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**Datasheet for the decision
of 8 January 2013**

Case Number: T 2098/08 - 3.4.01
Application Number: 05257413.4
Publication Number: 1669767
IPC: G01R 31/08, H02H 7/26,
H02J 13/00
Language of the proceedings: EN

Title of invention:

System and method of locating ground fault in electrical power distribution system

Applicant:

GENERAL ELECTRIC COMPANY

Headword:

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Relevant legal provisions:

EPC Art. 123(2)

Keyword:

"Added subject-matter (yes)"

Decisions cited:

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Catchword:

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Case Number: T 2098/08 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 8 January 2013

Appellant:
(Applicant)

GENERAL ELECTRIC COMPANY
1 River Road
Schenectady, NY 12345 (US)

Representative:

Bedford, Grant Richard
Global Patent Operation - Europe
GE International Inc.
15 John Adam Street
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Decision under appeal:

**Decision of the Examining Division of the
European Patent Office posted 11 June 2008
refusing European patent application
No. 05257413.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: G. Assi
Members: H. Wolfrum
M. J. Vogel

Summary of Facts and Submissions

I. European patent application 05 257 413.4 (publication No. EP 1 669 767) was refused by a decision of the examining division dispatched on 11 June 2008 for the reason of lack of clarity (Article 84 EPC 1973) of independent claims 1 and 2 of the request then on file. Moreover, a negative opinion on the matter of inventive step (Article 56 EPC 1973) was given.

II. The applicant lodged an appeal against the decision on 7 August 2008. The prescribed appeal fee was paid on the same day. A statement of grounds of appeal was filed on 16 October 2008.

The appellant requested that the decision be set aside and a patent be granted on the basis of claims 1 to 3 of a new request filed with the statement setting out the grounds of appeal.

Furthermore, an auxiliary request for oral proceedings was made.

III. On 31 May 2012 the appellant was summoned to oral proceedings to take place on 29 November 2012.

In a communication pursuant to Article 15(1) RPBA annexed to the summons to oral proceedings the Board pointed *inter alia* to problems of added subject-matter (Article 123(2) EPC) in the amendments made to the request on file.

IV. The appellant did not comment on the Board's observations nor did it file any further amended claims. Instead, by

letter of 31 October 2012, the appellant cancelled its request for oral proceedings and requested a decision.

V. By notification of 9 November 2012 the oral proceedings were cancelled.

VI. Independent claims 1 and 2 of the appellant's request read as follows :

"1. A method (144) for locating a ground fault in an electrical power distribution system (12), the method comprising:

providing a plurality of current sensors (14, 16, 17, 18, 20, 22) at a plurality of locations in the electrical power distribution system (12);

detecting a ground fault in the electrical power distribution system (12);

monitoring current at the plurality of locations in the electrical power distribution system (12) via the current sensors (14, 16, 17, 18, 20, 22);

introducing a test signal into the electrical power distribution system (12) via a test signal generating device (44) coupled across a portion of a grounding resistor (42); and

monitoring the plurality of locations to locate the ground fault between a location at which the test signal is detected and a downstream location at which the test signal is not detected; characterised in that:

the test signal is a pulse signal generated at desired intervals by periodically closing a switch (44) coupled across a portion of the grounding resistor (42) to generate the pulse signal at desired intervals and wherein locating the ground fault includes identifying zero sequence current values in phase with voltage across

the grounding resistor or out of phase with current through the grounding resistor."

"2. A system (10) for locating a ground fault in an electrical power distribution system (12), the system comprising:

plurality of current sensors (14, 16, 17, 18, 20, 22) adapted to monitor current at a plurality of locations in the distribution system (12); characterised by:

a test signal generating device (44) configured to introduce a test signal into the distribution system (12), wherein the test signal generating device (44) comprises a switch coupled across a portion of a neutral grounding resistor (42) of a substation transformer (28) and wherein the test signal is a pulse signal generated at desired intervals by periodically closing the switch (44);

a processor (62) configured to receive signals from the current sensors (14, 16, 17, 18, 20, 22) to identify a location of the ground fault between a location at which the test signal is detected and a downstream location at which the test signal is not detected and

the processor being arranged such that locating the ground fault includes identifying zero sequence current values in phase with voltage across the grounding resistor or out of phase with current through the grounding resistor."

Claim 3 is a dependent claim.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 99 EPC and is, therefore, admissible.

2. Amendments (Article 123(2) EPC)

2.1 In its observations annexed to the summons to oral proceedings, the Board expressed doubts as to a proper basis of disclosure for amendments made to the independent claims of the requests on file.

Given the fact that appellant did not comment on the Board's observations, the Board sees no reason to judge the matter differently.

2.2 Claim 1 on file combines in its characterizing portion features from original claim 2 ("*the test signal is a pulse signal generated at desired intervals*"), claim 3 ("*by periodically closing a switch (44) coupled across a portion of the grounding resistor (42)*") and from the description on original page 11, second paragraph ("*wherein locating the ground fault includes identifying zero sequence current values in phase with voltage across the grounding resistor or out of phase with current through the grounding resistor*").

However, it is not apparent that this feature combination has a clear and unambiguous disclosure in the application as originally filed.

In particular, it is not apparent that phase sensitive detection as claimed and referred to in the second paragraph of original page 11 is meant to be applied to

the generation of the test signal as a pulse signal at desired intervals by periodically closing a switch coupled across a portion of the grounding resistor as claimed and referred to on original page 4, lines 15, 16, 20 and 21, and page 10, line 31 to page 11, line 4. In the Board's view, a skilled reader of the application documents as originally filed would instead associate phase sensitive detection with the (no longer claimed) embodiment of a test signal which is a tone signal that is injected into the system by means of a current source as a zero sequence current at a frequency other than the fundamental frequency of current (original page 4, lines 16 to 18 and 21 to 24, and page 11, lines 4 to 10).

A corresponding deficiency exists for the combination of a test signal generating device with a processor as claimed in claim 2.

- 2.3 For the above reason, the Board has come to the conclusion that the appellant's request on file does not comply with the requirement of Article 123(2) EPC.

The appellant's request is therefore not allowable.

3. Although having been informed about the above deficiencies, the appellant did not present any further comments nor propose further amendment.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

R. Schumacher

G. Assi