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Datasheet for the decision of 30 April 2019

Case Number: T 0429/14 - 3.4.03

Application Number: 05744852.4

Publication Number: 1747593

IPC: H01L39/16

Language of the proceedings: EN

Title of invention:
FAULT CURRENT LIMITER

Patent Proprietor:
Rolls-Royce plc

Opponent:
Siemens Aktiengesellschaft

Headword:

Relevant legal provisions:
EPC Art. 123(2), 123(3)
EPC 1973 R. 71(2)
EPC R. 99(2)
RPBA Art. 13(1), 13(3), 15(6)

Keyword:
Amendments - added subject-matter (yes) - broadening of claim (yes)
Late-filed auxiliary requests - request clearly allowable (no)

Decisions cited:
T 0727/09

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 0429/14 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 30 April 2019

Appellant: (Patent Proprietor)	Rolls-Royce plc 62 Buckingham Gate London SW1E 6AT (GB)
Representative:	Rolls-Royce plc Intellectual Property Dept SinA-48 PO Box 31 Derby DE24 8BJ (GB)
Appellant: (Opponent)	Siemens Aktiengesellschaft Werner-von-Siemens-Straße 1 80333 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 28 January 2014 concerning maintenance of the European Patent No. 1747593 in amended form.**

Composition of the Board:

Chairman	G. Eliasson
Members:	S. Ward
	C. Heath

Summary of Facts and Submissions

I. This is an appeal by both the patent proprietor and the opponent against the interlocutory decision of the Opposition Division in the case of European patent No. 1 747 593. The Opposition Division decided, in relation to the requests then on file, that:

- the subject-matter of the main request failed to meet the requirements of Article 123(2) EPC;
- the subject-matter of the first auxiliary request was not new within the meaning of Article 54 EPC;
- the subject-matter of the second auxiliary request did not meet the requirements of Article 84 EPC;
- on the basis of the third auxiliary request, the patent and the invention to which it related met the requirements of the EPC.

II. Oral proceedings were held in the presence of the appellant-proprietor (hereinafter, the proprietor) and in the absence of the appellant-opponent (hereinafter, the opponent), the opponent's intention not to attend having previously been stated in writing.

The opponent requested in writing that the decision of the Opposition Division be set aside and the patent revoked.

At the end of the oral proceedings held before the Board the proprietor confirmed its requests that the decision of the Opposition Division be set aside, and that the patent be maintained according to the main request, or one of auxiliary requests 1 - 5, all filed with letter dated 3 June 2014, or according to one of auxiliary requests X and 7, filed during oral proceedings.

III. (a) Claim 1 of the main request reads as follows:

"A conductor element (16) for a fault current limiter (10), comprising:
a superconducting element (18) which quenches to a normal conducting state when at least one of the current density and temperature is above a fault value; and
a thermal mass (26a, 26b) in thermal contact with the superconducting element (18) to absorb heat from the superconducting element (18), the thermal mass (26a, 26b) having a thermal capacity calculated in terms of specific heat capacity and thermal conductivity with the superconducting elements to serve to maintain an even temperature throughout the superconducting element (18) in normal operation of the conductor element (16) and
the thermal mass is within a desired characteristic thermal distance from the superconducting element (18) to stop superconducting nearly adiabatically to limit fault currents,
wherein the thermal mass (26a, 26b) is provided by a plurality of bodies in solid form associated with parts of electrical insulation (30) to inhibit continuous electrical conductivity at least longitudinally beyond the plurality of bodies along the superconducting element through the plurality of bodies of the thermal mass; and
the conductor element (16) further comprises a connection arrangement (22) for providing, in use, thermal connection between the thermal mass (26a, 26b) and a cooling system (24) on one side of the thermal mass (26a, 26b) away from the superconducting element (18) to define a direct thermal path across the thermal

mass (26a, 26b) between the parts (30) of the electrical insulation."

(b) Claim 1 of auxiliary request 1 comprises all features of claim 1 of the main request together with the following additional feature:

"the superconducting element (18) is based on magnesium diboride".

(c) Claim 1 of auxiliary request 2 comprises all features of claim 1 of auxiliary request 1 together with the following additional feature:

"the conductor element (16) is generally cylindrical in form".

(d) Claim 1 of auxiliary request 3 is based on claim 1 of the main request modified as follows:

- *"within a desired characteristic thermal distance"* is modified to *"within no* ***more than three times a*** *characteristic thermal distance";*
- *"to stop superconducting"* is modified to *"to* ***quench****";* and
- *"to define a direct thermal path across the thermal mass (26a, 26b) between the parts (30) of the electrical insulation"* is modified to *"to define a direct thermal path across the* ***bodies of the*** *thermal mass (26a, 26b)".*

(e) Claim 1 of auxiliary request 4 comprises all features of claim 1 of auxiliary request 3 together with the additional feature referred to above under point (b).

(f) Claim 1 of auxiliary request 5 comprises all features of claim 1 of auxiliary request 4 together with the additional feature referred to above under point (c).

(g) Claim 1 of auxiliary request X is based on claim 1 of the main request whereby:

"to define a direct thermal path across the thermal mass (26a, 26b) between the parts (30) of the electrical insulation" is modified to
"to define a direct thermal path across the ***bodies of the*** *thermal mass (26a, 26b) between the parts (30) of the electrical insulation"*.

(h) Claim 1 of auxiliary request 7 is based on claim 1 of the main request with some reference signs corrected, and modified as follows:

"wherein the thermal mass (26a, 26b) is provided by a plurality of bodies in solid form associated with parts of electrical insulation (30) to inhibit ..." is modified to
*"wherein the thermal mass (****20****) is provided by a plurality of bodies* ***(26a, 26b)*** *in solid form* ***between parts of electrical insulation, the*** *parts of electrical insulation (30) to inhibit ...".*

IV. The opponent's arguments, in so far as they are relevant to the present decision, were essentially as follows:

Numerous features of the claims extended beyond the content of the application as filed, contrary to Article 123(2) EPC, including the feature that there

was "a direct thermal path across the thermal mass between the parts of the electrical insulation".

V. The proprietor's arguments, in so far as they are relevant to the present decision, were essentially as follows:

(i) The final paragraph of claim 1 of the main request had a basis in the application as filed. The first part ("the conductor element ... away from the superconducting element) was implicit in Fig. 1, and it was also implicit from from Figs. 1 and 2 that a direct thermal path existed from the superconducting element 18 across the thermal mass 20 to the cooling system 24 via the connection arrangement 22.

The passage on page 3, lines 17-21 disclosed an arrangement in which multiple bodies of the thermal mass are positioned along the element with electrically insulating material provided between adjacent bodies, as exemplified by the annular or disk-like bodies 30 in Fig. 2. The "parts (30) of the electrical insulation" referred to in the final paragraph of claim 1 were to be understood in this sense as they were defined in the penultimate paragraph as serving "to inhibit continuous electrical conductivity at least longitudinally". Hence, the bodies of the thermal mass could be described as being between the parts of the electrical insulation.

The final feature of claim 1 of the main request required there to be "a direct thermal path across the thermal mass between the parts of the electrical insulation", thus the direct thermal path was through the solid bodies as was clear from Fig. 2. Nonetheless, the insulation was electrically insulating and not

thermally insulating, and so thermal paths could also exist via the electrically insulating parts, even if they would be less thermally conductive than the solid bodies.

(ii) The amendments to claim 1 of auxiliary request 3 had a basis at page 7, lines 20 to 21. The feature "between the parts of the electrical insulation", could be removed from the claim 1 without offending against Article 123(3) EPC as it was essentially repetitious and had no real limiting effect.

(iii) The amendments to claim 1 of auxiliary request 7 were based on the application as filed and addressed the Board's concerns in relation to Article 123(3) EPC.

Reasons for the Decision

1. *Admissibility of the opponent's appeal*

1.1 In the written procedure the proprietor contended that the opponent's appeal was inadmissible, as the opponent had "merely repeated arguments on patentability" which were heard in the first instance proceedings, and had failed to explain why the contested decision was incorrect.

1.2 In its communication pursuant to Article 15(1) RPBA the Board noted that even if this constituted a fair appraisal of the opponent's grounds of appeal, it was doubtful whether the appeal would thereby be rendered inadmissible. While the EPC requires that an appellant "shall indicate the reasons for setting aside the

decision impugned ..." (Rule 99(2) EPC, corresponding to Rule 64(b) EPC 1973), there is no requirement that the appellant must provide *new* reasons, going beyond those already given before the department of first instance.

The cited decision (T 727/09) does not appear highly relevant, as it relates to a case in which "the statement of grounds of appeal submitted by the appellant sets out a reasoned argumentation as to why the patent should be revoked for lack of inventive step based exclusively on the newly filed documents" (Reasons, point 7). That is not the case here.

1.3 As this matter was not pursued further at oral proceedings, the Board sees no reason to deviate from its provisional view. The appeal of the opponent is therefore admissible.

2. As announced in advance, the duly summoned opponent did not attend the oral proceedings, which were held in the absence of the opponent in accordance with Rule 71(2) EPC 1973.

3. *Main Request: Article 123(2) EPC*

3.1 The final paragraph of claim 1 defines a connection arrangement for providing, in use, a thermal connection between the thermal mass and a cooling system on one side of the thermal mass away from the superconducting element:

"to define a direct thermal path across the thermal mass (26a, 26b) between the parts (30) of the electrical insulation."

This feature has no textual basis in the application as filed; in fact the term "thermal path" appears nowhere in the original application.

3.2 The proprietor argues (see above, point V(i)) that there is at least an implicit basis for an arrangement in which there are a plurality of bodies of the thermal mass positioned along the element, the bodies being positioned between electrical insulation parts, such that there is a direct thermal path across the bodies, i.e. across the thermal mass between the parts of the electrical insulation.

3.3 Even if this were accepted, the feature "to define a direct thermal path across the thermal mass (26a, 26b) between the parts (30) of the electrical insulation" is formulated in a manner which is highly suggestive of embodiments in which a direct thermal path exists in the portion of the thermal mass between the parts of the electrical insulation, *but not* in the parts of the electrical insulation. Even if the claim is interpreted as not excluding other possibilities, the wording leaves no doubt that embodiments fall within the ambit of the claim in which the direct thermal path exists between, but not in, the parts of the electrical insulation.

3.4 Such embodiments have no basis in the application as filed. The bodies 26 "are in thermal contact with each other, through the insulating material 28, 30, 32" (page 7, lines 1-2), and hence the insulating materials are electrically insulating but not thermally insulating, a point which was acknowledged by the proprietor at oral proceedings and in the written

procedure (e.g. letter dated 6 October 2014, page 5, final paragraph).

3.5 While the electrically insulating materials might well display a lower thermal conductivity than the bodies 26, a thermal path which only exists "between" the electrically insulating materials (and not in them) would require the electrically insulating materials to be also thermally insulating, which is not disclosed (in fact, the opposite is disclosed) in the application as filed.

3.6 Claim 1 of the main request therefore comprises subject-matter which extends beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

4. *Auxiliary requests 1 and 2*

4.1 Claim 1 in each of auxiliary requests 1 and 2 comprises the feature cited above under point 3.1, and found to introduce subject-matter going beyond the content of the application as filed.

4.2 Hence, auxiliary requests 1 and 2 do not comply with the requirements of Article 123(2) EPC.

5. *Auxiliary request 3: Article 123(3) EPC*

5.1 Article 123(3) EPC stipulates that a European patent may not be amended in such a way as to extend the protection it confers.

5.2 The final feature of claim 1 of the granted patent is:

"to define a direct thermal path across the thermal mass (26a, 26b) between the parts (30) of the electrical insulation to inhibit continuous electrical conductivity."

The final feature of claim 1 of auxiliary request 3 is:

"to define a direct thermal path across the bodies of the thermal mass (26a, 26b)".

It is therefore to be determined whether this amendment, in particular the excision of the feature "between the parts ..." would extend the protection conferred by the claim.

5.3 The granted version of claim 1 defines "at least one body in solid form" associated with "parts" (hence, at least two) of electrical insulation to inhibit longitudinal electrical conductivity. The thermal path is defined across the thermal mass "between the parts (30) of the electrical insulation to inhibit continuous electrical conductivity". In other words, in all of the granted embodiments at least one part of the thermal mass must lie between electrical insulation parts, and the thermal path must exist (at least) in that part of the thermal mass.

5.4 In claim 1 of the 3rd auxiliary request, however, while the thermal mass comprises a plurality of bodies, again associated with "parts" (hence, at least two) of electrical insulation to inhibit longitudinal electrical conductivity, it is not defined that any of the bodies (or any other portions of the thermal mass) lie *between* parts of electrical insulation.

Claim 1 of the 3rd auxiliary request therefore encompasses, for example, embodiments having a plurality of bodies and two parts of electrical insulation, whereby both parts of electrical insulation are located between the same two bodies (forming a double layer of electrical insulation "to inhibit continuous electrical conductivity"). Such an embodiment would not have any portion of the thermal mass lying "between the parts (30) of the electrical insulation", and hence no thermal path could be defined in such a portion. This embodiment would fall within the ambit of claim 1 of the 3rd auxiliary request, but not within the ambit of claim 1 of the granted claim.

5.5 Claim 1 of the 3rd auxiliary request has therefore been amended in such a way as to extend the protection which would be conferred by the patent, contrary to the requirements of Article 123(3) EPC.

6. *Auxiliary requests 4 and 5*

The feature "between the parts ..." has similarly been excised from claim 1 of each of auxiliary requests 4 and 5, and hence these requests do not comply with the requirements of Article 123(3) EPC for the reasons given in respect of auxiliary request 3.

7. *Auxiliary request X*

7.1 In claim 1 of auxiliary request X, the thermal path is defined to be "across the bodies of the thermal mass (26a, 26b) between the parts (30) of the electrical insulation". Hence, compared with the corresponding feature of claim 1 of the main request, claim 1 of auxiliary request X has been amended by the insertion of the phrase "bodies of the".

7.2 While the Board raises no objection to this amendment *per se*, it has no bearing on the arguments set out above under point 3, nor would it lead to a different conclusion being drawn in relation to the requirements of Article 123(2) EPC to that reached for the main request.

Auxiliary request X therefore does not comply with the requirements of Article 123(2) EPC.

8. *Auxiliary request* 7

8.1 Since auxiliary request 7 was filed during oral proceedings before the Board, the first question is whether the Board should exercise its discretion under Article 13(1) RPBA to admit it into the proceedings.

As a general rule, oral proceedings are scheduled with the aim of ensuring that a final decision can be taken at the end of the oral proceedings in accordance with Article 15(6) RPBA. Amendments filed after oral proceedings have been arranged (and in particular, filed during oral proceedings itself) shall not be admitted if they raise issues which the Board cannot reasonably be expected to deal with without adjournment of the oral proceedings (Article 13(3) RPBA).

8.2 The Boards therefore regularly apply the criterion that a new request filed at a late stage in the proceedings will only be admitted if it is clearly allowable in the sense that it can be quickly ascertained that it overcomes all outstanding issues without raising new ones (*Case Law of the Boards of Appeal of the European Patent Office, 8th Eighth Edition, 2016, IV.E.4.2.5*).

8.3 In claim 1 of auxiliary request 7 the feature "between parts of electrical insulation" has (in comparison to claim 1 of the main request) been deleted from the final paragraph and inserted in the penultimate paragraph as follows:

"the thermal mass (20) is provided by a plurality of bodies (26a, 26b) in solid form between parts of electrical insulation".

Hence a new formulation is introduced for the first time into the claim, and since there is no express basis in the text of the application as originally filed for such a formulation, the question arises whether the requirements of Article 123(2) EPC are met.

8.4 Moreover, according to the final paragraph of claim 1 of the granted patent there is "a direct thermal path across the thermal mass (26a, 26b) between the parts (30) of the electrical insulation ...". An explicit technical link is thereby defined between the direct thermal path and the feature "between the parts ... of electrical insulation".

In claim 1 of auxiliary request 7 this link is no longer defined, and it is not therefore immediately apparent to the Board that this amendment overcomes the objection under Article 123(3) EPC.

If auxiliary request 7 were admitted into the proceedings, these issues would have to be considered, and hence the criterion noted above under point 8.2 would not be fulfilled. Auxiliary request 7 is therefore not admitted into the proceedings.

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:

M. Kiehl G. Eliasson

Decision electronically authenticated