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**Datasheet for the decision  
of 2 May 2011**

**Case Number:** T 0180/10 - 3.2.07

**Application Number:** 05252676.1

**Publication Number:** 1591552

**IPC:** C23C 10/18

**Language of the proceedings:** EN

**Title of invention:**

Aluminizing composition and method for application within  
internal passages

**Applicant:**

GENERAL ELECTRIC COMPANY

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 111(1)  
EPC R. 103(1)a), 111(2)  
RPBA Art. 11

**Relevant legal provisions (EPC 1973):**

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**Keyword:**

"Decision on the state of the file: not reasoned"  
"Substantial procedural violation (yes)"  
"Reimbursement of the appeal fee (yes)"

**Decisions cited:**

T 1309/05, T 1356/05, T 1709/06, T 1442/09

**Catchword:**

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Case Number: T 0180/10 - 3.2.07

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.07  
of 2 May 2011

**Appellant:** GENERAL ELECTRIC COMPANY  
1 River Road  
Schenectady, NY 12345 (US)

**Representative:** Goode, Ian Roy  
London Patent Operation  
General Electric International, Inc.  
15 John Adam Street  
London WC2N 6LU (GB)

**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 2 September 2009  
refusing European patent application  
No. 05252676.1 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. 05 252 676.1 with a decision according to the state of the file.

II. With its grounds of appeal dated 12 January 2010 the appellant requested to set aside the decision and to grant a patent on the basis of the claims 1-9 of the main request, or alternatively on the basis of the claims 1-10 of the first auxiliary request, or the claims 1-4 of the second auxiliary request, all as filed together with the grounds of appeal. As an auxiliary request oral proceedings were requested.

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

D1 = US-A-5 041 309

D2 = Patent Abstracts of Japan vol. 009, no. 200  
(C-298), 16 August 1985 & JP-A-60 067652

D3 = US-A-5 366 765

D4 = Patent Abstracts of Japan vol. 015, no. 450  
(C-0885), 15 November 1991 & JP-A-03 193143

D5 = US-A-2 541 813

D6 = Database WPI Section Ch, Week 197751 Derwent  
Publications Ltd., London, GB; Class A81, AN 1977-  
90956Y XP002338662 & JP-A-52 133 836

D7 = EP-A-1 505 176

D8 = GB-A-2 058 844

D9 = FR-A-885 585.

IV. In the course of the examination proceedings the appellant, in response to the first substantive communication of the Examining Division dated 28 August 2007, filed with its letter dated 19 June 2008 an amended set of claims 1-10 and submitted arguments concerning novelty and inventive step and with respect to clarity.

A summons dated 29 April 2009 to oral proceedings on 9 September 2009 was issued by the Examining Division. In the second substantive communication, annexed to that summons, the Examining Division set out its opinion regarding the amended set of claims 1-10 filed with letter of 19 June 2008.

With letter dated 18 August 2009 the appellant stated that "applicants do not intend to be represented at the oral proceedings and request an appealable decision in writing based on the current state of the file".

V. The grounds of the decision of the Examining Division are as follows:

"In the communication(s) dated 28.08.2007, 29.04.2009 the applicant was informed that the application does not meet the requirements of the European Patent Convention. The applicant was also informed of the reasons therein.

The applicant filed no comments or amendments in reply to the latest communication but requested a decision according to the state of the file by a letter received in due time on 18.08.2009.

The European patent application is therefore refused on the basis of Article 97(2) EPC."

- VI. With a communication dated 10 February 2011 the Board gave its preliminary and non-binding opinion, expressing the view that the decision of the Examining Division was deficient in that it was not reasoned as required by Rule 111(2) EPC and that it intended to remit the case to the department of first instance for further prosecution and to reimburse the appeal fee, for reasons of this procedural violation. The appellant was asked whether or not it maintains its request for oral proceedings.
- VII. With letter dated 21 August 2010 the appellant withdrew its request for oral proceedings "as the Appeal Board has indicated that it intends to remit the case back to the Examining Division for further prosecution".

## **Reasons for the Decision**

*Lack of reasoning in the decision - substantial procedural violation*

1. The first substantive communication of the Examining Division dated 28 August 2007 and referred to in the impugned decision was based on claims 1-10 as originally filed and cited D1-D7.
- 1.1 Independent claims 1, 6, 8 and 10 as originally filed read as follows:
- "1. An aluminizing composition comprising

an aluminum-based powder;  
a binder selected from the group consisting of  
colloidal silica, at least one organic resin, and  
combinations thereof; and  
an inert pyrolysable thickener."

"6. A slurry coating composition for providing aluminum to an internal passage of a turbine component formed from a material comprising a nickel-based superalloy, wherein the composition is substantially free of hexavalent chromium, and comprises a binder selected from the group consisting of colloidal silica, at least one organic resin, and combinations thereof, particles of an aluminum-silicon alloy which has an average particle size in the range of about 1 micron to about 50 microns, and inert organic polymer thickener beads."

"8. A method for aluminizing an internal passage of a metal substrate comprising:  
injecting an aluminizing composition comprising an aluminum-based powder, a binder selected from the group consisting of colloidal silica, at least one organic resin, and combinations thereof; and inert organic pyrolysable thickener particles into the internal passage;  
heat treating the composition under conditions sufficient to remove volatile components from the composition, to cause diffusion of aluminum into surface regions of the internal passage, and to cause decomposition of at least some of the pyrolysable thickener particles; and  
burnishing excess material from the internal passage."

"10. A metal substrate, having a coating disposed on an internal passage, said coating being free of hexavalent chromium, and comprising aluminum-based powder, an inert organic pyrolysable thickener, and a binder selected from the group consisting of colloidal silica, at least one organic resin, and combinations thereof."

1.2 In points 2 and 2.1 of this first communication the Examining Division raised novelty objections with respect to the subject-matter of claims 1, 8 and 10 in view of D1 by stating "*D1 discloses a method and composition for aluminizing steel substrates (e.g. interior surfaces of steel tubes, pipes and like components ... see col. 1, lin. 13-17), consisting of applying on the substrate a slurry comprising aluminum powder (or aluminium-silicon alloy powder), a colloidal silica solution and methocel methylcellulose (see col. 8, lin. 57-col. 9, lin. 9) and heating the applied slurry.*"

In points 3 to 3.2 of this communication it was considered that claim 1 was not novel in view of D5 and D6 by stating "*D5 discloses a composition for aluminizing metal articles consisting of applying on the articles a coating of a composition comprising a suspension of finely divided aluminum in a fugitive liquid carrier medium which [sic] will decompose and evaporate by heating. The carrier medium comprises a mixture of nitrocellulose and oil-modified alkyd resin (see col. 4, lin. 30-66; claim 1).*" and "*D6 discloses a composition for aluminizing a steel substrate consisting of coating the substrate with a slurry comprising aluminum powder and a caking agent selected from polyamide acrylate, polyacrylic acid, poly sodium*

*acrylate, carboxymethyl cellulose, hydroxyl ethyl cellulose, colloidal silica and water."*

The Examining Division further considered in points 4 to 4.2 that the subject-matter of claim 6 does not involve an inventive step by stating "*D3 discloses a method and composition for aluminizing the internal surfaces of a hollow superalloy article consisting of applying to the internal surfaces a slurry comprising an aluminum based powder, an inert ceramic particulate, a halide compound in particulate form and an aqueous base dispersant wick [sic] includes an organic thickening agent, evaporating and heating the slurry (see col.3, lin. 38-col. 4, lin. 65; claims 1-3)*" and that "*The only difference between claim 6 of the application and the mentioned D1 and D3, is the use of the organic polymer thickener "beads".*" and after a short description of the process of D2 and the composition of D4 that "*The skilled person would therefore regard it as a normal option to include the features of D2 and D4 in the slurry aluminizing process described in D1 and D3.*"

In point 5 it further stated that D7 is from the applicant himself and was published on 09.02.05, claiming the priority of US633888 dated 04.08.03, discloses "*much of the same teachings as the present application, particulary [sic] as concerns claims 1, 3-5. Consequently, the priority claimed for the present application cannot be accepted as the true first filing under Art. 4 of the Paris Convention and Art 87(4) EPC and the effective date becomes the filing date at the EPO of 28.04.05. As such, D7 is prejudicial to the*



*novelty and inventivity of the present claims 1, 2-5 under Art. 52(4) and 56 EPC."*

*Subsequently it stated in point 6 that "Dependent claims 2-5, 7, 9 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the EPC with respect to novelty and/or inventive step, the reasons being as follows: the features are known from D1, D2, D3, D4, D5, D6 and/or D7."*

*Finally the Examining Division stated in point 7 "According to Art.84 EPC the claims have to be clear and concise. Claims 1, 8 and 10 do not fulfil the requirements of Art.84 EPC for the following reason: it is not clear what the difference is between an organic resin and an inert organic pyrosable [sic] thickener (e.g. polymethylacrylate)."*

- 1.3 It is thus apparent from a comparison of the wording of claims 1, 8 and 10 as originally filed (see point 1.1 above) with the statement made in points 2 and 2.1 of the first communication (see point 1.2 above) that this communication neither contains an explanation as to why the aluminizing composition and method as well as the resulting coated substrate according to D1 fulfil **all** the requirements as set out by the features of said claims 1, 8 and 10 respectively. It remains unclear which component of D1 is e.g. the organic resin, which is the thickener, which particle size has the aluminium-silicon alloy of D1. It also does not indicate in points 3.1 and 3.2 why the aluminizing compositions according to D5 and D6 would fulfil **all**

the requirements as set out by the features of claim 1, e.g. which component thereof is the thickener.

The statement concerning D7 and the validity of the priority of the present application with the consequence that D7, in case that the priority of the present application is considered not to be valid, would be "*prejudicial to the novelty and inventivity of the present claims 1, 2-5*" is a mere allegation since it has not been shown in the communication, namely by describing the relevant content of D7 and by citing and/or quoting the relevant passages thereof, that the invention and the teaching of D7 is actually the same subject-matter as that of the present application, to be the "real" first application as meant in Article 87(4) EPC.

Points 2 to 6 of this communication contain only allegations without giving any reasoning for the lack of novelty or lack of inventive step, e.g. as to why the person skilled in the art would combine the **aluminizing** methods of D1 or D3 with either D2, i.e. a method for forming **an alloy layer**, or with D4, i.e. a method for forming a **sintered ceramic body**, namely which objective technical problem should be solved by the person skilled in the art in order to arrive at the subject-matter claimed. The further allegation made in point 6 does not give any references in the cited documents D1 to D7 for the features of the dependent claims allegedly known therefrom.

2. As a response to the first communication the appellant filed with its letter dated 19 June 2008 an amended set of claims 1-10. It stated that claims 1 and 10 have

been amended to make clear that the thickener is an inert organic pyrolysable solid particulate thickener while claim 6 has been amended to refer to inert organic pyrolysable solid particulate beads and that the basis for these amendments can be found at lines 2 to 3 of the third paragraph of page 5 of the description. It further submitted substantive arguments concerning novelty, inventive step and clarity, as follows:

*"Claims 1, 8 and 10 are considered to be novel over the prior art of documents D1, D5 and D6 cited by the Examiner since there is no disclosure in these documents of an aluminizing composition containing an inert organic pyrolysable solid particulate thickener in combination with an aluminium based powder and a binder selected from colloidal silica, at least one organic resin and combinations thereof.*

*Claims 1, 8 and 10 are considered to be novel over the prior art of document D7 since there is no disclosure in D7 of an aluminizing composition containing an inert organic pyrolysable solid particulate thickener. The present application is therefore entitled to its priority date and document D7 is prior art for the consideration of novelty only.*

*With regard to inventive step of claims 1, 8 and 10, the problem which the present invention seeks to overcome is to provide a composition and method for applying such compositions within internal passages of turbine engines wherein the substrate is a nickel base or cobalt base superalloy. D1 is concerned with diffusing coating a workpiece such as ferritic tubing.*

*D5 is concerned with forming an alloy of aluminium on a ferrous or copper surface and teaches unexpected advantages resulting from the use of both granular and flake aluminium in specified proportions. D6 is concerned with coating the surface of a steel material with aluminium or iron aluminium powder and a caking agent. The steel materials having the aluminium diffused surface have good ductility and bending properties as well as good heat resistance, corrosion resistance and ageing resistance.*

*None of the prior art documents D1, D5 or D6 is concerned with the same problem as the present invention.*

*Claim 6 is considered to be inventive over the prior art of documents D1 and D3 when combined with the teaching of documents D2 or D4.*

*D2 is concerned with the formation of an alloy layer. There is no mention of aluminium being absorbed into the metal layer. D4 is concerned with beads for dispersing a ceramic slurry and the preparation of a ceramic slurry. D4 is concerned with the manufacture of a semiconductor ceramic body. In D4, when beads are composed of an acrylic resin and mixed with a ceramic slurry and the material is burnt in an incinerating or baking process, a ceramic body which is sintered is obtained and the organic matter from the acrylic resin is decomposed during this process.*

*Applicants therefore consider that the man skilled in the art would not combine the teaching of documents D2 or D4 with that of documents D1 and D3, in order to*

*solve the problem of providing aluminium to an internal passage of a turbine component.*

*In claims 1, 8 and 10 the at least one organic resin is used as a binder and the inert organic pyrolysable solid particulate material is used as a thickener. The man skilled in the art will understand that these compounds fulfil different functions and therefore have different properties. The claims are thus considered to meet the requirements of Article 84 EPC."*

- 2.1 Independent claims 1, 6, 8 and 10 of this set of claims read as follows (amendments as compared to claim 1 as originally filed are in bold with deletions in brackets; emphasis added by the Board):

"1. An aluminizing composition comprising an aluminum-based powder; a binder selected from the group consisting of colloidal silica, at least one organic resin, and combinations thereof; and an inert organic pyrolysable **solid particulate** thickener."

"6. A slurry coating composition for providing aluminum to an internal passage of a turbine component formed from a material comprising a nickel-based superalloy, wherein the composition is substantially free of hexavalent chromium, and comprises a binder selected from the group consisting of colloidal silica, at least one organic resin, and combinations thereof, particles of an aluminum-silicon alloy which has an average particle size in the range of about 1 micron to about

50 microns, and inert organic [**polymer thickener**]  
**pyrolysable solid particulate** beads."

"8. A method for aluminizing an internal passage of a metal substrate comprising:  
injecting an aluminizing composition comprising an aluminum-based powder, a binder selected from the group consisting of colloidal silica, at least one organic resin, and combinations thereof; and inert organic pyrolysable thickener particles into the internal passage;  
heat treating the composition under conditions sufficient to remove volatile components from the composition, to cause diffusion of aluminum into surface regions of the internal passage, and to cause decomposition of at least some of the pyrolysable thickener particles; and  
burnishing excess material from the internal passage."

"10. A metal substrate, having a coating disposed on an internal passage, said coating being free of hexavalent chromium, and comprising aluminum-based powder, an inert organic pyrolysable **solid particulate** thickener, and a binder selected from the group consisting of colloidal silica, at least one organic resin, and combinations thereof."

2.2 The second substantive communication dated 29 April 2009 was annexed to the summons to oral proceedings before the Examining Division scheduled for 9 September 2009. It was based on this amended set of claims 1-10.

Initially it stated "*The applicant's explanations submitted with her letter of 19.06.2008 have been*

*carefully considered. However it is the preliminary opinion of he [sic] examining division that the new claims 1-10 submitted on 19.06.2008 do not comply with the requirements of the EPC and the application should be refused."*

In point 2 of this communication the Examining Division then referred to documents D1-D9 among which D8 and D9 - both taken from the European Search Report - were cited for the first time in the examination procedure.

In points 3 and 4 it stated that "*the subject-matter of claims 1, 8 and 10 is not new within the meaning of Article 54(1) and (2) EPC*" and "*Document D1 discloses an aluminizing slurry mix composition for diffusion coating e.g. the inside surfaces of tubular metallic components, comprising an aluminum powder, a colloidal silica solution and methocel. Methocel is an organic pyrosable [sic] solid particulate. (see example IV; col. 1, lin. 1-17; col. 2, lin. 1-14)*" continued by "*the subject-matter of claim 1, 5 is not new*" and "*Document D5 discloses an aluminizing suspension for calorizing articles of all types and shapes comprising finely divided aluminum and a binder comprising a solution of nitrocellulose (solid basis) and alkyd resin (solid basis) dissolved in a solvent mixture including xylol and butal [sic] acetate (see col. 1, lin. 1-8; col. 2, lin. 1-6; lin. 28-38; col. 4, lin. 30-66).*"

Subsequently in point 5 the Examining Division stated that "*The present application does not meet the requirements of Article 52(1) EPC because the subject-matter of claims 1, 2, 5-10 is not inventive within the meaning of Article 56 EPC. Document **D8** discloses the*

*diffusion coating of the internal surface of a hollow in a metallic workpiece such as cooling passages in the interior of a nickel-based superalloy, comprising applying and heating a coating layer comprising a dispersion of the metal particles, e.g. aluminum, to be diffused in the metallic workpiece, in a solution of acrylic resins and poly(methyl methacrylate), which is a solid pulver [sic] (see page 1, lin. 1-11 ; page 2, lin. 1-4; page 3, lin. 60-62; page 4, lin. 49-54; claims 1-17)". This was followed in point 6 by "Furthermore the subject-matter of claim 4 can not be the basis of an inventive step either as the use of stabilizers, in particular hydroxyl groups, are well known by the skilled person. **D9** discloses the addition of sugar to a diffusion metallic (e.g. aluminium) slurry composition (see claims 1-3)." (emphasis added by the Board).*

Finally in point 7 of this communication it stated "*The subject of the Oral Proceedings will be whether the claimed subject-matter is new and/or involves an inventive step in the sense of Articles 52(1), 54 and 56 EPC*".

2.3 This second communication clearly does **not** contain anything dealing with the arguments submitted by the appellant, particularly not as to why they cannot be accepted.

Furthermore, also this second communication does **not** contain any comprehensible reasoning as to why the aluminizing composition, method and resulting coated substrate disclosed in document D1 or the aluminizing composition according to D5 would fulfil the



requirement of "an inert organic pyrolysable **solid** particulate **thickener**" or of "inert organic pyrolysable **thickener** particles as defined in claims 1, 8 and 10 (see point 2.1 above).

Points 5 and 6 contain only allegations without giving any comprehensible reasoning for the lack of inventive step objection on the subject-matter of claims 1, 2 and 4-10 in view of the newly cited D8 and D9, e.g. as to why the person skilled in the art would modify the aluminizing method of D8 in order to arrive at the subject-matter claimed, or why it should be combined with the teaching of D9. The Examining Division has not applied the problem-solution approach and has not explained which objective technical problem should be solved by the person skilled in the art.

Furthermore, taking account of the amendment made in claim 6 (see point 2.1 above) it seems that the Examining Division has not examined as to whether or not this amended set of claims complies with the requirements of Article 123(2) EPC.

3. As a response to this second communication the appellant decided to not be represented at the oral proceedings and to request an appealable decision in writing based on the current state of the file.
4. The impugned decision according to the state of the file does not contain any further reasoning and merely refers to "the communication(s) dated 28.08.2007, 29.04.2009", stating that "the applicant was informed that the application does not meet the requirements of the European Patent Convention. **The applicant was also**

- informed of the reasons therein**" and that the applicant filed no comments or amendments in reply to the latest communication (emphasis added by the Board).
- 4.1 From the above analysis of the content of the two substantive communications it is evident that the impugned decision falls short of revealing the reasons which led the department of first instance to conclude lack of novelty and/or lack of inventive step, or lack of clarity for that matter.
- 4.2 Furthermore, contrary to what is stated in the second communication ("the applicant's explanations ... have been carefully considered") it is apparent that the Examining Division ignored all the appellant's arguments since this communication and therefore the decision is silent in this respect. Consequently, the impugned decision is also not reasoned in that respect.
- 4.3 It is evident that the Examining Division, when issuing the impugned decision, did not follow the Guidelines for Examination in the European Patent Office, according to which the reasoning must contain in logical sequence those arguments which justify the order. Furthermore, the reasoning should be complete and independently comprehensible and the reasoning should contain important facts and arguments which speak against the decision (see the Guidelines, Chapter E-X, 5). The latter means that the decision should address the arguments of the losing party (not in the least to also comply with the right to be heard).
- 4.4 Moreover, even though claims 1, 6 and 10 of the two sets of claims have been amended once by incorporating

further features so that the subject-matter of claims 1, 6 and 10 of the two different requests have been substantially restricted, the impugned decision refers to both substantive communications.

This means that it is left up to the Board to construct the applicable reasons by having to "mosaic" the various arguments from the file, or that it leaves the Board in doubt as to which arguments apply to which claim version. This does **not** meet the requirement of a "reasoned" decision in accordance with Rule 111(2) EPC (see e.g. decisions T 1309/05, points 3 to 3.7 of the reasons; T 1356/05, point 15 of the reasons; T 1709/06, points 1.2 to 1.2.5 of the reasons; and T 1442/09, points 1.4.1 to 1.6 of the reasons; none published in OJ EPO).

A reasoned decision should address the arguments of the losing party (see point 4.3 above) and should make sure that it deals sufficiently with the counterarguments put forward and provides reasoned support for what it alleges.

5. The lack of reasoning in a decision is a substantial procedural violation since it results in the appellant being deprived of any reasoning which it can properly address in appeal and in the Board being unable to properly examine the reasons why the Examining Division came to its conclusions.

*Remittal to the department of first instance (Article 111(1) EPC)*

In view of the aforesaid substantial procedural violation the Board considers that it is appropriate to set aside the decision under appeal for this reason alone and to remit the case to the department of first instance for further prosecution in accordance with Article 111(1) EPC, in application of Article 11 RPBA.

As the request for oral proceedings was withdrawn if the above were the Board's decision, no oral proceedings needed to be held.

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

For the above reasons it is also equitable to reimburse the appeal fee pursuant to 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 department of first instance for further prosecution.
3. The appeal fee is to be reimbursed.

The Registrar:

The Chairman:

G. Nachtigall

H. Meinders