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Datasheet for the decision of 15 October 2024

Case Number: T 1211/22 - 3.4.02

Application Number: 12004657.8

Publication Number: 2538429

IPC: H01H47/22, H01H33/666, H01F7/18, H01H47/32

Language of the proceedings: EN

Title of invention:
Method and apparatus for controlling circuit breaker operation

Patent Proprietor:
Tavrida Electric Holding AG

Opponent:
Siemens Aktiengesellschaft

Relevant legal provisions:
EPC Art. 100(b), 83

Keyword:
Sufficiency of disclosure - All requests (no)

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Case Number: T 1211/22 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 15 October 2024

Appellant: (Opponent)	Siemens Aktiengesellschaft Werner-von-Siemens-Straße 1 80333 München (DE)
Representative:	Siemens Patent Attorneys Postfach 22 16 34 80506 München (DE)
Respondent: (Patent Proprietor)	Tavrida Electric Holding AG Alte Steinhauserstrasse 21 6330 Cham (CH)
Representative:	FRKelly Waterways House Grand Canal Quay Dublin D02 PD39 (IE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 18 March 2022 rejecting the opposition filed against European patent No. 2538429 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	G. Flyng
Members:	C.D. Vassoille
	B. Burm-Herregodts

Summary of Facts and Submissions

I. The opponent filed an appeal against the decision of the opposition division rejecting the opposition against European patent no. 2 538 429.

II. In the contested decision the opposition division concluded that the grounds for opposition under Article 100(a), (b) and (c) EPC did not prejudice the maintenance of the patent as granted.

III. In a communication under Article 15(1) RPBA, the board informed the parties *inter alia* of its preliminary opinion according to which the ground for opposition under Article 100(b) EPC prejudiced the maintenance of the patent as granted.

IV. Oral proceedings before the board took place on 15 October 2024.

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 and the patent be maintained as granted (main request) or, if this was not possible, that the patent be maintained in amended form in accordance with one of the auxiliary requests 1 to 3, each of which was filed with the reply to the notice of opposition on 8 December 2020 and re-filed with the reply to the appeal.

V. Claim 1 of the main request has the following wording (feature numbering added by the board):

"**[1.1]** A method of controlling an electrical switch (10),
[1.2] the electrical switch comprising a movable contact (12) and an electromagnetic actuator (18) for causing said movable contact to move between an open position and a closed position, said method comprising:
[1.3] with said movable contact in said open position, applying a voltage (V1) to said actuator (18) to cause a motive force to be applied to said movable contact (12) to cause said movable contact to move towards said closed position,
[1.4] said voltage being applied for a first time period (P1) ending before said movable contact reaches said closed position, and
[1.5] at the end of said first time period, adjusting said voltage to reduce said motive force, characterised by
[1.6] determining a duration of said first time period (P1) based on a desired initial speed of the movable contact (12),
[1.7] and applying said voltage for said first time period to accelerate said movable contact to said desired initial speed."

VI. Claim 1 of each of auxiliary requests 1 to 3 includes a feature which corresponds in essence to feature 1.6 of claim 1 of the main request. The further details of these requests are specified in the reasons below.

VII. The appellant essentially argued that the patent did not sufficiently disclose a way of implementing feature 1.6 of claim 1, i.e. determining a duration of the

first time period P1 based on a desired initial speed of the movable contact (12), because the patent did not describe how the "desired initial speed" could be determined or calculated.

The respondent essentially argued that the person skilled in the art, in particular on the basis of the information in the patent regarding a maximum speed, could derive the desired initial speed either empirically or by way of calculation.

The detailed arguments of the parties are referred to in the reasons below.

Reasons for the Decision

1. Main request - Article 100(b) EPC

1.1 The patent does not disclose the invention of claim 1 of the patent as granted in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC).

1.2 The appellant essentially argued that the patent did not sufficiently describe a way of implementing feature 1.6 of claim 1, i.e. determining a duration of the first time period (P1) based on a desired initial speed of the movable contact (12).

1.3 The opposition division concluded that the initial speed could be empirically determined in the factory and programmed into the controller. They further held that the controller then performed the determination of said first time period P1 as described in the patent. Reference was made to figures 6 to 9 and page 16, line 27 to page 17, line 15 of the original description (corresponding to the paragraph [0047] of the patent). On the basis of this disclosure they considered that the claimed invention was sufficiently described (see section 2 of the reasons for the contested decision).

1.4 The respondent essentially argued in a first line of argument that the value of the "desired initial speed" could be determined by the desired maximum speed according to what was disclosed in paragraph [0047] of the patent. In particular, they contended that the patent explicitly mentioned values of a desired maximum speed, namely between 1 and 1.5 m/s (see paragraph [0036] of the patent), and more specifically a desired

maximum (closing) speed of approximately 1 m/s (see paragraph [0050] of the patent) for the embodiment illustrated in figure 6B. A corresponding value for the desired initial speed at the time T3 could thus be derived from figure 6B. The figures were not merely schematic and could therefore easily serve as a basis for the skilled person to simply read the value of the desired initial speed at time T3.

1.5 The board is not convinced that the patent sufficiently discloses what the "desired initial speed" according to feature 1.6 of claim 1 is or how it should be determined in terms of a practical implementation of the invention. Paragraph [0047] of the patent, *inter alia*, states the following:

> "In preferred embodiments, the desired initial speed of the contact 12 at time T3 is determined by the desired maximum speed of the contact 12 when it engages the fixed contact 14. The desired maximum speed depends on the physical characteristics of the circuit breaker 10 but in general is selected so as not to cause undue damage to the contacts 12, 14. Once the initial speed is known, the duration of period P1 can be determined."

1.6 In view of the above disclosure in paragraph [0047], the person skilled in the art would have indeed obtained the information that the desired initial speed of the moving contact is to be determined by the desired maximum speed. It is also true that the patent gives specific examples of the maximum speed, in particular a range of 1 to 1.5 m/s (see paragraphs [0036] and [0050]) and a further exemplary specification of approximately 1 m/s for the embodiment of figures 5 and 6 (see paragraph [0037] and [0050]).

Furthermore, it is evident, at least from figures 6 to 9 of the patent, as argued by the respondent, that the desired initial speed is not identical to the maximum speed, but is evidently lower than the maximum speed, lying somewhere between 0 m/s (i.e. when the movable contact is stationary) and the maximum speed at T4, which again lies somewhere between approximately 1 m/s and 1.5 m/s.

1.7 However, it is not explained in the patent, nor is it apparent from the common general knowledge of the skilled person, how the desired initial speed can be determined by the maximum speed. In this context, reference was made by the respondent to documents D5 (EP 1 006 537 A1), D6 (DE 195 35 211 A1) and D8 (US 7 898 788 B2), which disclose methods of modelling and simulation to obtain a speed profile of a mobile part of an electromagnetic actuator. According to the respondent, corresponding methods could be applied by the skilled person to determine the desired initial speed in the context of the patent.

1.8 The board does not dispute that modelling and simulation can, in principle, be used to obtain speed profiles. However, for a proper modelling of an electrical switch such as a circuit breaker, the physical properties of that electrical switch and the design aims must be known. These properties and aims, however, cannot be derived from the patent. It is unclear what specific physical properties the circuit breaker possesses that underlie the maximum speed values disclosed in the patent. In particular, the appellant has correctly pointed out that paragraph [0047] explicitly states that the desired maximum speed depends on the physical properties of the circuit breaker (as previously mentioned). These include, *inter*

alia, the strength of the spring, the type and counterweight of the fixed contact, etc.. Without these fundamental details regarding the structural/physical characteristics, it is not evident how a skilled person could have reproduced or verified the corresponding speed profile through modelling and simulation. Furthermore, there is no indication of what would make a particular initial speed "desired", in other words how to determine a "desired initial speed" from a given maximum speed in a particular circuit breaker.

1.9 Furthermore, it is not clear how the skilled person could have empirically determined the desired initial speed based solely on the maximum speed mentioned in the patent, relying on experimental methods using an accelerometer. The respondent argued that, in an experimental setup, the skilled person could have iteratively deduced the desired initial speed starting from the maximum speed at time T4 as provided in the patent.

1.10 The board, however, cannot agree with this argument. In particular, essential information regarding the physical configuration of the electrical switch and design aims is missing, which would be necessary to empirically determine a desired initial speed based on the desired maximum speed mentioned in the patent. This means that, as explicitly stated in paragraph [0047] of the patent, the desired maximum speed is dependent on the physical properties of the circuit breaker. However, these physical properties are not provided in sufficient detail in the patent and there is no indication of what would make a particular initial speed "desired". Consequently, it would not have been possible for the skilled person, either through empirical methods (using an accelerometer) or through

modelling and simulation, to determine the desired initial speed solely based on the desired maximum speed disclosed in the patent.

1.11 This also applies to the disclosure in paragraphs [0049] and [0050] of the patent, where specific values for T3 (time of desired initial speed) and T4 (time of desired maximum speed) are given as T3 = 7 ms and T4 = 16.5 ms. In the present case, however, the mere disclosure of individual values for T3 and T4 and the desired maximum speed is not sufficient. What is required is a clear, operable way of enabling the person skilled in the art to implement feature 1.6, which specifies that the duration of the first time period P1 is to be determined on the basis of the desired initial speed of the movable contact. The patent fails to provide such teaching on how to implement this feature because it does not disclose how the desired initial speed is correlated with the desired maximum speed for a particular type of electrical switch.

1.12 Consequently, since the patent does not sufficiently specify the physical properties of the electrical switch — such as the spring force, contact mass, or other relevant parameters — and does not disclose the design aims, it is impossible to determine the necessary relationship between the desired initial speed and the desired maximum speed, either experimentally or through simulation, as already discussed above. Thus, the skilled person would have no knowledge of the specific physical configuration of the electric switch to which the provided times and speeds apply. According to paragraph [0047], the desired initial speed is to be derived from the desired maximum speed, yet the patent offers no general explanation on

how this relationship can be established for a particular configuration of an electrical switch. Thus, the absence of these physical details and design aims leaves the skilled person without the necessary information to implement feature 1.6.

1.13 For the same reason, it is irrelevant whether a specific value for the desired initial speed can be derived from the figures or not. Even if a corresponding value could be read from figure 6B, which the board doubts, the skilled person would still not know what the associated electrical switch is. They would therefore not be in a position to derive a technically feasible way to implement the invention solely from these values. In particular, they would not be able to carry out the method as defined in claim 1 because they would not know which particular type of electrical switch could be controlled by it.

1.14 The respondent also referred to T 0312/88 and argued that according to this decision, a skilled person could be expected to carry out a small number of clarifying experiments. They further argued that in the present case only a very small number of iterations in an experimental set-up would have been required to determine the desired initial speed on the basis of the desired maximum speed.

1.15 Again, the board is not convinced by this argument. There are numerous possible configurations and physical specifications of the electrical switch and (capacitor) voltages covered by the subject-matter of claim 1. However, the patent is not based on a specific configuration, but at most gives time values for T3 and T4 and a range of possible values for the desired maximum speed, but without indicating the physical

details of an electrical switch to which these values apply. Therefore, in the present case, it cannot be said that only a few iterations are required to empirically determine the desired initial speed, since the skilled person would not even know which specific electrical switch configuration to base these experiments on and would still not know what the design aims were in selecting the desired initial speed. However, as long as these details are not known, the disclosure of the maximum speed at time T4 cannot be considered a promising starting point for experiments.

1.16 Consequently, it is not apparent to the board how the skilled person could have arrived at a predictable determination of the "desired initial speed" for the invention with reasonable effort.

1.17 In a second line of argument, the respondent contended that feature 1.6 of claim 1 not only encompassed a directly determined desired initial speed, but also included embodiments where the desired initial speed could be indirectly determined by first identifying the point in time T3. According to the respondent, paragraph [0047] of the patent optionally disclosed that T3 can be determined empirically, thereby providing a way to establish the first time period P1 without the need to directly identify the desired initial speed. In this interpretation, the desired initial speed could be inferred indirectly by determining T3, which the respondent argued was within the scope of claim 1.

1.18 The board does not concur with the respondent's interpretation that claim 1 includes an indirect determination of the desired initial speed. Feature 1.6 of claim 1 explicitly requires that the duration of the

first period P1 be determined based on the desired initial speed of the movable contact. If the time T3 were determined first, there would be no need to establish the desired initial speed separately, as T3 already marks the endpoint of the first time period P1. Consequently, determining the desired initial speed would be redundant. Furthermore, the language of feature 1.6 is clear in specifying that the first time period P1 must be determined based on the desired initial speed, not based on the point in time T3.

1.19 Therefore, the empirical determination of the time T3, as outlined in paragraph [0047], can only be understood as an alternative method for determining the first time period P1 which is not encompassed by the subject-matter of claim 1.

1.20 In the light of the above considerations, the board found that the respondent's second line of argument was not relevant to the question of whether the patent disclosed the invention according to claim 1 in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

1.21 Therefore, the board came to the overall conclusion that the ground for opposition under Article 100(b) EPC prejudices the maintenance of the patent as granted (main request).

2. Auxiliary requests 1 to 3 - Article 83 EPC

2.1 The amendments made in the independent claim 1 of each of auxiliary requests 1 to 3 do not overcome the finding of insufficiency of disclosure in respect of the ground for opposition under Article 100(b) EPC.

2.2 Auxiliary request 1

2.2.1 Claim 1 of auxiliary request 1 is amended, *inter alia*, to specify that the desired initial speed is determined by a desired maximum speed of the movable contact when it engages the second contact. The amendment is based on the description in paragraph [0047] of the patent (see point 1.5 above).

2.2.2 The respondent's arguments in relation to the auxiliary request 1 were essentially a repetition of the arguments already presented in relation to the main request.

2.2.3 As already explained with respect to the main request, the mere indication that the desired initial speed is to be determined on the basis of the desired maximum speed is not sufficient to enable the skilled person to carry out the invention. In this respect, reference is made to the reasons set out for the main request, which also apply to auxiliary request 1. The inclusion of the relevant specification of the maximum speed in claim 1 does not alter these findings.

2.3 Auxiliary requests 2 and 3

2.3.1 Claim 1 of auxiliary request 2 differs from claim 1 of the main request merely in that the movable contact is specified to be an electrical contact.

2.3.2 Claim 1 of auxiliary request 3 includes the amendment of auxiliary request 2 and additionally specifies an increase in voltage for the time after the voltage is adjusted to reduce the motive force, which thus concerns a time after the desired initial speed and the

maximum speed have been reached at T3 and T4, respectively.

2.3.3 The respondent did not put forward any additional arguments with regard to the auxiliary requests 2 and 3. The board's findings set out in point 1. with respect to the main request above also apply to each of auxiliary requests 2 and 3.

3. Result

Since the ground for opposition under Article 100(b) EPC prejudices the maintenance of the patent as granted and since none of the respondent's auxiliary requests 1 to 3 overcome the objections to the main request, 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:

L. Gabor G. Flyng

Decision electronically authenticated