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**Datasheet for the decision
of 26 January 2015**

Case Number: T 1973/10 - 3.5.02
Application Number: 00124788.1
Publication Number: 1205945
IPC: H01B12/06
Language of the proceedings: EN
Title of invention:
Superconducting cable
Patent Proprietor:
Prysmian S.p.A.
Opponent:
Siemens Aktiengesellschaft
Relevant legal provisions:
EPC Art. 56
Keyword:
Inventive step - (no)



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Boards of Appeal
Chambres de recours**

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Case Number: T 1973/10 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 26 January 2015

Appellant: Siemens Aktiengesellschaft
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Respondent: Prysmian S.p.A.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted on
20 July 2010 concerning maintenance of the
European Patent No. 1205945 in amended form.

Composition of the Board:

Chairman M. Ruggiu
Members: R. Lord
P. Mühlens

Summary of Facts and Submissions

I. This is an appeal of the opponent against the decision of the opposition division that the European patent No. 1 205 945, and the invention to which it related, met the requirements of the EPC. The decision was based on the patent proprietor's second auxiliary request, as filed during the oral proceedings of 22 June 2010.

II. The following document cited by the opponent is relevant for this decision:

D6: JP-6 44 832 A and translation into English provided by patent proprietor.

III. With the response to the statement of grounds of appeal dated 23 March 2011 the respondent (patent proprietor) requested that the appeal be dismissed. This represents the respondent's sole current request.

In a letter dated 18 December 2014, the appellant (opponent) argued *inter alia* that the subject-matter of claim 1 did not involve an inventive step over D6.

Oral proceedings before the board took place on 26 January 2015, at which, as indicated in a letter dated 19 December 2014, the respondent was not represented.

The appellant requested that the decision under appeal be set aside and that the patent be revoked.

IV. Claim 1 of the respondent's sole request (i.e. the second auxiliary request which was the subject of the decision under appeal) reads as follows:

"Superconducting cable comprising at least one layer of tapes of superconducting material wound on a support at a prefixed distance so as gaps are formed among adjacent tapes, wherein non-superconducting material is interposed between adjacent tapes to partially fill said gaps, wherein the non-superconducting material has a thickness differing from that of the tapes of the superconducting material of an amount not higher than +/-15%, wherein the width of the non-superconducting material is such that a gap of 0.1-3 mm remains between a tape of superconducting material and the adjacent non-superconducting material."

- V. The arguments of the appellant which are relevant for the present decision can be summarised as follows:

Document D6 described a superconducting cable comprising all of the features of claim 1 of the patent as granted, for the reasons already discussed during the procedure before the opposition division. The interpretation of the claim by the opposition division to the effect that it excluded arrangements in which the tapes of superconducting material and the non-superconducting material were partially in contact with one another was incorrect, because the wording of the claim was so broad that such contact was not excluded. Thus even if, as shown for instance in figures 1a and 1b of D6, the laminated blocks (4) of superconducting material and the spacers (6) might be in contact at their radially inward ends, such an arrangement would still fall within the terms of the present claim 1, because there was a gap between these elements throughout most of their radial extent.

It could be calculated from the disclosure in paragraphs [0020] and [0021] and figures 1a and 1b of

D6 that the width of the gap at its radially outer end was within the range of 0.1-3 mm defined in the claim.

D6 disclosed in paragraph [0013] only that the height of the spacer should be "somewhat higher" than that of the block of superconducting tapes, without specifying an upper limit to the difference. However, given this wording, it would have been obvious to the skilled person to select a difference less than the upper limit of 15% defined in the claim. In this context it was relevant that the technical problem mentioned in D6 (see e.g. paragraphs [0009] and [0013]) was essentially the same as that discussed in the patent in suit.

VI. The respondent argued essentially as follows:

The subject-matter of claim 1 as maintained by the opposition division was new and involved an inventive step over D6, because that document provided no teaching that the gap between the superconducting tapes and the non-superconducting spacer was such that they were not in contact with one another, as required by the wording of the claim.

Reasons for the Decision

1. The appeal is admissible.
2. *Inventive step (Article 56 EPC)*
 - 2.1 As an initial step in the assessment of inventive step in the subject-matter of the present claim 1 (i.e. that of the second auxiliary request addressed in the decision under appeal) it is first necessary to address

the question of the interpretation of the terminology of the claims. In this context the appellant has argued that the opposition division interpreted the claim in too restricted a manner, and that the conclusion that the subject-matter of the claim involved an inventive step resulted from that incorrect interpretation. The board agrees with the appellant's arguments in this respect at least insofar as they concern the question of whether the tapes of superconducting material and the non-superconducting material adjacent to them can be in contact anywhere. Thus the board is of the opinion that the wording of the claim does not preclude the existence of such contact between these elements, but rather merely requires the presence of a space between them.

2.2 The board agrees with the conclusion in the decision under appeal that the document D6 represents a suitable starting point for the assessment of inventive step, and that it discloses a superconducting cable (see figures 1a and 1b) comprising at least one layer of tapes of superconducting material (blocks 4 comprising layers of superconducting material 3) wound on a support (former 5) at a predetermined distance from one another such that gaps are formed between adjacent tapes, wherein non-superconducting material (spacers 6) is interposed between adjacent tapes to partially fill said gaps (triangular gaps remain either side of the depicted spacers).

2.3 According to the decision under appeal, the cable of the present claim 1 was distinguished from that of D6 by the following two features:

- i) the non-superconducting material has a thickness differing from that of the tapes of the

superconducting material by an amount not higher than +/-15%; and

ii) the width of the non-superconducting material is such that a gap of 0.1-3 mm remains between a tape of superconducting material and the adjacent non-superconducting material.

2.4 However, as far as feature ii) is concerned, the board agrees with the appellant that this is present in the cable of D6. In this respect it is noted that, for the reasons indicated in paragraphs 2.1 and 2.2 above, it is not relevant whether or not the spacer is in contact with the bottom of the stack of superconducting tapes. Moreover, as the appellant has demonstrated in the calculations described on pages 6 and 7 of the letter of 18 December 2014 (which are based on paragraphs [0020] and [0021] of the description in the translation of D6), it can be determined that the width of at least a significant part of the gaps in D6 falls within the range of 0.1-3 mm defined in the present claim. Even if this were considered to not be unambiguously disclosed in D6 (which might be considered to be the case, given the inconsistencies in the disclosure of paragraphs [0020] and [0021] and Figures 1a and 1b), the board is of the opinion that this feature could not contribute to the presence of an inventive step, since in the extremely broad context of the claim it is not apparent what technical effect might result from this selection of the gap width. In particular the board notes that the claim does not define the dimensions of any other element in the cable, so that the relationship between the gap width and the dimensions of the superconducting tapes and/or the spacer is undefined. Furthermore, in the light of the limited disclosure in the patent in suit concerning the effect of the defined gap (see

paragraph [0018]), it is not apparent to the board what technical effect might arise from the modification of the arrangement of D6 (with the bases of the blocks of superconducting tapes and the spacers being in contact) to provide a gap as small as 0.1 mm, as covered by the present claim.

2.5 As far as feature i) identified above is concerned, the board is of the opinion that this establishes novelty over D6, since the only teaching in that document with regard to the relationship between the thickness (height) of the stack of superconducting tapes and that of the spacer is that the latter should be "somewhat higher" than the former (see paragraph [0013] of the description). This definition is not clearly restricted to the claimed case in which this difference does not exceed 15%, so that the subject-matter of the claim can be considered to be new over D6. Nonetheless, the board is of the opinion that, given the wording "somewhat higher", and taking into account that the reason for this selection indicated in that paragraph and in paragraph [0009] is essentially the same as that discussed in paragraphs [0012] and [0013] of the patent in suit (i.e. avoiding the application of excess stress to the corners of the superconducting tapes), it would have been obvious to the skilled person to implement the cable of D6 in such a manner that the thickness of the spacer exceeded that of the stack of superconducting tapes by less than 15%.

2.6 The board therefore concludes that the subject-matter of claim 1 of the respondent's sole request does not involve an inventive step according to Article 56 EPC.

3. In view of the above, the respondent's sole request does not provide a basis for the maintenance of the patent in amended form, so that the board has to accede to the appellant's request to revoke the patent.

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:



U. Bultmann

M. Ruggiu

Decision electronically authenticated