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**Datasheet for the decision
of 14 March 2023**

Case Number: T 0818/20 - 3.5.02

Application Number: 14198919.4

Publication Number: 3035483

IPC: H02J50/10, A61B6/00, H01F38/18,
H01F27/36

Language of the proceedings: EN

Title of invention:
Inductive rotary joint with U-shaped ferrite cores

Patent Proprietor:
Schleifring GmbH

Opponent:
Siemens Healthcare GmbH

Relevant legal provisions:
EPC Art. 83

Keyword:
Sufficiency of disclosure - main request and auxiliary request
1 (no)

Decisions cited:
T 0169/20



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Case Number: T 0818/20 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 14 March 2023

Appellant: Siemens Healthcare GmbH
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Respondent: Schleifring GmbH
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
26 February 2020 concerning maintenance of the
European Patent No. 3035483 in amended form.**

Composition of the Board:

Chairman R. Lord
Members: C.D. Vassoille
J. Hoppe

Summary of Facts and Submissions

- I. The opponent filed an appeal against the interlocutory decision of the opposition division concerning maintenance of the European patent no. 3 035 483 in amended form.
- II. In the decision under appeal the opposition division *inter alia* concluded that the then auxiliary request 1 fulfilled the requirements of Articles 123(2), 84, 83, 54 and 56 EPC.
- III. The parties were summoned to oral proceedings before the board. In a communication under Article 15(1) RPBA 2020 annexed to the summons, the board set out their preliminary observations on the appeal, concluding *inter alia* that the main request (corresponding to the auxiliary request 1 underlying the decision under appeal) appeared to fulfil the requirements of Articles 84, 123(2) and 83 EPC but that it was questionable whether the subject-matter of claim 1 of the main request involved an inventive step. It was further held that this would seem to also apply to auxiliary request 1 filed with the reply to the appeal.
- IV. Oral proceedings took place on 14 March 2023 in the form of a Zoom videoconference.

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

The respondent (patent proprietor) requested that the appeal be dismissed (main request), or as an auxiliary

measure that the patent be maintained according to auxiliary request 1 filed with the reply to the appeal.

V. Claim 1 of the main request has the following wording (feature numbering corresponding to page 5 of the decision under appeal):

"1.1 Rotating power transformer (100) comprising a primary magnetic core (110) having at least one primary winding (111) and a secondary magnetic core (120) having at least one secondary winding (121),

1.2 each based on a ring shaped body,

1.3 the primary magnetic core (110) being in close proximity to the secondary magnetic core (120) separated by an air gap (130), being rotatable against each other around a rotation axis (150),

1.4 the magnetic cores (110, 120) comprise U-shaped cores with a base connecting two legs,

1.5 having a leg width more than 1,5-times larger than the base height,

1.6 the magnetic cores are of a ferrite material,

1.7 at least one of the magnetic cores (110, 120) is mounted to a base body (200)

1.8 having a groove (201) with a width larger than the width of the at least one of the magnetic cores, and there is a gap defined by the width of the groove (201) and the width of the magnetic core, characterized in that

1.9 the base is of a plastic material,

1.9.1 both materials have a different thermal expansion coefficient,

1.10 the gap is at least partially filled by a filler (210), and

1.11 with defined thermal expansion coefficients of the magnetic cores, the filler, and the base body,

1.12 the dimensions are selected such that the thermal expansion of the magnetic cores plus the thermal expansion of the filler is identical to the thermal expansion of the gap in the base body."

VI. The wording of claim 1 of auxiliary request 1 only differs from claim 1 of the main request in that feature 1.9 reads as follows:

"the base body is of a plastic material" (emphasis added by the board)

VII. The arguments of the appellant as far as they are relevant for the present decision are as follows:

Feature 1.12 of claim 1 of the main request was clear in itself and therefore did not require any further interpretation as to the meaning of the term "gap". Even if the description were taken into account, it was clear from paragraph [0019] that the gap was between the side wall of the groove and the side wall of the magnetic core. This was consistent with the only definition of the gap given in feature 1.10 of claim 1. There was therefore nothing in claim 1 that would lead the skilled person to believe that, contrary to the

literal wording of feature 1.12, the gap was actually intended to be the groove of the base body.

Feature 1.10 of claim 1 of the main request could only be interpreted in the sense that the gap is partially filled by the filler in the height direction of the gap, but not in the width direction. The only technically meaningful interpretation in view of the objective of the invention, i.e. to improve the mechanical stability, was that the filler extends over the entire width of the gap.

This interpretation led to an embodiment within the scope of claim 1 in which the equation resulting from feature 1.12 could only be solved if the thermal expansion of the magnetic core was zero. Since such a material did not exist, the invention could not be implemented by a person skilled in the art.

VIII. The arguments of the respondent as far as they are relevant for the present decision are as follows:

Reference was made to the reasons given by the opposition division in paragraph 17 of the decision under appeal. Reference was also made to the previous submissions in the proceedings before the opposition division. In particular, it was irrelevant whether the filler extended over the entire width of the gap or not, since the equation resulting from feature 1.12 could be solved in any case. Furthermore, a Google search for materials with zero thermal expansion produced a number of hits.

The respondent did not comment on the interpretation of features 1.10 and 1.12 throughout the appeal proceedings.

Reasons for the Decision

1. *Main request - Insufficiency of disclosure (Article 83 EPC)*

1.1 The patent does not disclose the invention as defined in claim 1 in a manner sufficiently clear and concise for it to be carried out by a person skilled in the art (Article 83 EPC).

1.2 Under the established case law of the Boards of Appeal, the requirements of sufficiency of disclosure are met if a person skilled in the art can carry out the invention as defined in the independent claims over the whole scope of the claims without undue burden using their common general knowledge (see the Case Law of the Boards of Appeal, tenth edition 2022, II.C.5.4)

This requirement is not met in the present case.

1.3 In this respect the following questions concerning the interpretation of claim 1 which were discussed during the oral proceedings are relevant in the context of the assessment of Article 83 EPC:

- Does the expression "gap" in feature 1.12 require interpretation, in particular in the sense that "gap" actually means "groove"?
- How is feature 1.10 to be interpreted, according to which "the gap is at least partially filled by a filler"?

1.4 As to the term "gap", the wording of feature 1.12 in the overall context of claim 1 does not contain any unclarity or ambiguity. Rather, it clearly states that dimensions are selected such that the thermal expansion of the magnetic cores plus the thermal expansion of the filler is identical to the thermal expansion of the gap in the base body.

There is nothing in claim 1 that would lead the skilled person to believe that, contrary to its literal wording, feature 1.12 refers to the thermal expansion of the groove in the base body instead of the gap. Even if this definition might seem to make more sense from a technical point of view, there is no indication in claim 1 that something else was meant than the clear wording of the claim would suggest in view of features 1.8, 1.10 and 1.12. This was also not argued by either of the parties.

In particular, feature 1.8 of claim 1 introduces a "gap defined by the width of the groove (201) and the width of the magnetic core". This is entirely in line with the patent specification in paragraph [0019], which states that a gap is generated between a side wall of the groove and a side wall of the magnetic cores, if the width of the groove is larger than the width of the magnetic cores.

Therefore, considering the claim as a whole and in its technical context, it can be said that there is neither a contradiction nor an ambiguity arising from the use of the term "gap" in feature 1.12. It can therefore also be said that the gap in feature 1.12 clearly refers to the gap as defined in features 1.8 and 1.10 and consequently does not refer to the groove as such,

but to a portion of the groove, which is defined by the width of the groove and the width of the magnetic core.

In view of the clear and unambiguous wording of claim 1, there is no need to consult the description in the case on file (for an outline of the case law in this respect, see T 0169/20, reasons 1.2 to 1.4). However, for the sake of argument, the board wishes to mention that even taking into account the description, no other conclusion could be reached. The patent appears to be ambiguous in paragraph [0019] with respect to the use of the term "gap" in connection with the groove and the filler. However, this alone does not lead to the conclusion that the term "gap" in claim 1 is misused or actually has a different meaning. To the contrary, since the term "gap" has a clear meaning in the context of claim 1, this feature cannot be given a different meaning in the light of the description. Moreover, the description does not allow such a conclusion to be drawn in an unambiguous manner. The board notes that the respondent has not argued this either.

- 1.5 As to whether feature 1.10 is to be interpreted exclusively in the sense that the gap is filled with the filler over its entire width, the board notes that while feature 1.10 may be broad, there is no apparent reason why it should be interpreted in such a restricted sense so as to exclude specific embodiments falling within the scope of that feature. The description should not be used to implement restrictive features not suggested by the wording of the claims (see Case Law of the Boards of Appeal, 10th Edition, II.A.6.3.4).

The mere fact that an effect of the invention mentioned in the description is not or only insufficiently solved

by some embodiments may be relevant for the question of inventive step. In the present case, however, it is irrelevant for the question of claim interpretation, at least as far as technically reasonable interpretations of the claim wording are concerned. In fact, the board does not consider the wording of feature 1.10 to be unclear, so that an interpretation in light of the description was neither required nor appropriate.

1.6 Therefore, in accordance with the submissions of the appellant during the oral proceedings, the board understands feature 1.10 to include, in particular, the following technically reasonable arrangements of the filler in the gap:

- (a) The filler extends over the entire width of the gap, but only partially in the direction of the gap height;
- (b) the filler extends over the entire width and the entire height of the gap;
- (c) the filler extends only partially across the width of the gap and either partially or fully across the height of the gap.

1.7 Feature 1.12 requires the thermal expansion of the magnetic cores plus the thermal expansion of the filler to be identical to the thermal expansion of the gap in the base body, which can be expressed mathematically as follows:

$$\Delta W_{\text{gap}} = \Delta W_{\text{core}} + \Delta W_{\text{filler}}$$

Since in options (a) and (b) the gap is completely filled by the filler (in the width direction), a

necessary condition for feature 1.12 in these cases is that the width of the gap is at any time equal to the width of the filler. The appellant is therefore correct that $\Delta W_{\text{gap}} = \Delta W_{\text{filler}}$ must be satisfied in the case of (a) and (b).

However, this condition can only be satisfied if the thermal expansion of the magnetic cores is zero ($\Delta W_{\text{core}} = 0$). Only in this case can the condition of feature 1.12 be satisfied, as the thermal expansion of the filler is identical to the thermal expansion of the gap. There is no other way to solve the equation of feature 1.12 above for these cases.

1.8 The definition $\Delta W_{\text{gap}} = \Delta W_{\text{groove}} - \Delta W_{\text{core}}$ cannot be derived from feature 1.8 of claim 1, contrary to what was assumed by the opposition division. In feature 1.8 it is only stated that the gap is defined by the width of the groove and the width of the magnetic core. It does not say that the gap width is equal to the width of the groove minus the width of the magnetic core. Rather, as stated above, the skilled person will readily understand from the general technical context of the claimed subject-matter that the gap is formed when the width of the groove is greater than the width of the magnetic core. In this case, a gap is formed between a side wall of the groove and a side wall of the magnetic core. This understanding is consistent with the description in paragraph [0019] of the patent. Therefore, for options (a) and (b) it is correct to assume that $\Delta W_{\text{gap}} = \Delta W_{\text{filler}}$.

1.9 The board therefore agrees with the appellant that options (a) and (b) require a thermal expansion of the magnetic cores to equal zero. A magnetic core which is

of ferrite material having a thermal expansion of zero, however, does not exist.

- 1.10 The board does not dispute that there may be a few materials with a very low or even a zero thermal expansion, at least within a very narrow temperature range. However, claim 1 relates to a magnetic core made of a ferrite material (feature 1.6). The respondent has not provided any evidence that there are magnetic cores made of ferrite which have zero thermal expansion and the board is convinced that, as argued by the appellant, no such material exists.

For the sake of completeness, it should be noted that, in the decision under appeal, the opposition division also stated that, if a zero thermal expansion of the magnetic core were required in order to solve the equation resulting from feature 1.12, this would prevent the person skilled in the art from implementing the invention if such a material did not exist (see point 17.5.3.1 of the reasons for the decision under appeal).

- 1.11 It should also be noted that an embodiment of the invention in which the filler extends across the entire width of the gap is not an isolated individual implementation, but rather constitutes the main embodiment of the invention. This understanding is consistent with the description, see in particular paragraphs [0019], [0030] and [0031], in connection with figures 6 and 7.

- 1.12 The board concludes that claim 1 may comprise practicable solutions to the equation according to feature 1.12 in the case of option (c) where the filler does not extend across the full width of the gap.

However, for the main options (a) and (b), i.e. in the case where the filler extends across the entire width of the gap, the equation could only be solved if the thermal expansion of the magnetic core made of ferrite was zero, which is not possible. Options (a) and (b), which fall within the scope of claim 1, are therefore not practicable. Consequently, the invention as defined in claim 1 cannot be carried out in the whole range claimed.

1.13 For these reasons, the board concluded that claim 1 of the main request does not meet the requirements of Article 83 EPC.

2. *Auxiliary request 1 - Insufficiency of disclosure (Article 83 EPC)*

2.1 Claim 1 of auxiliary request 1 was amended to overcome an objection under Article 123(2) EPC by replacing "base" in feature 1.9 with "base body".

Since this amendment has no effect on the question whether the invention as defined in claim 1 can be implemented by the person skilled in the art, as was acknowledged by the respondent in the oral proceedings, the reasons given by the board in respect of the main request above also apply to auxiliary request 1.

2.2 For these reasons the board concluded that also claim 1 of auxiliary request 1 does not meet the requirements of Article 83 EPC.

3. *Result*

As neither the main request nor auxiliary request 1 fulfils the requirements of Article 83 EPC, the board had to accede to the appellant's main request.

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

R. Lord

Decision electronically authenticated