

Internal distribution code:

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

D E C I S I O N
of 12 April 2002

Case Number: T 0114/00 - 3.5.2

Application Number: 92203845.0

Publication Number: 0550927

IPC: H01H 71/10

Language of the proceedings: EN

Title of invention:
Selective automatic safety switch

Patentee:
HOLEC HOLLAND N.V.

Opponent:
ABB Patent GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 0114/00 - 3.5.2

D E C I S I O N
of the Technical Board of Appeal 3.5.2
of 12 April 2002

Appellant: ABB Patent GmbH
(Opponent) Wallstadter Strasse 59
D-68526 Ladenburg (DE)

Representative: Miller, Toivo
ABB Patent GmbH
Postfach 1140
D-68520 Ladenburg (DE)

Respondent: Holec Holland N.V.
(Proprietor of the patent) Tuindorpstraat 61
NL-7555 CS Hengelo (NL)

Representative: de Bruijn, Leendert C.
Nederlandsch Octrooibureau
P.O. Box 29720
NL-2502 LS Den Haag (NL)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 7 December 1999
rejecting the opposition filed against European
patent No. 0 550 927 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: W. J. L. Wheeler
Members: M. Ruggiu
B. J. Schachenmann

Summary of Facts and Submissions

I. The opponent appealed the decision of the opposition division rejecting the opposition filed against European patent No. 0 550 927.

II. Claim 1 of the patent in suit as granted reads as follows:

"Safety switch for the selective protection of electrical installations, comprising:

- a primary current path (11) with, incorporated therein, a self-closing first switching unit (12) and a first actuation device (13), which interacts with the latter, for the as far as possible undelayed opening of the contacts (14, 15) of the first switching unit (12) in the case of the occurrence of a short-circuit current;
- a second switching unit (17) incorporated in the primary current path (11) and connected in series with the first switching unit (12), and a second actuation device (20) interacting with the second switching unit (17) for the delayed opening of the contacts (18, 19) of the second switching unit (17) in the case of the occurrence of an overload current;
- a third actuation device (24) interacting with the second switching unit (17), which third actuation device (24) is connected to a shunt path (26) which comprises current limiting means (27) and which bridges at least the contacts (14, 15) of the first switching unit (12), for the delayed

opening of the contacts of the second switching unit (17) in the case of the occurrence of a short-circuit current;

- a latching device (21) for keeping the contacts (18, 19) of the second switching unit (17) in the open position after opening,
- and delay means (28) for holding the contacts (14, 15) of the first switching unit (12) in the open position for a delay time,

characterized in that the delay means (28) is independent of the second switching unit (17) and its delay time is set independently of the delay time of the second switching unit."

Claims 2 to 5 of the patent in suit are dependent on claim 1.

III. During the appeal, the appellant referred to the following prior art documents:

D1: DE-A-2 854 711;

D2: DE-A-3 133 200;

D3: DE-A-3 023 512;

D4: CH-A-230 577;

D5: EP-A-0 350 826;

D5': DE-A-3 823 976; and

D6: EP-A-0 371 419.

Documents D1, D5, D5' and D6 were cited for the first time by the appellant in the grounds of appeal.

Documents D1, D5 and D6 are cited in the patent in suit as granted. D5' is the document on which the priority of D5 is based.

IV. Oral proceedings were held before the board on 12 April 2002.

The appellant (opponent) requested that the decision under appeal be set aside and that the European patent No. 0 550 927 be revoked.

The respondent (patentee) requested that the appeal be dismissed and that the patent be maintained.

V. The appellant essentially argued as follows:

Figure 7 of document D1 showed a safety switch having the features specified in the preamble of claim 1 of the patent in suit, except that D1 did not mention delay means for holding the contacts of the first switching unit in the open position for a delay time. The safety switch according to Figure 7 of D1 suffered from the disadvantage that the contacts of the first switching unit had to open and close a number of times (known as pumping in the art) before the third actuation device opened the contacts of the second switching unit to disconnect a short-circuit.

Document D5 considered this problem at column 1, line 33 *et seq* and proposed, as a solution, to have delay means holding the contacts open for a

predetermined time. D5 disclosed delay means comprising a magnetic device with an armature having a helical thread-shaped groove which ensured the armature would move slowly to delay a switching operation. The delay provided by the magnetic device of D5 only depended on the geometrical and constructional features of the device.

Document D6 disclosed a mechanism which used the delay means of D5', which was also described in D5, for holding main contacts open for a predetermined time. D6 referred to D1 and thereby suggested applying the mechanism disclosed therein to the safety switch of D1. The main contacts of D6 corresponded to those contacts of the safety switch of D1 which were arranged in parallel to the shunt path comprising current limiting means. Thus, the skilled person would apply the delay mechanism of D6 only to the contacts (70) of D1 arranged in parallel to the shunt path.

The combination of document D1 with documents D5 and/or D6 directly led to the subject-matter of claim 1 of the patent in suit. Documents D1, D5 and D6 had to be seen as a unit because D6 referred to D1 and D5' (which was a member of the same patent family as D5), so that the subject-matter of claim 1 lacked novelty, or did not involve an inventive step in view of these documents.

Document D2, which disclosed a safety switch in accordance with the preamble of claim 1, referred to document D1 and suggested avoiding pumping by disposing an actuator in the shunt path to keep the contacts of the first switching unit open upon the occurrence of a short-circuit current. In practice, this actuator was independent of the second switching unit. Thus, D2

disclosed another solution to the problem of pumping. D2 did not constitute the prior art closest to the instant invention. Nevertheless, introducing delay means in accordance with D5, D5' or D6 into the safety switch of D2 led the skilled person directly to the subject-matter of claim 1 of the patent in suit.

Furthermore, the features of the dependent claims of the patent in suit were also obvious.

VI. The arguments of the respondent can be summarised as follows:

The safety switch of document D2 had all the features of the preamble of claim 1 of the patent in suit, whereas document D1 did not disclose delay means for holding the contacts of the first switching unit in the open position for a delay time. Thus, D2, not D1, disclosed the prior art closest to the invention. The delay means of D2 was not independent of the second switching unit, because the delay period for holding the contacts of the first switching unit open ended when the contacts of the second switching unit opened. Therefore, the delay time depended on the actuation of the second switching unit and on the energy passing through the third actuation device. This dependency could cause pumping in certain circumstances and the present invention provided an improvement over the prior art disclosed in D2. With the invention, the amount of the energy passed during the delay time was determined and this advantage was not hinted at in the prior art.

Documents D5, D5' and D6 related to delay devices for holding contacts open. However, these documents could

be combined with D1 or D2 only with the benefit of hindsight. In particular there was no reason to combine the delay means disclosed in D5, D5' or D6 with the first switching unit of D1. The skilled person would not isolate a feature from D6 and apply it in the safety switch of D1. Furthermore, D6 described an auxiliary contact in parallel with the main contact while in D1 the main and auxiliary contacts were in series.

Reasons for the Decision

1. The appeal is admissible.

2. The board agrees with the parties that the safety switch shown in Figure 7 of D1 comprises all the features of the precharacterising preamble of claim 1 of the patent in suit, except for the last feature of the preamble, which specifies delay means for holding the contacts of the first switching unit in the open position for a delay time. It should furthermore be noted that the safety switch shown in Figure 7 of D1 has a first actuation device which interacts not only with the first switching unit (bearing the reference 70 in Figure 7 of D1) but also with the second switching unit (not referenced in Figure 7 of D1), whereby, upon the occurrence of a short-circuit current, the first actuation device opens the contacts of both the first and the second switching units.

3. The safety switch shown in Figure 7 of D1 suffers from the problem of pumping, i.e. upon the occurrence of a short-circuit which is not disconnected by another switch, the contacts of the first and second switching

units open and close repeatedly before the third actuation device in the shunt path bridging the contacts of the first switching unit causes opening and latching of the contacts of the second switching unit.

4. In the view of the board, the skilled person looking for a solution to this problem would consider the teaching provided by document D5, or the equivalent document D5', because D5 and D5' discuss the problem of pumping. According to D5 (see column 1, lines 33 to 47) and D5' (see column 1, lines 32 to 45), the problem of pumping could be solved by providing a time controlled delay device keeping a contact unit open for a predetermined time.

However, this teaching of D5 or D5' cannot be applied in a straightforward manner to the safety switch shown in Figure 7 of D1 because, in the safety switch of D1, the same coil (72) actuates both the first and the second switching units, which are therefore linked. Simply applying a delay device to that safety switch would result in the contacts of both switching units being kept open for a predetermined time, which would not eliminate pumping because the opening of the contacts of the second switching unit would interrupt the current in the shunt path. Thus, the skilled person would have no reason to apply the teaching of document D5 or D5' to the safety switch shown in Figure 7 of D1.

5. Document D6 relates to safety switches for the selective protection of electrical installations, ie the same technical field as the patent in suit. Furthermore, D6 cites document D1. The board therefore considers that the skilled person looking for a solution to a problem occurring in the safety switch of

D1 would consider the teaching of D6.

D6 discloses a mechanism which makes use of the delay device of document D5' for delaying reclosure of a main contact unit ("Hauptkontaktstelle"). The main contact unit opens upon occurrence of a short-circuit current. If the short-circuit current is still present when the main contact unit recloses, after a predetermined delay time defined by the delay device, the mechanism of D6 reopens and latches the main contact unit in the open position. Furthermore, D6 mentions that an auxiliary contact unit ("Nebenskontaktstelle") is arranged in parallel to the main contact unit.

Thus, D6 does not teach switching the overcurrent to a shunt path for a predetermined delay time. It teaches keeping a main contact unit of the safety switch open for a predetermined delay time before reclosing it. Applying this teaching to the safety switch shown in Figure 7 of D1 would lead to delaying the reclosure of the main contact unit thereof, which is the second switching unit (not referenced in Figure 7 of D1). That the second switching unit is to be viewed as the main contact unit is confirmed by the fact that D1 qualifies the contacts (70) of the first switching unit as auxiliary contact unit ("als Hilfskontaktstelle dienende Trennstelle") (see in particular the description at page 14, lines 6 to 9 of D1) and the contacts (not referenced in Figure 7 of D1) of the second switching unit as main switching unit ("Hauptkontaktstelle") (see in particular claim 8 and the description at page 9, lines 21 to 23 of D1). Furthermore, D6 relates to a switch in which the main and auxiliary switching units are in parallel, while the safety switch according to Figure 7 of D1 has its

main and auxiliary switching units connected in series.

Thus, a combination of the teaching of D6 and Figure 7 of D1 would not lead the skilled person to the subject-matter of claim 1 of the patent in suit.

6. Document D2 discloses a safety switch having all the features of the preamble of claim 1 of the patent in suit. The delay means of D2 is formed by a coil arranged in series in the shunt path bridging the contacts of the first switching unit and holds said contacts open as long as sufficient current flows in the shunt path. When the contacts of the second switching unit of D2 open, the current in the shunt path is interrupted and the contacts of the first switching unit reclose. Thus, in D2, the contacts of the first switching unit are kept open for a delay time which depends on the time at which the contacts of the second switching unit open and thereby is not independent of the second switching unit. Thus, D2 does not disclose the features of the characterising portion of claim 1.
7. D2 discusses the problem of pumping occurring in D1 (see page 4, line 12 to page 5, line 18 of D2) and states that it provides an improvement avoiding this problem (see page 5, line 35 to page 6, line 4 of D2).

Thus, although the patent in suit states that the safety switch of D2 suffers in certain circumstances from the problem of pumping, this would not be apparent to the skilled person from D2. The skilled person would therefore have no reason to combine D2 with the teaching of D5, D5' or D6. The argument that it was obvious to replace the delay means of D2 by a delay

device of the type discussed in D5, D5' or D6 is thus based on hindsight.

Furthermore, the two switching units of the safety switch of D2 are arranged in series, whereas D6 refers to a case in which the switching units are in parallel. In the view of the board, this discrepancy between D2 and D6 further deters the skilled person from combining these documents.

8. Document D3 and D4 disclose safety switches with a coil arranged in a shunt path bridging contacts, the coil holding the contacts open as long as sufficient current flows in the shunt path. Thus, the disclosure in D3 or D4 does not go beyond that of document D2 in this respect.
9. The board therefore concludes that the invention defined in claim 1 of the patent in suit is new and not obvious to a skilled person in view of the cited documents of the state of the art. The subject-matter of claim 1 can thus be considered as involving an inventive step in the sense of Article 56 EPC.

Claims 2 to 5 are dependent on claim 1 and their subject-matter can therefore also be considered as involving an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Hörnell

W. J. L. Wheeler