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**Datasheet for the decision  
of 3 December 2018**

**Case Number:** T 1167/13 - 3.5.02

**Application Number:** 04784759.5

**Publication Number:** 1687881

**IPC:** H02H1/00

**Language of the proceedings:** EN

**Title of invention:**

System and Method for Remotely Detecting Electric Arc Events  
in a Power System

**Patent Proprietor:**

The Boeing Company

**Opponents:**

Airbus Operations GmbH (DE)/Airbus Operations SAS (FR) /  
Airbus Operations Limited (GB) /  
Airbus Operations S.L. (ES)/Airbus SAS (FR)

**Relevant legal provisions:**

EPC Art. 83, 123(2), 54, 56, 114(2)  
RPBA Art. 12(4)

**Keyword:**

Sufficiency of disclosure - (yes)

Amendments - extension beyond the content of the application  
as filed (no)

Inventive step - (yes)

Late-filed facts - submitted with the statement of grounds of  
appeal



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Case Number: T 1167/13 - 3.5.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.02**  
**of 3 December 2018**

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**Decision under appeal:** **Decision of the Opposition Division of the European Patent Office posted on 21 March 2013 rejecting the opposition filed against European patent No. 1687881 pursuant to Article 101(2) EPC.**

**Composition of the Board:**

**Chairman** R. Lord  
**Members:** C. Vassoille  
R. Cramer

## **Summary of Facts and Submissions**

I. This is an appeal of the opponents against the decision of the opposition division to reject the opposition against European patent No. 1 687 881.

II. The following documents are relevant for the present decision:

D1: EP 1 298 770 A2

D2: WO 99/09422 A1

E1: EP 0 570 206 A2

E2: CA 2 256 208 A1

III. Oral proceedings before the board took place on 3 December 2018.

The appellants (opponents) requested that the decision under appeal be set aside and that the European patent No. 1 687 881 be revoked. As an auxiliary request they requested that the case be remitted to the department of first instance for further prosecution.

The respondent (patent proprietor) requested that the appeal be dismissed (main request), or alternatively that the decision under appeal be set aside and the patent be maintained in amended form on the basis of the claims of one of auxiliary requests A to E filed with the reply to the statement of grounds of appeal.

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

"System of remotely detecting an electric arc event, said system comprising:  
at least one load (14);

at least one slave controller (10) disposed proximate, and electrically connected to, the at least one load (14), wherein the at least one slave controller (10) is adapted to measure at least one parameter associated with the at least one load (14), and wherein the at least one slave controller (10) is adapted to controllably alter the input current to the at least one load (14), according to the at least one parameter; and

at least one arc fault detector (16) being adapted to detect an electric arc event;

**characterized in that** the least one arc fault detector (16) is electrically connected between the at least one slave controller (10) and the at least one load (14), and **in that** the at least one arc fault detector (16) includes a high pass filter/gain stage (22) which is adapted to attenuate strong load related components of the current and to provide gain to signals above a predefined frequency."

Claims 2 to 7 are dependent on claim 1. Claim 8 defines a method comprising substantially the method steps corresponding to the apparatus features of claim 1, and claims 9 and 10 are dependent on claim 8.

V. The arguments of the appellants which are relevant for the present decision are as follows:

The patent as granted did not disclose the claimed invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, because it contained no disclosure as to how to provide at least one arc fault detector, which is electrically connected between the at least one slave controller and the at least one load. The wording of claim 1 in light of the description had two possible

interpretations, first, tapping of a current ("IANA") from the input current to the load, or second, a series connection, in the electrical sense, of the slave controller, the arc fault detector (in the following referred to as "AFD") and the load. In the latter case, the invention could not be carried out by a skilled person, because an operation of the load was not possible. The respondent had further not provided evidence that the second possible interpretation was technically meaningless and that the skilled person would therefore not consider this interpretation. Furthermore, paragraph [0013] of the patent in suit disclosed the possibility to tap off a current from the conductor between the slave controller and the load. On the other hand, paragraph [0022] referred to a series connection of the AFD between the slave controller and the load.

The skilled person could also not carry out the invention, because claim 1 contained several references to a "current", but defined in such a manner that it was not clear whether they all related to the same current, or whether these were different currents, which were hence processed differently. In particular, claim 1 stated that the AFD is adapted to attenuate strong load related components of "the current", which could only be interpreted as corresponding to the "input current", which was according to claim 1 controllably altered by the slave controller. The description, however, referred to the output current "IANA" as the current whose load related components are to be attenuated. Claim 1 could therefore only be understood such that the AFD must necessarily be arranged in the current path between the slave controller and the load.

Furthermore, the invention could not be carried out over the whole range claimed. The AFD described in the patent in suit was only capable of detecting serial arc events, because the high pass filter/gain stage (in the following referred to as "HPF/GS") was not suitable for detecting parallel arc events. This new objection had already been presented at the oral proceedings before the opposition division. The fact that this was not reflected in the minutes, should however not adversely affect the appellants. Furthermore, new arguments did not fall under Article 114(2) EPC and should be admitted into the proceedings at any time.

The subject-matter of claim 1 extended beyond the content of the application as filed. In particular, during the examination proceedings claim 1 had been amended to recite "the current" of which load related components are to be attenuated by the HPF/GS. This current must be understood such that it corresponds to the "input current to the at least one load" recited in the preamble of claim 1. Contrary thereto, the application as filed disclosed the "output current (IANA) from the programmable controller" in this context (see page 7, lines 2 and 3 of the published patent application WO 2005/029666 A1).

Claim 1 further represented an undisclosed intermediate generalisation, because the feature referring to an HPF/GS which is adapted to attenuate strong load related components of the current, was disclosed in combination with further features in the application as filed on page 6, lines 24 to page 7, line 13, in an inextricable manner. In particular, a processing element, a switchable band-pass filter and their respective structural and functional relationship with the HPF/GS, as well as the explicit reference to the



attenuation of DC and AC current and voltage components were interlinked with the HPF/GS. This last aspect was also not inherent to the HPF/GS. Additionally, the term "attenuate" was not the technical term that is normally used in the context of high pass filters. Rather, "filtering" was the correct term that should be used in this respect. The term "attenuate" implied a broader function of a high pass filter, namely not only filtering but attenuating load related components of the current. Attenuating of components from a current could therefore not be considered as being an inherent function of the HPF/GS. The stated purpose on page 7, lines 12 and 13 was also not defined in claim 1.

The subject-matter of claim 1 further lacked novelty in view of E1 and E2. The term "slave controller" was to be interpreted broadly in view of the definition given in the description, in particular in paragraph [0024] of the patent in suit ("...the programmable controller can be used as a power relay or a circuit breaker"). The term could therefore be interpreted as a "normal" hard wired controller, which included the "GFI" (reference numeral 72) of E1 as well as the "AFCI/GFCI circuitry" (reference numeral 182) of E2.

If the slave controller were considered as a distinguishing feature over claim 1, the claimed subject-matter was at least not based on an inventive step, contrary to the requirements of Article 56 EPC. When starting from E1 or E2 the objective technical problem was that of how to attain a more flexible arrangement with enhanced functionality. The skilled person when starting from E1 or E2 would learn from the patent in suit that the slave controller can be used as a GFI. He would further recognise that the use of a controller is the first choice, while it was irrelevant

whether it is a slave controller or not. The skilled person would then have considered reconfiguring the system of E1 and E2 accordingly on the basis of his common general knowledge.

D1 in combination with E1 or E2 likewise rendered the subject-matter of claim 1 obvious. The distinguishing feature of the subject-matter of claim 1 over D1 was that of a HPF/GS. When starting from D1 the skilled person was confronted with the objective technical problem of how to detect serial arc events instead of parallel arc events. The skilled person being confronted with this objective technical problem would have replaced (or supplemented) the microcontroller (reference numeral 26) in D1 with the HPF/GS circuit of E1 (reference numeral 15 in figure 1) or alternatively with the HPF/GS circuit of E2 (reference numeral 188 in figure 6) to thereby arrive at the claimed invention. It was further to be noted that claim 1 does not exclude the presence of a low pass filter in addition to the HPF/GS.

Finally, the case should be remitted because the opposition division had committed a substantial procedural violation by not having discussed inventive step in the appealed decision on the basis of a combination of D1 with E2, even though this attack had been explicitly included in the grounds of opposition.

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

The patent in suit disclosed the claimed invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The skilled person would not consider the second interpretation

presented by the appellants, because it made no sense technically to serially connect the AFD between the slave controller and the load. The skilled person would understand from claim 1 and the overall description that the wording "connected between" defined merely the location of the AFD connection. It was further evident from figures 1, 2, 3 and 7 of the patent in suit that the current is tapped off to the AFD and that the AFD was thus not serially connected between the slave controller and the load. That second interpretation was also in contradiction with figure 7, which illustrated an additional "damaged wire detector" in a block diagram and further in contradiction to figure 2, which showed that no current flows out of the AFD. Figure 3 further illustrated a straight arrow from the slave controller indicating "to load" and not "to arc fault detector". It was thus also clear from figure 3 that there is a direct connection between the slave controller and the load. As regards the disclosure of both paragraphs [0013] and [0022] of the patent in suit, the skilled person learned nothing other than tapping off a current from the electrical connection between the slave controller and the load.

The person skilled in the art would understand from the patent in suit that the "input current to the load" and the "output current from the programmable controller" are the same current. Claim 1 further talked about "components of the current" (emphasis added) and it was clear to the skilled reader that the load related components are present on the tapped current as well as on the output current from the slave controller and the input current to the load. No contradiction between the two currents mentioned in claim 1 could therefore be recognised.

The respondent had no recollection of the third objection under Article 83 EPC, i.e. that the skilled person was not able to carry out the invention over the whole range claimed, having been presented during the oral proceedings before the opposition division. Also, the minutes were silent in this regard. The corresponding objection put forward in the statement of grounds of appeal was thus a new objection and should not be admitted into the appeal proceedings under Article 12(4) RPBA.

As regards the alleged added subject-matter, the function of the HPF/GS according to claim 1 did not extend beyond what was described on page 6, line 21 to page 7, line 13 of the application as filed. In particular, it did not play a role for the function of the HPF/GS, whether AC or DC current and voltage is provided to the HPF/GS, because its function always remained the same. In particular, it was always capable of attenuating AC components of the current below the cut-off frequency, which naturally also includes DC components. The term "attenuate" was the technical term that would normally be used to describe the function of such a filter and therefore described an inherent function of the HPF/GS. It was further clear from the patent in suit that the term high pass filter/gain stage indicates a high pass filter followed by a gain stage. The processing element was an optional feature, which was clear from the wording on page 6, line 21: "can include a processing element". The stated purpose on page 7, line 13 was an inherent consequence of the use of the HPF/GS, and therefore did not need to be explicitly mentioned in claim 1.

The subject-matter of claim 1 was novel over E1 and E2. Neither of these documents disclosed a slave

controller. Both documents rather disclosed conventional circuit breakers in the form of hard-wired components. In contrast thereto, the slave controller according to claim 1 was a programmable controller being capable of functioning as a circuit breaker or ground fault interrupter (GFI). The patent in suit disclosed in paragraph [0024] that the slave controller "can be used as a power relay or circuit breaker", which was however not equivalent to a circuit breaker as disclosed in E1 and E2, namely a hard-wired component. The programmability of the slave controller allowed it to be used very flexibly, as outlined in paragraph [0035] of the patent in suit. Furthermore, the term "slave" was a technical term that was clearly associated with a master in the context of a master-slave-concept.

The subject-matter of claim 1 was based on an inventive step over E1 or E2 in combination with the common general knowledge of the skilled person and also over a combination of D1 with either E1 or E2.

Starting from D1 as the closest prior art document and considering the distinguishing feature to be at least the provision of a HPF/GS, the objective technical problem was that of how to provide a reliable detection of electric arc events. Apart from the fact that in E1 the circuit indicated by reference numeral 15 was technically different from the HPF/GS of claim 1, because it additionally included a low pass filter, the skilled person had had no reason to substitute the microcontroller of D1 with, or to provide additionally, the filter circuits of E1 or E2. More specifically, D1 referred to an entirely different way of detecting electric arc events. Implementing the filter circuits of E1 or E2 in D1 would have rendered inoperable a

number of the circuit elements, such as the trip circuit and the threshold detectors, as well as the overall arc detection mechanism of D1. The skilled person when being confronted with the objective technical problem, would not have considered a restructuring of the detection circuit of D1 but would rather have searched for a different solution to the problem. The objective technical problem formulated by the appellants was based on hindsight.

When starting from E1 or E2 as the closest prior art document, the skilled person had no motivation to modify either of these documents in such a manner as to arrive at the claimed invention. In particular, the circuit of E1 would have needed to be significantly reconfigured in order to arrive at the subject-matter of claim 1.

### **Reasons for the Decision**

1. The appeal is admissible.
2. *Sufficiency of disclosure (Article 100(b) EPC)*
  - 2.1 The appellants' central argument with regard to Article 100(b) EPC was that the person skilled in the art could have interpreted the wording "electrically connected between" of claim 1 such that the AFD is serially connected between the slave controller and the load, a configuration which according to the appellants would not enable the skilled person to carry out the invention.
  - 2.2 The board notes that in accordance with the established case law of the boards of appeal, when interpreting the

claims, the person skilled in the art "should rule out interpretations which are illogical or which do not make technical sense. He should try, with synthetical propensity, i.e. building up rather than tearing down, to arrive at an interpretation of the claim which is technically sensible and takes into account the whole disclosure of the patent." (see Case Law of the Boards of Appeal, 8<sup>th</sup> edition 2016, Chapter II.A.6.1, page 287).

2.3 The board notes that it is not the respondent's responsibility to provide proof for the fact that the second interpretation of the subject-matter of claim 1 results in a non-functional system. Rather, the onus is on the appellants to show that the second interpretation would be taken into consideration by a skilled reader. However, the appellants themselves have acknowledged that an operation of the load would not be possible in the case of a series connection between the slave controller, the AFD and the load. Contrary to what was argued by the appellants, the board is therefore convinced that the person skilled in the art would not consider a series connection in the electrical sense between the slave controller, the AFD and the load, because it does not constitute a practicable implementation in the context of the claimed invention. Rather, the board is persuaded by the respondent's argument that the skilled person would understand the expression "electrically connected between" to be information about location, indicating the positional relationship of the AFD with respect to the slave controller and the load. The skilled person would further understand from paragraph [0013] of the patent in suit that the AFD is electrically connected to a conductor between the slave controller and the load in the sense of a "tapped connection". No other

passage of the patent in suit, and in particular not paragraph [0022] referred to by the appellants, would reasonably lead the person skilled in the art to any other conclusion. The board also has no doubts that figures 1, 2, 3 and 7 clearly indicate that a current to be supplied to the AFD is tapped off from the conductor between the slave controller and the load. Therefore, in the board's view the second interpretation of claim 1 presented by the appellants would not be considered by the skilled person when being confronted with the patent in suit.

- 2.4 The board therefore concludes that the only reasonable interpretation of the contested feature of claim 1, is that the AFD is connected in a tapped manner to the conductor connecting the slave controller with the load. It follows that the current flowing between the slave controller and the load, which in terms of the patent in suit is equivalent to the output current from the slave controller or the input current to the load, can not be the same as the current indicated by "IANA" in paragraph [0027] and figure 2 of the patent in suit. For the same reason, the board is convinced by the respondent's argument that the person skilled in the art has no difficulty to understand that the "components of the current" (emphasis added) are not only present on the current flowing from the slave controller to the load but also on the current IANA flowing into the AFD. The fact that the current IANA supplied to the AFD has been referred to in the patent in suit as the "output current" therefore does not hinder the skilled person from carrying out the invention.



3. *Admission of a new objection into the appeal proceedings (Articles 114(2) EPC and 12(4) RPBA)*

3.1 In the statement of grounds of appeal, the appellants raised the objection under Articles 100(b) and 83 EPC that the person skilled in the art could not carry out the invention over the whole range claimed, because the circuit described in the patent in suit was only suitable for detecting serial, not parallel, arc faults, which was however not reflected in claim 1. The respondent considered this to be a new objection which was raised for the first time in the statement of grounds of appeal and therefore should not be admitted into the appeal proceedings.

3.2 The board has come to the conclusion that the objection has been raised for the first time in the statement of grounds of appeal and represents an alleged new fact within the meaning of Article 114(2) EPC and Article 12(4) RPBA rather than an argument of the sort that can be presented at any time during the proceedings. In the first instance proceedings, the appellants raised two objections concerning Article 100(b) EPC. Neither of these objections remotely related to the question of the type of arc fault to be detected, and in particular not to the specific question of whether the invention can be carried out over the whole range claimed. The corresponding objection thus cannot reasonably be considered as a mere argument, which was provided in support of alleged facts that have already been presented. Since the appellants did not contest during the oral proceedings before the board that the new objection is a new alleged fact, the board sees no reason to deviate from the above assessment.

- 3.3 According to Article 12(4) RPBA the board has the discretionary power to hold inadmissible facts which could have been presented in the first instance proceedings. The board notes that the opposition division stated in its preliminary opinion of 10 December 2012 that the requirements of Article 83 EPC were considered to be fulfilled. The board concludes that the appellants could not have been surprised by the final decision of the opposition division to reject the objection under Article 83 EPC. The further objection under Article 83 EPC could, and should, therefore have been presented already in the first instance proceedings. Furthermore, the questions that were raised by the new objection are not in any way related to the other objections raised in the first instance proceedings in the context of Article 100(b) EPC, and admitting them into the appeal proceedings would have required a fresh discussion of points that had not been at issue before the opposition division.
- 3.4 Moreover, the board is not convinced by the appellants' argument that the objection at issue was in fact presented during the oral proceedings before the opposition division, since this allegation was neither confirmed by the respondent nor is it reflected in the minutes. The board is also not aware of any request of the appellants for correction of the minutes.
- 3.5 Thus, the board exercised their discretion under Article 12(4) RPBA to not admit the new objection into the appeal proceedings.
- 3.6 The board therefore concludes that the patent in suit discloses 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, so that the

opposition ground under Article 100(b) EPC does not prejudice the maintenance of the patent.

4. *Added subject-matter (Article 100(c) EPC)*

4.1 The central point of the appellants' objection under the opposition ground of Article 100(c) EPC was that claim 1 defines an undisclosed intermediate generalisation in view of the further features that are disclosed on page 6, line 21 to page 7, line 13 of the application as filed in connection with the HPF/GS, but which were not included in claim 1.

4.2 The board is not convinced by this line of argument, because the features that are described in the passage cited by the appellants are either optional or inherent in the HPF/GS. In particular, the original application on page 6, line 21 discloses that the AFD can include a processing element capable of controlling operation of an AFD module. Contrary to what was argued by the appellants it is also not apparent why the processing element should become compulsory in view of its possible control of the AFD module. Furthermore, the board considers the term "attenuate" to be the technical term which is normally used to describe the general function of a filter outside its pass band. Thus, an inherent functionality of a high pass filter is the attenuation of signals below a cut-off frequency, independent of whether these signals are related to an AC or DC current or voltage. The board also considers the effect of a facilitated detection of small arc fault characteristics in the output current (see the application as filed on page 7, line 13) to be inherent, if some gain is provided to signals above a predefined frequency. The feature of claim 1, referring to an HPF/GS adapted to attenuate strong load related

components of the current and to provide gain to signals above a predetermined frequency, therefore does not extend beyond what was originally disclosed in the passages addressed by the appellants.

4.3 The appellants have also argued that the general term "the current" used in claim 1 extends beyond the content of the application as filed. The appellants particularly referred to the original application on page 7, lines 1 to 9, which did not disclose the provision of an input current but rather an output current IANA, which is provided to the AFD. The board does not find this argument convincing. As has already been outlined with respect to sufficiency of disclosure (see point 2.4 above), the only technically reasonable interpretation of the feature of claim 1 that "[the HPF/GS] is adapted to attenuate strong load related components of the current" is such that it relates to components which are present on the output current and input current, respectively, flowing from the slave controller to the load. As has been argued by the respondent, these components must however also be present on the current IANA, which is tapped off from the conductor connected between the slave controller and the load. Otherwise, there would be no need to attenuate these components by means of the HPF/GS. Nothing else is disclosed on page 7 of the original application and the feature at issue therefore does not contain subject-matter that extends beyond the content of the application as filed.

4.4 The board therefore concludes that the ground for opposition of Article 100(c) EPC does not prejudice the maintenance of the patent in suit.

5. *Novelty (Article 54 EPC)*

5.1 Novelty of the subject-matter of claim 1 was disputed by the appellants on the basis of documents E1 and E2. It was particularly in dispute, whether E1 and E2 disclose a "slave controller" in the sense of claim 1.

5.2 The appellants have argued that the term "slave controller", in view of the disclosure of the patent in suit, should not be interpreted according to the normal technical meaning of the term, but rather in the broadest sense such that it extends to a circuit breaker, since this was the definition given in paragraph [0024] of the patent in suit. Hence, the solid state relay 72 in figure 2c of E1 as well as the circuit 182 in figure 7 of E2 represented a "slave controller" in the sense of claim 1.

5.3 The board does not agree with this line of argument. As has been confirmed by the appellants themselves, the term "slave controller" has a well-known technical meaning to the person skilled in the art, which includes the capability to interact with a master device, and which further implies that the slave controller is programmable, whether operating in slave mode or independently.

5.4 Contrary to what was argued by the appellants, the board does not recognise any discrepancy between the wording of claim 1 and the description of the patent in suit. The patent in suit discloses in paragraph [0024] that the slave controller "can be used as a power relay or circuit breaker" (emphasis added) and in paragraph [0021] that it "can [...] be configured to operate independent of the master controller or any other controller" (emphasis added). It is clear from the

content of the whole disclosure of the patent in suit that these passages are not to be understood such that a power relay or circuit breaker may be used instead of the slave controller, or in other words that the slave controller in this case has the structural characteristics of a power relay or a circuit breaker. Rather, the only possible way to interpret the passage in view of the whole disclosure of the patent in suit is that the slave controller is capable of performing the functions of a power relay or a circuit breaker. Even if this implies a functional adaptation, it does not imply a modification of the structural characteristics inherent to a slave controller. The skilled person therefore does not receive any information from the description of the patent in suit that would be in contradiction to the normal technical understanding of the term "slave controller".

5.5 It has not been disputed by the appellants that neither the GFI solid state relay disclosed in E1 nor the AFCI/GFCI circuitry disclosed in E2 corresponds to what the person skilled in the art would normally understand to be a slave controller.

5.6 The board therefore concludes that neither E1 nor E2 discloses a slave controller in a system of remotely detecting an electric arc event. The subject-matter of claim 1 of the granted patent is therefore novel with regard to these documents (Article 54 EPC).

6. *Inventive step (Article 56 EPC)*

6.1 The appellants have argued that the subject-matter of claim 1 does not involve an inventive step in the sense of Article 56 EPC in view of a combination of E1 or E2 with the common general knowledge of the skilled person

or in view of a combination of D1 with either E1, E2, D2 or the common general knowledge of the skilled person.

6.2 As regards the combination of documents E1 or E2 with the common general knowledge of the skilled person, the appellants' arguments were centered on the point that the person skilled in the art would understand from the patent in suit that a "normal" controller can function as a GFI. He would then have modified the system of E1 or E2 accordingly, because he would have realised that the use of a controller is "the first choice". The board does not consider this to be a valid argument, because the question of inventive step cannot be assessed on the basis of knowledge that the skilled person obtains from the patent in suit. The appellants' arguments are consequently clearly based on an *ex post facto* analysis, which is not admissible in the assessment of inventive step in the sense of Article 56 EPC.

6.3 The appellants did not provide further convincing arguments as to why the skilled person was motivated to modify the systems of E1 or E2 so as to comprise a slave controller according to claim 1. The sole fact that slave controllers might have been known to the skilled person at the effective date of the patent in suit and that the objective technical problem would have been that of how to provide greater flexibility in the system, is not sufficient to convince the board that the skilled person would, without any further hint, in fact have readily modified documents E1 and E2 such as to arrive at the subject-matter of claim 1, as has been argued by the appellants. The appellants have further relied on their broad interpretation of a slave controller as a "normal" controller. The board however

does not agree with this interpretation (see points 5.3 and 5.4 above) and the appellants have failed to convincingly demonstrate that the person skilled in the art would have replaced the hard-wired circuits GFI (E1) and AFCI/GFCI (E2), not by a "normal" controller but by a slave controller, which is not only capable of providing different functionalities in the system but which is also capable of receiving operational instructions from a master device.

6.4 The board concludes that the subject-matter of claim 1 cannot be derived in an obvious manner from E1 or E2.

6.5 In the context of the objection of lack of inventive step starting from document D1, it has not been disputed that this document differs from the subject-matter of claim 1 at least in the provision of a HPF/GS, which is adapted to attenuate strong load related components of the current and which is adapted to provide gain to signals above a predetermined frequency. In this respect the appellants relied only on the HPF/GS circuits that can be found in E1 and E2 and argued that the person skilled in the art, when starting from D1 and being confronted with the objective technical problem of how to detect a serial arc fault instead of, or as well as, a parallel arc fault, would have replaced or supplemented the microcontroller (reference numeral 26 in figure 1 of D1) with the HPF/GS circuits of E1 or E2.

6.6 However, the board notes in this context that the system of D1 and the systems of E1 and E2, are very different in their nature, in particular with respect to the method of detecting electric arc events, as has also been acknowledged by the appellants. In particular, D1 refers to the detection of parallel arc



events on the basis of a measured pulse signal, without any reference to frequency spectra. The board is therefore not convinced by the appellants' argument that the person skilled in the art would have replaced the microcontroller of D1 with, or would have additionally integrated in the system, the HPF/GS circuits of E1 or E2. Notwithstanding the question of whether the objective technical problem that has been formulated by the appellants is appropriate, the board is persuaded by the respondent's argument that the notional combination of D1 with E1 or E2 would result in a substantial restructuring of the overall circuit of D1, as a consequence of which at least some parts of the circuit would not function any more. In the opinion of the board, there is nothing in the prior art that would lead the skilled person to undertake such a substantial restructuring.

6.7 The board therefore concludes that the person skilled in the art would not have taken into consideration the supplementing or replacement of the microcontroller of D1 by the circuits corresponding to the HPF/GS disclosed in E1 or E2 and that the subject-matter of claim 1 therefore cannot be derived from D1, in particular in combination with E1, E2, D2 or the common general knowledge of the skilled person, in an obvious manner.

6.8 Given the above conclusions, the difference of providing a HPF/GS according to the characterising portion of claim 1 is sufficient to establish that the subject-matter of claim 1 of the patent in suit involves an inventive step according to Article 56 EPC. It is therefore not necessary for the board to consider whether or not the system of D1 is a system of remotely detecting an electric arc event and whether a slave

controller is disposed proximate to the at least one load.

7. *Remittal to the department of first instance*

7.1 The appellants have, as an auxiliary measure, requested remittal of the case to the department of first instance.

7.2 The board notes that the combination of document D1 with E2 was not discussed in the oral proceedings (see section 20.1 of the appealed decision). The board concludes that the appellants did not consider this combination as the most relevant inventive step attack, also because they did not seek to discuss this combination during the oral proceedings before the opposition division (section 4.4.17 and 4.4.18 of the minutes). This combination was also not explicitly discussed in the decision, but the board notes that in section 19.15 the opposition division has given its opinion on E2 and has particularly pointed out that the feature that the AFD is electrically connected between the slave controller and the load is not disclosed in E2, and it was not disputed by the appellants that this feature is also not disclosed in D1. It is therefore clear that an explicit consideration of this combination would not have led the opposition division to change its decision to reject the opposition. Thus, even if this omission were considered to be a procedural flaw, the board is of the opinion that it was not a substantial procedural violation (see Case Law of the Boards of Appeal, 8th Edition, IV.E. 8.4.1(b)) that would justify remittal of the case to the department of first instance.

7.3 The appellants' request to remit the case to the department of first instance for further consideration must therefore be rejected.

8. *Other matters*

8.1 Claims 2 to 7 of the patent in suit are dependent on claim 1, and claim 8 defines a method of remotely detecting an electric arc event, comprising the method steps corresponding to the apparatus features of claim 1, so that the above conclusions concerning novelty and inventive step apply also to these claims. This also applies to claims 9 and 10, since these are dependent on claim 8. No objections to these claims under Articles 83 and 123(2) EPC have been raised beyond those raised with respect to claim 1. The board therefore concludes that none of the grounds for opposition raised by the appellants prejudice the maintenance of the patent in suit, so that the board has to accede to the main request of the respondent.

8.2 Given this conclusion, it is not necessary for the board to consider any of the respondent's auxiliary requests.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



M. H. A. Patin

R. Lord

Decision electronically authenticated