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**Datasheet for the decision  
of 25 April 2022**

**Case Number:** T 0649/19 - 3.5.02

**Application Number:** 07808768.1

**Publication Number:** 2054902

**IPC:** H01H9/00, H01H3/26, G05F1/147

**Language of the proceedings:** EN

**Title of invention:**  
Electric motor drive unit for on-load tap changers

**Patent Proprietor:**  
Hitachi Energy Switzerland AG

**Opponent:**  
Maschinenfabrik Reinhausen GmbH

**Relevant legal provisions:**  
EPC Art. 113(1), 100(a), 54, 56

**Keyword:**  
Right to be heard - substantial procedural violation (no)  
Novelty - main request (yes)  
Inventive step - main request (yes)



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**Case Number: T 0649/19 - 3.5.02**

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.02**  
**of 25 April 2022**

**Appellant:** Maschinenfabrik Reinhausen GmbH  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 14 January 2019  
rejecting the opposition filed against European  
patent No. 2054902 pursuant to Article 101(2)  
EPC.**

**Composition of the Board:**

**Chairman** R. Lord  
**Members:** C.D. Vassoille  
A. Bacchin

## **Summary of Facts and Submissions**

- I. This is an appeal of the opponent against the decision of the opposition division to reject the opposition against European patent no. 2 054 902.
- II. The following document is relevant for the present decision:
- D1: WO 01/92978 A1
- III. In a communication annexed to the summons to oral proceedings according to Article 15(1) RPBA 2020, the board informed the parties of their preliminary opinion according to which the subject-matter of claim 1 of the patent as granted appeared to be new in view of D1 but not to involve an inventive step. The parties were also informed about the board's preliminary view that the ground for opposition under Article 100(b) EPC was not part of the appeal proceedings and that the opposition division had not committed any violation of the opponent's right to be heard.
- IV. With a letter of 23 March 2022 in reply to the board's communication, the patent proprietor submitted additional arguments.
- V. Oral proceedings before the board took place on 25 April 2022 in the presence of the proprietor. As announced in their letter of 28 February 2022, the opponent did not attend the oral proceedings.

The appellant (opponent) requested in writing that the decision under appeal be set aside and the patent be revoked. Furthermore, they requested reimbursement of

the appeal fee on the basis of an alleged violation of the right to be heard.

The respondent (patent proprietor) requested that the appeal be dismissed (main request), or if that is not possible, that the decision under appeal be set aside and the patent be maintained in amended form on the basis of one of the auxiliary requests 1 to 5 filed with the reply to the grounds of appeal.

VI. Claim 1 of the respondent's main request (patent as granted) reads as follows:

"A motor drive cabinet (2) in an on-load tap-changer, comprising an electric motor drive unit and a control unit (12), whereby said electric motor drive unit comprises an electric motor (6), a gearbox (7), a position transmitter (9) and an outgoing axis (3) outgoing from said motor drive cabinet (2), wherein said gearbox (7) is connected between said electric motor (6) and said outgoing axis (3) and said position transmitter (9) is arranged on said outgoing axis (3), wherein said control unit (12) is arranged to control said outgoing axis (3) outgoing from said motor drive cabinet (2) by feeding said electric motor (6) through direct connection, and wherein said position transmitter (9) is arranged to detect movement and position of said outgoing axis (3) and to provide indications thereof to said control unit (12), and wherein said motor drive cabinet (2) is sealed during use with said electric motor drive unit and control unit (12) inside said sealed motor drive cabinet (2)."

Claims 2 to 8 are dependent on claim 1.

In view of the tenor of the present decision, it is not necessary to cite the wording of the claims of the auxiliary requests here.

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

*Substantial procedural violation / Right to be heard*

The appeal fee should be reimbursed due to a substantial procedural violation. The opposition division had violated the appellant's right to be heard under Article 113(1) EPC by not having duly considered their arguments in the decision under appeal. In particular, the opposition division had disregarded the interpretation of the term "control unit" of claim 1. The corresponding interpretation affected the arguments with regard to both novelty and inventive step. Furthermore, the provision of a mere summary of the arguments concerning the ground for opposition of lack of novelty was not sufficient to satisfy the requirement of the right to be heard. Reimbursement of the appeal fee was therefore justified.

*Novelty*

The subject-matter of claim 1 was not new in view of D1.

The "position transmitter" was disclosed by the assembly defined as a position transmitter or a position sensor. The "angle sensor 39" of D1 was only part of this position transmitter.

As regards the claimed "control unit", the expression "unit" as such did not infer specific structural

limitations, either generally speaking or within the terminology of the patent. In particular, the term did not imply a limitation to strictly only control logic. In light of this, the "control unit" within the meaning of claim 1 not only comprised the control unit 40 of D1, implementing the control logic functions, but also further elements like the contactors 5, which might be integrated in the universal converter of D1.

The meaning of the expression "direct connection" was obscure. Paragraph 20 of the patent implied that a "direct connection" between the control unit and the electric motor was any connection in which no contactors were present between the control unit and the electric motor. This however did not rule out contactors or other switching elements being present within the control unit. The "direct connection" between the control unit and the electric motor of claim 1 was anticipated by D1 as the contactors could either be part of the control unit by a corresponding definition of the control unit, or because the contactors could be integrated in the universal voltage converter of D1, thereby forming part of the control unit. In either case, no contactors remained between the control unit and the electric motor.

The patent under appeal did not contain a definition of the term "sealed". Sealing could thus merely provide at least some protection to the motor drive cabinet against environmental conditions. In light of this, the motor drive cabinet of D1 (as such anticipated by the casing mentioned but not illustrated in D1) was also sealed within the meaning of claim 1. In particular, it was clear from D1 that the equipment of the driving mechanism was to be "enclosed" in the casing (D1, page 7, lines 19 to 22). The casing of D1 implied a

protective function and more specifically had a "door" (D1, page 7, lines 19 to 22), which represented a barrier between the interior of the casing and the environment. Given that a definition of the term "sealed" was not apparent, the door of D1 anticipated a "sealed motor drive cabinet". Furthermore, according to D1 on page 16, lines 18 to 35, temperature and humidity were controlled in the apparatus of D1. This implied a corresponding sealing of the motor drive cabinet, as recited in claim 1.

*Inventive step*

If document D1 was considered to be the closest prior art and the distinguishing features were considered to be the "direct connection" between the control unit and the electric motor and the "sealed motor drive cabinet", the objective technical problem was considered by the opposition division to provide a more compact construction of the elements inside the motor drive cabinet so that the cabinet could be more easily sealed. However, the object of a compact construction was an objective independent from the sealing aspect. In particular, it was not apparent what effect a more compact construction or reduced size of the motor drive cabinet had on the sealing of the motor drive cabinet. There was consequently no interrelated effect between the two distinguishing features.

- VIII. The arguments of the respondent which are relevant for the present decision are as follows:

*Novelty*

The subject-matter of claim 1 was new in view of D1. D1 did not disclose a direct connection between a control

unit and an electric motor in the sense of claim 1. The appellant interpreted the expression "control unit" too broadly, which did not correspond to the skilled person's understanding of the expression. In D1, several elements were arranged between the control unit and the electric motor, especially a motor switch and contactors 5, see figure 1 and page 7, lines 26 to 30. Therefore, D1 did not disclose a direct connection between the control unit and the electric motor. Moreover, the contactors 5 did not form part of the control unit 40.

Furthermore, D1 did not directly and unambiguously disclose a sealed housing which encompassed a control unit and a motor drive cabinet according to claim 1. To the contrary, it was clear that there were slots and other openings in the housing of D1 as could be seen, e.g. in figure 1 of D1.

#### *Inventive step*

The subject-matter of claim 1 involved an inventive step in view of document D1. A direct connection between the control unit and the electric motor and arranging the position transmitter on the outgoing axis in combination with sealing the motor drive cabinet comprising these two elements, provided a synergistic effect. The combined technical effect resulted in the provision of a motor drive cabinet having an improved durability. In particular, arranging the position transmitter on the outgoing axis led to a reduction of the number of outgoing axes. Thereby, an improved sealing of these components could be achieved.

The primary objective of D1 was to provide an improved detection and controlling of the tap-changer position,



see page 3, lines 14 to 28. It was further clear from D1, in particular page 17, lines 12 to 14, that the motor drive unit of D1 was intended to have a modular character. Accordingly, there were provided a number of components between the control unit and the electrical motor (see in particular page 7, lines 27 to 33, page 12, lines 17 to 27, page 15, lines 9 and 10). These components required thus electric connections between them. Consequently, each one these connections represented a possible weak point in view of the technical problem of an improved durability in view of temperature changes, vibrations and/or a corrosive environment.

The distinguishing features were thus so linked as to solve the common objective technical problem of improving the durability of the motor drive cabinet. The solution to this problem, i.e. providing the combined distinguishing features, was not obvious in view of D1.

### **Reasons for the Decision**

1. The appeal is admissible.

On account of the information by letter of 28 February 2022, that the duly summoned appellant would not attend the oral proceedings, the board continued the proceedings and took a decision in the absence of that party, who was treated as relying only on their written case, in accordance with Rule 115(2) EPC and Article 15(3) RPBA 2020.

2. *Request for reimbursement of the appeal fee (Rule 103(1) (a) EPC)*

2.1 The appellant has requested reimbursement of the appeal fee under Rule 103(1) (a) EPC because the opposition division allegedly committed a substantial procedural violation by not duly considering relevant arguments in the decision under appeal. It was argued that the opposition division had disregarded the interpretation of the term "control unit" of claim 1, submitted by the appellant.

2.2 It is established case law of the Boards of Appeal that the right to be heard under Article 113(1) EPC is not just a right to present comments but to also have these comments duly considered, in order to enable a party and the board to understand whether the decision was justified (see Case Law of the Boards of Appeal, 9th edition 2019, III.K.3.4.2).

2.3 The board agrees with the appellant in so far as the opposition division in the reasons for the decision essentially summarised their arguments with regard to the ground for opposition under Articles 100(a) and 54 EPC, but did not give reasons why it did not find these arguments convincing.

Although the board thus agrees that the opposition division did not provide a proper reasoning with respect to the question of novelty, this does not amount to a substantial procedural violation. In fact, the overall decision's reasoning enables the identification of the interpretation of the terms adopted by the opposition division and thus of their line of argument.

The board particularly observes that the division discussed the ground for opposition under Article 100(a) EPC in combination with Article 56 EPC (see point 5 of the reasons) in more detail and thereby at least implicitly referred to the appellant's argument according to which D1 disclosed that the contactors could be considered to form part of the control unit as follows:

"Second, the contactors which are connected between the control unit and the motor according to D1, cannot be regarded as a part of the control unit" (see section 5.4.1, first paragraph of the reasons for the decision under appeal).

It is clear from the above that the interpretation of the term "control unit", which was a crucial aspect in the appellant's overall argumentation, was not completely disregarded at least in the assessment of inventive step of the subject-matter of claim 1 in view of D1. Rather, the opposition division clearly has taken into consideration the appellant's favoured interpretation of a "control unit" as including the contactors, which in the appellant's view leads to a direct and unambiguous disclosure of a "direct connection" within the meaning of claim 1.

Thus, while the decision under appeal contained only a very limited reasoning, and in particular did not explicitly refer to the appellant's favoured interpretation, the appellant's right to be heard under Article 113(1) EPC was not violated.

Hence, it is clear from the contested decision that at least the core arguments of the appellant were not only

heard but also taken into account in the division's decision making process.

2.4 Consequently, the opposition division did not commit a substantial procedural violation. Since the requirements of Rule 103(1) (a) EPC therefore are not met, the request for reimbursement of the appeal fee must be refused.

3. *Main Request - Novelty (Article 100(a) EPC in combination with Article 54 EPC)*

3.1 The subject-matter of claim 1 is new in view of document D1.

3.2 The angle sensor 39 in combination with further elements of D1's motor drive does not correspond to a position transmitter in the sense of claim 1. In fact, despite the mechanical interaction between the shaft 25 and the outgoing axis 7, the angle sensor 39 is clearly arranged on the shaft 25 and not on the outgoing axis 7, contrary to the clear wording of claim 1.

3.3 The control unit 40 in combination with the universal voltage converter (including the contactors 5) does not correspond to a control unit in the sense of claim 1. There is no reason to interpret the term "control unit" more broadly than the usual technical understanding of the term would suggest.

It is true that the patent describes a power stage as part of the control unit (paragraph [0020]). However, there is nothing in D1 that would lead the skilled reader to believe that the universal voltage

controller, which may include the contactors, is part of the control unit 40.

Moreover, even if this were the case, D1 would still not directly and unambiguously disclose that the control unit feeds the electric motor through direct connection. In any case, the mere disclosure that the contactors could be integrated in the universal voltage converter does not provide a sufficient basis for this assumption.

- 3.4 It is undisputed that document D1 explicitly discloses that the driving mechanism is to be enclosed in a casing (page 7, lines 19 to 22). It may also be true that the patent does not describe the degree of protection afforded by sealing the motor drive cabinet.

However, it is evident that the skilled reader would understand the term "sealed" as used in claim 1 to imply something more than just any kind of enclosure or similar protection of a motor drive cabinet. In particular, claim 1 offers no basis for interpreting the expression "sealed motor drive cabinet" in the broad sense of an enclosure of any kind. In this case, the term "sealed" would be superfluous.

The mere disclosure in D1 of temperature and humidity control (page 16, last paragraph) also does not directly and unambiguously imply that the motor drive cabinet is sealed within the meaning of claim 1. The temperature and humidity control is obviously independent of the question whether the casing is sealed or not. In fact, both are possible with a non-sealed casing.

3.5 The subject-matter of claim 1 is therefore new in view of D1, because it at least does not disclose the following features:

- the position transmitter is arranged on the outgoing axis,
- the control unit feeds the electric motor through direct connection,
- the motor drive cabinet is sealed during use with the electric motor drive unit and control unit inside the sealed motor drive cabinet.

3.6 In conclusion, the subject-matter of claim 1 is new in view of document D1. Given that the appellant did not raise any further objection on the ground of lack of novelty, the ground for opposition under Article 100(a) EPC in combination with Article 54 EPC does not prejudice the maintenance of the patent as granted.

4. *Main Request - Inventive step (Article 100(a) EPC in combination with Article 56 EPC)*

The subject-matter of claim 1 involves an inventive step in view of document D1.

4.1 *Respondent's submissions after notification of the summons*

In their letter of 23 March 2022, the respondent has presented further arguments to support the presence of an inventive step in view of document D1. The board considers these arguments, as well as those submitted during the oral proceedings, to be a normal development

of the submissions already in the proceedings. They are, moreover, appropriate and justified in view of the board's observations on the question of the existence of a synergistic effect of the distinguishing features (see point 14 of the communication under Article 15(1) RPBA 2020).

The submissions made after the notification of the summons to oral proceedings therefore do not represent amendments to the respondent's appeal case under Article 13(2) RPBA 2020. They are consequently taken into consideration by the board in the assessment of an inventive step.

For the sake of completeness, it is noted that the appellant did not respond to the respondent's arguments in the letter of 23 March 2022.

#### 4.2 *Starting point*

The appellant's sole objection of lack of inventive step is based on document D1. It was not disputed that this document is a suitable starting point for the purposes of the problem-and-solution approach.

#### 4.3 *Distinguishing features*

The subject-matter of claim 1 differs from document D1 by the features mentioned under point 3.5 above.

#### 4.4 *Objective technical problem*

4.4.1 The objective technical problem referred to by the opposition division, namely providing a more compact construction of the elements inside the motor cabinet so that the housing can be sealed more easily, is not

appropriate because it contains a pointer to the claimed solution (see point 5.3 of the reasons for the decision under appeal).

4.4.2 Furthermore, the board considers the objective technical problem proposed by the respondent, namely to improve durability of the motor drive cabinet, to be unjustifiably broad.

4.4.3 Rather, the board considers the objective technical problem to be that of how to improve reliability of the motor drive cabinet under harsh environmental conditions (see paragraph [0016] of the patent). The board considers this to be a reasonable formulation which avoids incorporating elements of the solution in the problem.

#### 4.5 *Obviousness*

4.5.1 At least the feature of the control unit feeding the electric motor through direct connection and the feature of arranging these components in a sealed motor drive cabinet are so linked as to solve the objective technical problem as formulated under point 4.4.3 above in a synergistic manner.

4.5.2 In particular, the board agrees with the respondent that feeding the electric motor by direct connection as recited in claim 1 provides for a reduced number of electrical connections within the motor drive cabinet. The board also finds plausible the respondent's argument that the electric connections are weak points in the motor drive cabinet, which can reduce the reliability of the motor drive cabinet. The reduction of the number of connection by direct connection in combination with the sealed motor drive cabinet thus



improves the overall reliability of the motor drive cabinet under harsh environmental conditions.

- 4.5.3 Document D1 does not disclose or suggest the combination of providing a direct connection between the control unit and the motor drive cabinet as well as providing these components in a sealed motor drive cabinet.

To the contrary, as the respondent has correctly pointed out, D1 is primarily concerned with an improved control of the driving mechanism by providing a modular arrangement of the components, see page 3, lines 6 to 10:

"The object of the present invention is to achieve a driving mechanism which makes possible a facilitated and improved supervision and control of the driving mechanism, with the possibility to adapt the supervision and control in a simple manner depending on the requirements and needs of the user."

The correspondingly envisaged modular character of the driving mechanism is further evident from figure 1 and the description on page 17, lines 12 ff. There, the provision of a flexible system is described by suitably dividing the supervision and control unit into a number of modules. Document D1 therefore leads away from the claimed solution, as instead of a design with reduced electrical connections, it proposes a modular design with more connections to provide a flexible system.

The skilled person would therefore not have considered modifying the motor drive cabinet of D1 in view of the objective technical problem in order to arrive at the

subject-matter of claim 1. This would have been entirely contrary to the teaching of D1 and would have required significant constructional changes. Therefore, it would not have been considered by the skilled person to solve the objective technical problem.

While sealing of a cabinet may be known *per se*, the specific combination of the distinguishing features, as far as they concern a direct connection in combination with a sealed motor drive cabinet, is not rendered obvious by document D1.

- 4.6 Consequently, the subject-matter of claim 1 involves an inventive step in view of document D1. The ground for opposition under Article 100(a) EPC in combination with Article 56 EPC therefore does not prejudice the maintenance of the patent as granted.

5. *Conclusion*

Since the ground for opposition under Article 100(a) EPC does not prejudice the maintenance of the patent as granted and the ground for opposition under Article 100(b) EPC is not part of the appeal proceedings, the board had to accede to the respondent's main request.

**Order**

**For these reasons it is decided that:**

1. The appeal is dismissed.
2. The request for reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:



L. Stridde

R. Lord

Decision electronically authenticated