

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 21 March 2024**

Case Number: T 0306/22 - 3.5.02

Application Number: 10724049.1

Publication Number: 2452410

IPC: H02H1/00, H02H7/26

Language of the proceedings: EN

Title of invention:

Substation automation system with remote redundant protection function

Patent Proprietor:

Hitachi Energy Ltd

Opponent:

Siemens Aktiengesellschaft

Relevant legal provisions:

EPC Art. 100(a), 54(2), 56, 84

Keyword:

Grounds for opposition - lack of patentability - lack of novelty (yes)

Novelty - auxiliary requests 1, 2, 15 to 26, 17a, 19a, 21a, and 26a (no)

Inventive step - auxiliary requests 13 and 13a (no)

Claims - clarity - auxiliary request 14 (no)



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0306/22 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 21 March 2024

Appellant: Hitachi Energy Ltd
(Patent Proprietor) Brown-Boveri-Strasse 5
8050 Zürich (CH)

Representative: Vossius & Partner
Patentanwälte Rechtsanwälte mbB
Siebertstrasse 3
81675 München (DE)

Appellant: Siemens Aktiengesellschaft
(Opponent) Werner-von-Siemens-Straße 1
80333 München (DE)

Representative: Siemens Patent Attorneys
Postfach 22 16 34
80506 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
9 December 2021 concerning maintenance of the
European Patent No. 2452410 in amended form.**

Composition of the Board:

Chairman R. Lord
Members: H. Bronold
J. Hoppe

Summary of Facts and Submissions

- I. The appeals of the appellant/patent proprietor (in the following: proprietor) and of the appellant/opponent (in the following: opponent) are against the interlocutory decision of the opposition division with which it was found that European patent No. 2 452 410 in amended form according to then auxiliary request 0-1 (which corresponds to pending auxiliary request 2) met the requirements of the EPC.
- II. In the oral proceedings the proprietor requested that the decision under appeal be set aside and that the patent be maintained as granted (main request) or as an auxiliary measure, that the patent be maintained in amended form based on one of auxiliary requests 1 or 2 (where auxiliary request 2 corresponds to a request to dismiss the opponent's appeal) or auxiliary requests 13 to 26, all filed with the grounds of appeal, or as further auxiliary measure that the patent be maintained in amended form based on one of auxiliary requests 13a, 17a, 19a, 21a or 26a, filed with letter dated 28 September 2022 (each of these requests following the corresponding request numbered without "a").
- III. In the oral proceedings the opponent requested that the decision under appeal be set aside and that the European patent be revoked.
- IV. In a communication under Article 15(1) RPBA the board informed the parties *inter alia* that in view of the disclosure of document D4 it preliminarily considered the ground of opposition under Article 100(a) EPC to prejudice the maintenance of the patent as granted and

that the subject-matter of at least one of the independent claims according to each of auxiliary requests 1, 2, 13 and 15 to 26 seemed not to be novel. Moreover, the board was inclined to agree with the opponent that claim 1 according to auxiliary request 14 lacked clarity in the sense of Article 84 EPC.

V. Oral proceedings before the board took place on 21 March 2024.

VI. Independent claim 6 according to auxiliary request 2 reads as follows:

"A Substation Automation system (10) configured to perform protection functions (111, 121, 131) for a bay (11, 12, 13) of a substation (1) of an electric power system, particularly a medium-voltage substation (1), characterized in that

the Substation Automation system (10) is further configured to receive via a communication link (31) redundancy protection commands from a remote redundancy facility (2) according to one of claims 1 to 5, and to execute the redundancy protection commands for the bay (11, 12, 13),

that the Substation Automation system (10) comprises protection modules (110, 120, 130) configured to perform the protection functions (111, 121, 131), in that the protection module (110, 120, 130) is connected via a process bus (14) to measurement equipment and operating equipment for primary switchgear associated with the bay (11, 12, 13), and in that the Substation Automation system (10) is configured to transmit, from the process bus (14) to the remote redundancy facility (2), process values measured by the measurement

equipment, and to receive, from the remote redundancy facility (2), and forward via the process bus (14) protection commands directed to the operating equipment, and

that the Substation Automation system (10) further comprises a gateway (100) for communicating with the remote redundancy facility (2), the gateway (100) being connected to the process bus (14) and configured to forward to the remote redundancy facility (2) network messages including the process values from the measurement equipment, and forward to the operating equipment protection commands included in network messages received from the remote redundancy facility (2)."

VII. Independent claim 1 according to auxiliary request 13 reads as follows:

"A system, comprising a plurality of N Substation Automation systems (10), each of which performing protection functions (111, 121, 131) for bays (11, 12, 13) of a substation (1, N) of an electric power distribution system, particularly a medium-voltage substation (1), and

a remote redundancy facility (2) with a protection server (20) for the plurality of Substation Automation systems (10), the remote redundancy facility (2) being remote from the Substation Automation systems (10), wherein the protection server (20) is a computerized protection server (20) of the remote redundancy facility (2) and wherein the protection server (20) is configured to run redundant protection functions and to transmit via communication links (31) to the Substation Automation systems (10) redundancy protection commands

to be executed by the respective Substation Automation system for the bays (11, 12, 13), and

wherein the protection server (20) comprises a plurality of protection modules (21, 2N), each protection module (21, 2N) being associated with at least one protection function of a specific bay (11, 12, 13) of a substation (1), and configured to receive process values measured by the measurement equipment associated with that specific bay (11, 12, 13), and to transmit protection commands to the operating equipment associated with that specific bay (11, 12, 13), wherein a separate protection module (21, 2N) is assigned to each protection by (11-13) of the substation."

VIII. Claim 1 of auxiliary request 13a differs from that of auxiliary request 13 only by the addition of the following feature:

"the at least one protection functions of each protection bay (11, 12, 13) are isolated in the separate protection module (21, 2N) assigned to the respective protection bay (11, 12, 13)".

IX. Independent claim 1 according to auxiliary request 14 includes the following expression:

"wherein the protection server (20) is configured to transmit the redundancy protection commands in case of a detected failure of a protection module (110, 120, 130) or IED of the Substation Automation system (10)."

Independent claim 7 includes a corresponding limitation defining the Substation Automation system to have the corresponding function instead of the protection server.

- X. The arguments of the parties relevant for the decision are dealt with below together with the grounds for the decision.

Reasons for the Decision

1. Admissibility of the appeals - Article 108 EPC and Rule 99 EPC

Both appeals were filed and reasoned in due time and form and were sufficiently substantiated. Therefore, both appeals are admissible.

2. Main request and auxiliary request 1 - Article 100(a) and 54(2) EPC

Regarding the main request and auxiliary request 1, the board's conclusion given below under 3. regarding novelty of the subject-matter of claim 6 of auxiliary request 2 over document D4 applies *mutatis mutandis* because independent claim 7 of the main request is broader than claim 6 of auxiliary request 2, which corresponds to the combination of granted claims 7 to 9, and because independent claim 6 of auxiliary request 1 is identical to independent claim 6 of auxiliary request 2.

Consequently, the board has arrived at the conclusion that the ground of opposition under Article 100(a) EPC prejudices the maintenance of the patent as granted and that auxiliary request 1 is not allowable because the subject-matter of independent claim 6 is not novel over the disclosure of document D4, contrary to the requirements of Article 54(2) EPC. The board's conclusion was not disputed by the proprietor.

3. Auxiliary request 2 - Article 54(2) EPC

The subject-matter of claim 6 according to auxiliary request 2 is not novel over the disclosure of document D4. Auxiliary request 2 does not therefore fulfil the requirements of Article 54(2) EPC.

3.1 With respect to novelty of the subject-matter of claim 6 according to auxiliary request 2 over the disclosure of document D4 the proprietor argued that document D4 failed to disclose the following features:

(i) a process bus

(ii) a gateway being connected to the process bus

(iii) a forwarding of protection commands

(iv) a plurality of protection functions

3.2 Regarding the first difference (i) the board agrees with the opponent's corresponding arguments as set out in their statement of grounds of appeal. In particular, the board agrees with the opponent that the connections 36 and 40 in figure 1 of D4 represent logical connections instead of separate signal lines as argued by the proprietor. Thus, the communication links 36 and 40 shown as separate communication lines in D4 cannot be interpreted in the way the proprietor or the contested decision suggest.

The board also agrees with the opponent that a "bus" is any structure allowing the communication of more than two participants which may even consist of plural parts and that do not necessarily use the same communication

medium. The proprietor's arguments that D4 failed to disclose a bus connecting the protection modules to measurement equipment and operating equipment does not convince the board. The fact that the communication lines 36 and 40 are not explicitly described as a bus in D4 or that D4 defines a separate power bus 12 to exist between the bays of the substations can not negate the fact that the measurement equipment 34 and the operating equipment 24 of the substations 14, 30 communicate with the protection modules in the remote redundancy facility C/CPU1, C/CPU2 of D4.

Further, the board also agrees with the opponent that independent claim 6 according to auxiliary request 2 does not require a direct connection to the process bus and that in the absence of any technical definition of this feature in claim 6, every part of the communication connection disclosed in D4 may be interpreted as the process bus.

Thus, the board concludes that the first alleged difference (i) does not exist.

3.3 The proprietor further argued that D4 failed to disclose that a gateway is connected to the process bus (difference (ii)).

Regarding the second difference (ii) the proprietor argued that the Ethernet switch of figure 1 of D4 could be seen as a gateway, but that it was not connected to communication lines 36, 38 and 40 according to D4 such that it was not connected to the process bus in the sense of claim 6. The board does not agree with the proprietor in this respect either, because claim 6 does not require a direct connection between the process bus and the gateway, as argued by the opponent. Not even

according to the specification of the contested patent is there a direct connection between the process bus and the gateway. As argued by the opponent in their statement setting out the grounds of appeal on page 11, from figure 1 of the patent it follows that gateway 100 is connected to the IEDs (intelligent electronic devices) via a station bus 15. The process bus 14 merely connects the IEDs to merging units which in turn are connected to measuring and operating equipment. Moreover, the patent does not contain a definition of the claimed process bus.

The board is therefore convinced that claim 6 does not require a direct connection of the gateway 100 to the process bus 14. Therefore, the second alleged difference (ii) between the subject-matter of claim 6 and the disclosure of document D4 as argued by the proprietor does not exist.

3.4 With respect to difference (iii) there was dispute whether D4 disclosed the forwarding of protection commands.

The proprietor argued that D4 failed to disclose such forwarding because according to D4 the second message 78 was not forwarded but rather a third signal 40 was generated based on the second message 78.

In this context the board agrees with the opponent's argument that even according to the patent the forwarding of protection commands has no other meaning than that the redundancy protection commands received by the gateway, such as switching signals sent by the protection module, have to reach the operating equipment. This is however known from figure 1 and paragraph [0036] of D4 according to which module 30

sends and receives one or more second signals 38 to or from circuit breaker 14. The board notes in this context that according to claim 6 the forwarded protection commands are "included in network messages" such that claim 6 does not require the protection commands to be transmitted in identical form between the remote redundancy facility and the operating equipment. It is sufficient that the required information is forwarded, as is the case according to D4.

Therefore alleged difference (iii) between the subject-matter of claim 6 and the disclosure of document D4 does not exist.

- 3.5 Regarding the fourth difference (iv) - a plurality of protection functions - the board is not convinced by the proprietor's arguments either.

Firstly, the board notes that the whole patent does not specify what the protection functions are and how they should differ with respect to each other. Secondly, the expression "functions" is not further mentioned in claim 6. It is already not clear whether the execution of redundancy protection commands in claim 6 should be the same as performing redundancy protection functions. As there is overall no definition in the patent regarding the protection functions, this feature is not suitable for distinguishing the subject-matter of claim 6 over the disclosure of document D4.

- 3.6 Therefore the fourth alleged difference (iv) between the subject-matter of claim 6 and the disclosure of document D4 as argued by the proprietor does not exist either.

3.7 Thus, the board arrived at the conclusion that the subject-matter of claim 6 according to auxiliary request 2 is not new over the disclosure of document D4 in the sense of Article 54(2) EPC.

Consequently, auxiliary request 2 is not allowable.

4. Auxiliary request 13 - Article 56 EPC

4.1 Claim 1 according to auxiliary request 13 lacks an inventive step starting from the disclosure of document D4.

4.2 Claim 1 according to auxiliary request 13 is based on claim 1 according to auxiliary request 12 filed with the proprietor's statement of grounds of appeal. Claim 1 according to auxiliary request 13 differs from claim 1 according to auxiliary request 12 only in the following distinguishing feature:

"wherein a separate protection module (21, 2N) is assigned to each protection bay (11-13) of the substation".

4.3 In its preliminary opinion under section 8.1 the board had indicated with respect to claim 1 of auxiliary request 12 that it was inclined to agree with the comments by the opponent in section 4.8 of their statement of grounds of appeal concerning lack of novelty in the light of document D4 of the former auxiliary request 8. Claim 1 of former auxiliary request 8 is identical to claim 1 of then pending auxiliary request 12. The opponent additionally referred to the reasoning with respect to former auxiliary request 0. The Board agrees with the

reasoning as provided in this respect under point 10. of the impugned decision for lack of novelty over D4. The board also agrees with the opponent's argument that the additional feature of claim 1 according to former auxiliary request 8 (pending auxiliary request 12) compared to claim 1 according to former auxiliary request 0, i.e.

"A system comprising a plurality of N Substation Automation systems (10), each of which performing protection functions (111, 121, 131) for bays (11, 12, 13) of a substation (1, N) of an electric power distribution system, particularly a medium-voltage system (1),"

is also known from document D4, as is apparent in particular from figure 1, substation bays 16 and modules 30. The proprietor has not presented any corresponding argument following the preliminary opinion of the board regarding auxiliary request 12, so that the board sees no reason to deviate from its preliminary opinion. Even taking the proprietor's arguments into account that document D4 disclosed neither redundancy, because CCPU2 was to replace CCPU1 rather than providing redundant functions, nor a hint to that effect, and that in D4 the logic was centralized, not a duplicate of the same function of the protection modules in the bays, as according to claim 1, the board still agrees with section 10 of the contested decision that D4 in paragraph [0084] and figure 1 discloses that the two redundant CCPU's 28 can be used for communication with each module 30 and that these two CCPU's represent separate modules in the sense of claim 1 which are associated with one or more protection functions, i.e. over-current protection

functions as disclosed in paragraph [0036], of one or more specific bays, i.e. the branch circuits 16 of D4.

The board therefore concludes that all features of claim 1 according to auxiliary request 12 are disclosed in document D4. Thus, only the added feature "wherein a separate protection module (21, 2N) is assigned to each protection bay (11-13) of the substation" can distinguish the subject-matter of claim 1 of auxiliary request 13 from D4.

- 4.4 During the oral proceedings before the board the proprietor further argued that because claim 1 according to auxiliary request 13 was now directed to a system comprising a plurality of Substation Automation systems and a remote redundancy server, the board's preliminary opinion that claim 1 according to auxiliary request 13 lacked novelty over document D4 because, as indicated in section 7.2 of its preliminary opinion, the distinguishing feature did not form part of the subject-matter claimed, was moot.

While the board agrees with the proprietor's argument, which they also presented in writing with their letter dated 7 March 2024, section 2, the board is not convinced that the subject-matter of claim 1 according to auxiliary request 13 involves an inventive step.

- 4.5 The proprietor formulated the objective technical problem based on the above identified distinguishing feature as *"implementing enhanced safety against protection function failure in an efficient manner."*

- 4.6 The board however agrees with the opponent that the subject-matter of claim 1 according to auxiliary request 13 does not involve an inventive step starting

from the disclosure of document D4. Further, the board agrees with the opponent that the distinguishing feature does not result in the solution of the objective technical problem as formulated by the proprietor.

As argued by the opponent, the vague expression "assigned" in claim 1 can not be considered to result in the solution of the technical problem formulated by the proprietor.

The definition in claim 1 that "a separate protection module" is "assigned to each protection bay" does not define what technical effect is achieved by assigning an (undefined) function to each protection bay or how to enhance the safety of the claimed system.

In this context the board further notes that the expressions in the distinguishing feature are not even linked to the corresponding remaining features of claim 1. Firstly, the distinguishing feature contains "a separate protection module" which can not be interpreted to mean the protection modules already defined elsewhere in claim 1 due to the use of the indefinite article "a". Moreover, the distinguishing feature introduces another new expression "protection bay" which does not occur elsewhere in claim 1 either.

Since claim 1 defines neither what the "protection functions" are or how the added expressions "a separate protection module" and "protection bay" interact with the remaining features, nor what the technical effect of "assigned" should be, the board cannot identify how the distinguishing feature could contribute to the solution of the objective problem of implementing enhanced safety against protection function failure in

an efficient manner, nor of any other problem. Thus, in the absence of any technical contribution the distinguishing feature cannot establish an inventive step.

4.7 The proprietor's corresponding argument that contrary to the disclosure of document D4 the subject-matter of claim 1 defined the protection modules to be bay-specific regarding the protection functions resulting in a one-to-one allocation of protection module and bay of the Substation Automation system does not convince the board either. The board considers the distinguishing feature not to define a one-to-one allocation of protection module and bay as argued by the proprietor. As already set out above, the wording of the distinguishing feature using the indirect article "a" is not suitable to define a one-to-one allocation. Based on this finding, the board can also not confirm the problem to be solved as defined by the opposition division and the positive conclusion on inventive step that were based on the assumption that a "one-to-one" assignment of protection modules to substation bays existed, as set out in sections 15.4 and 15.5 of the contested decision.

4.8 Consequently, the board concludes that the subject-matter of claim 1 according to auxiliary request 13 does not involve an inventive step in the sense of Article 56 EPC starting from the disclosure of document D4.

Therefore, auxiliary request 13 is not allowable.

5. Auxiliary request 13a

Auxiliary request 13a was filed by the proprietor in response to an objection under Article 123(2) EPC raised by the opponent in their reply to the proprietor's appeal.

During the oral proceedings before it, the board indicated that since the amendment in auxiliary request 13a was directed to an objection under Article 123(2) EPC, it considered it not to have any impact on the question of novelty or inventive step. The proprietor accepted this interpretation.

Therefore, the board concludes that the above reasoning regarding auxiliary request 13 applies *mutatis mutandis* to the subject-matter of claim 1 according to auxiliary request 13a.

Consequently, the subject-matter of claim 1 according to auxiliary request 13a does not involve an inventive step in the sense of Article 56 starting from the disclosure of document D4.

Therefore, auxiliary request 13a is not allowable.

6. Auxiliary request 14 - Article 84 EPC

Claims 1 and 7 according to auxiliary request 14 are limited by a feature taken from the description according to which "the redundancy protection commands" are transmitted "in case of a detected failure of a protection module ... of the ... Substation Automation System".

6.1 The opponent *inter alia* raised an objection of lack of clarity against this feature, on the grounds that it was not clear how a redundancy protection command could be received under a condition only and that it was not clear how and by what entity the failure would be detected.

6.2 The board is in this context not convinced by the proprietor's argument that it was clear that the protection server detected the failure. The corresponding wording of claims 1 and 7 merely covers the transmittal of the commands. However, the detection of the failure is not defined in claims 1 and 7.

6.3 Therefore, the board arrived at the conclusion that claims 1 and 7 according to auxiliary request 14 are not clear in the sense of Article 84 EPC.

Consequently, auxiliary request 14 is not allowable.

7. Auxiliary requests 15 to 26, 17a, 19a, 21a, and 26a

The board notes that its finding regarding claim 6 of auxiliary request 2 applies *mutatis mutandis* to the subject-matter of the corresponding independent claim according to each of auxiliary requests 15 to 26, 17a, 19a, 21a, and 26a. Although claim 1 according to auxiliary request 15 is further limited in that the remote redundancy facility is located at a remote centre and the respective independent claim 5 according to each of auxiliary requests 25, 26 and 26a is further limited in that the gateway provides for protocol conversion, the board's conclusion regarding claim 6 according to auxiliary request 2 still applies, because the former feature does not add any technical content

since the redundancy facility is already defined to be remote, and the latter feature is an inherent feature of any gateway.

The proprietor has not provided further arguments with respect to the board's preliminary opinion, such that the board confirms that the subject-matter of claim 7 according to auxiliary requests 22 and 23, the subject-matter of claim 1 according to auxiliary request 15, the subject-matter of claim 5 according to auxiliary requests 16 to 21, 17a, 19a, 21a, 25, 26 and 26a, and the subject-matter of claim 6 according to auxiliary request 24 lacks novelty over the disclosure of document D4.

Consequently, none of auxiliary requests 15 to 26, 17a, 19a, 21a, and 26a is allowable.

8. Conclusion

Since none of the proprietor's requests is allowable, the board accedes to the opponent's requests.

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