
a process for treating a steel work piece, which comprises the following steps:
- vacuum carburisation of the work piece,
- carrying out a quenching process in a gaseous medium".

The passages cited in the search report are paragraph [0040] and claim 1.

Paragraph [0040] reads as follows:
"[0040] Wärmebehandelt und gehärtet wurden in einer Anlage nach den Fig. 1 und 2 Chargen mit folgenden Daten:
Chargenabmessungen:
Breite: F 600 mm
Höhe: 600 mm
Länge: 1000 mm
Chargengewicht: 250 kg
Chargenoberfläche: max. 7,5 m^2

Abschreckung:
Druck: 20 bar
Medium: He, N_2
Gebläseleistung:
20 bar He: 132 kW
20 bar N_2: 250 kW
Heizen: 100 bis 150 kW
Drücke:
Endvakuum beim Entlüften: < 5 x 10^{-2} mbar
Aufkohlen: 5 bis 20 mbar
Transporttunnel/Heizkammern: 1 bar
Temperaturen:
Heizkammern: max. 1100°C
Aufkohlen: 930°C
Diffundieren: 930°C
Abschreckung: 930°C (Beginn)
Gleichmäßigkeit: ± 5 K
Kühlwasser: max. 25°C
Ausgang: +15 bis +40°C
Stähle:
1. EHT 0,3+0,2 (Einsatzstahl ähnlich 16MnCr5)
Werkstücke: stationäre Getriebe, Zahnräder, Ritzel, Wellen
2. EHT 0,5+0,3 (Einsatzstahl ähnlich 16MnCr5)
Werkstücke: PKW-Getriebe, Zahnräder, Ritzel, Wellen, Schiebemuffen
3. EHT 1,5+0,5 (Einsatzstahl ähnlich 16MnCr5)
Werkstücke: Transporter-Getriebe, Zahnkränze, Wellen
4. 42 CrMo4 (Einspritzsysteme)

Zeiten (jeweils in Minuten)			
1.	2.	3.	4.
EHT 0,3+0,2	EHT 0,5+0,3	EHT 1,5+0,5	42 CrMo4
Einschleusen:			
5	5	5	5
Aufheizen:			
70	80	90	90
Aufkohlen:			
14	38	226	---
Diffundieren:			
19	56	349	---
Absenken			
16	16	16	---
Abschrecken:			
5	5	5	5
Rückgewinnen:			
11	11	11	18
Ausschleusen:			
7	7	7	7
Transport			
10	10	10	10"

Claim 1 reads as follows:
"1. Verfahren zum Aufkohlen und Härten von Werkstückchargen (20, 21, 24, 24') in einer Tunnelanlage (1), bei der an einen Transporttunnel (2) für die Werkstückchargen (20, 21, 24, 24') mindestens eine Chargierschleuse (3), mehrere Heizkammern (17, 18, 22, 23), mindestens eine Aufkohlungskammer (6, 7) und mindestens eine Abschreckkammer (14) angeschlossen sind und bei der zwischen den einzelnen Kammern und dem Transporttunnel (2) Absperreinrichtungen für die Einstellung der jeweiligen Behandlungsatmosphäre angeordnet sind, dadurch gekennzeichnet, daß in dem

Transporttunnel (2) und in den Heizkammern (17, 18, 22, 23) ein Druck zwischen 0,9 und 2 bar, in der mindestens einen Aufkohlungskammer (6, 7) ein Druck eines Aufkohlgases zwischen 1 und 50 mbar und in der Abschreckkammer (14) beim Härten ein Druck eines über einen Wärmeaustauscher umgewälzten Abschreckgases zwischen 5 und 50 bar, vorzugsweise zwischen 10 und 30 bar, eingestellt wird."

1.1.3 This reasoning is not only incomprehensible, it requires the applicant to solve this problem for the Examining Division, by piecing together the information of these two references, to arrive at a proper novelty analysis.

1.1.4 The result is that this communication only contains allegations with respect to novelty and D4.

1.1.5 The above applies also to the novelty "objections" based on D1 and D3 for which neither a complete analysis along the claims features A to E is performed.

1.1.6 The applicant's reply (see point VI above) was not helpful either, dealing only with D1 and D3. It only added the further remark that the cited documents could **not** question novelty of claim 1. This remark is ambiguous since it could relate to the previously cited D1 and D3 or it could be the documents cited in the search report.

1.1.7 However, it can be left open whether the applicant actually dealt with D4 or not in that reply. The impugned decision to refuse the application for lack of novelty over D4 was namely based on the following **new arguments** in addition to what was mentioned in the first communication (compare points V and VII above):

"*It is clear from the description that (see description p.4, l. 13-17):*
"a heat transfer coefficient higher than 1500 W/m^{2}K can be achieved by a mixture of gases (...) but the gas should be injected under a pression [sic] *of at least 2000 kPa (i.e. 20 bar). In addition to the pressure the gas should be at speed of at least 15 m/s for achieving the required coefficient of heat transfer, such speed and pressure can be reached with equipment designed for this purpose, for example circulation turbine."*

Document D4 explicitly discloses quenching with a mixture of gases, at pressures of up to 50 bar (exemplarily 20 bar) and using circulation turbine ("Umwälzgebläse") (see document D4, p. 5, l. 54-59; p. l. 28-30[sic]*).*

The subject-matter of claim 1 can therefore not be considered as novel with regard to document D4 (Article 54(2) EPC)."

Thus the Examining Division added **new reasons** concerning D4 and referred to a more specific passage (namely page 5, lines 54 to 59) within the earlier discussed paragraph [0040], as mentioned in the Search Report.

Additionally, also for page 5 it referred to "*p. l. 28-30*", which most presumably should mean page 4, lines 28 to 30, since this passage deals with the quenching chamber, the quenching gases and the use of a circulation blower (or circulation turbine) for guiding the quenching gas over the hot work piece. In contrast to said new passage on page 4, paragraph [0040] only mentions the engine power of "a blower" but is likewise

silent with respect to any **heat transfer coefficient**, let alone any **gas speeds** of the disclosed quenching gas mixture of He and N_2, of which the **mixing ratio** is also not specified.

The same applies to the further reasoning in the impugned decision. It appears that the Examining Division for this reason, i.e. that D4 does **not explicitly** disclose the required heat transfer coefficient of "higher than 1500 W/m^2K", for the first time referred to the description of the present application in order to demonstrate an **implicit** disclosure of this feature in D4. In the present application it is described how a heat transfer coefficient of higher than 1500 W/m^2K can be achieved. This coefficient "**can be achieved** by using a mixture of gases such as, for example, **helium gas and carbon dioxide**, but the gas should be injected under a pressure of at least 2000 kPa. In addition to this pressure **the gas should be at a speed of at least 15 m/s**". Furthermore, it is stated that "Such speed and pressure **can be reached with equipment designed for this purpose**, for example circulation turbines" (see page 4, lines 13 to 18; emphasis added by the Board).

1.1.8 Already at this stage it should have been clear to the Examining Division that it was including additional reasoning into the proceedings, to which the applicant had **not** had the opportunity to react, i.e. that his right to be heard (Article 113(1) EPC) would **not** have been respected. Going ahead with such a decision therefore constitutes the **first** procedural violation.

2. *Lack of reasoning in the decision (Rule 111(2) EPC) - second substantial procedural violation*

Further, the Board considers that these new arguments still do **not** provide a comprehensible reasoning why the process of D4 including the quenching step with a circulation blower (circulation turbine) and a quenching gas consisting of an undefined mixture of He and N_2 and a pressure of 20 bar inevitably results in a heat transfer coefficient of "higher than 1500 W/m^2K". This should apparently be analogous to the mixture He and CO_2 at a pressure of at least 20 bar and a gas speed of at least 15 m/s disclosed in the present application.

Therefore the Examining Division committed a **second** substantial procedural violation in that the impugned decision is **not** fully reasoned as required by Rule 111(2) EPC.

3. *Interlocutory revision (Article 109(1) EPC)*

As already considered by the Board, it should have been clear to the Examining Division when drafting its impugned decision that it was including new reasoning in the proceedings, to which the applicant had not had the opportunity to react, and that this decision was lacking a comprehensible reasoning with respect to the appellant's submission (see points 1.1.8 and 2 and point VI above).

3.1 In its statement of grounds of appeal the appellant mentioned that its right to be heard has been violated on both these issues (see point VIII above).

3.2 A simple comparison of the appellant's statements in the grounds of appeal should have shown the Examining Division that it had failed to respect the right to be heard and that it might have failed to provide a complete reasoning. To avoid at least the first procedural violation the Examining Division should have rectified its decision and continued the examination proceedings, as required by the Guidelines for Examination 2012, E-X, 7.3.

4. *Remittal to the Examining Division (Article 111(1) EPC)*

In view of the substantial procedural violations the Board decides to remit the case to the Examining Division for further prosecution in accordance with Article 111(1) EPC.

As the request for oral proceedings was withdrawn with letter of 20 November 2014, the present decision could be taken in written proceedings.

5. *Reimbursement of the appeal fee (Rule 103(1)(a) EPC)*

In view of the two substantial procedural violations it is also equitable to reimburse the appeal fee pursuant Rule 103(1)(a) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division for further prosecution.

3. The appeal fee is to be reimbursed.

The Registrar: The Chairman:

G. Nachtigall H. Meinders

Decision electronically authenticated