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**Datasheet for the decision  
of 2 July 2010**

**Case Number:** T 1534/07 - 3.4.01

**Application Number:** 00308818.4

**Publication Number:** 1092982

**IPC:** G01R 31/28

**Language of the proceedings:** EN

**Title of invention:**

Diagnostic system with learning capabilities

**Applicant:**

GENERAL ELECTRIC COMPANY

**Opponent:**

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**Headword:**

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**Relevant legal provisions:**

-

**Relevant legal provisions (EPC 1973):**

EPC Art. 54(1)(2)

**Keyword:**

"Novelty (no)"

**Decisions cited:**

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**Catchword:**

-

**Case Number:** T 1534/07 - 3.4.01

**DECISION  
of the Technical Board of Appeal 3.4.01  
of 2 July 2010**

**Appellant:** GENERAL ELECTRIC COMPANY  
1 River Road  
Schenectady  
NY 12345 (US)

**Representative:** Pedder, James Cuthbert  
London Patent Operation  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 2 May 2007  
refusing European patent application  
No. 00308818.4 pursuant to Article 97(1)  
EPC 1973.

**Composition of the Board:**

**Chairman:** H. Wolfrum  
**Members:** P. Fontenay  
J.-P. Seitz

## Summary of Facts and Submissions

- I. The appeal lies from the decision of the examining division to refuse European patent application No. 00 308 818.4. The decision was based on the ground of lack of novelty under Article 54(1) and (2) EPC 1973 in view of document DE-A-198 29 640 (D1).
- II. The claims underlying the impugned decision were filed with a letter received on 26 February 2004, following a first communication of the examining division in which it had expressed the view that the subject-matter of originally filed independent claims 1 and 6 was not new. The amended set of claims merely differed from the original claims in that reference signs had been added. The objection of lack of novelty, based on document D1, was reiterated in a second and a third communication, the latter accompanying a summons to attend oral proceedings.

In the three letters filed in reaction to the communications of the examining division, the applicant repeatedly contested the finding of lack of novelty. In the third letter filed on 6 November 2006, in view of the forthcoming oral proceedings, the appellant additionally filed an auxiliary request, which was considered allowable by the examining division.

In a fourth letter dated 14 March 2007, which followed the issuance of a communication under Rule 51(4) EPC 1973 based upon the allowable auxiliary request, the applicant indicated that it requested an appealable decision based on the main request, i.e. the set of claims filed on 26 February 2004.

The decision to refuse the application was remitted to the post on 2 May 2007.

- III. The appellant (applicant) lodged an appeal against this decision by notice received at the EPO by facsimile on 19 June 2007. The prescribed appeal fee was paid on the same day. The statement setting out the grounds of appeal was filed on 4 September 2007.

The appellant requested that the impugned decision be set aside and that a patent be granted on the basis of claims 1 to 10 filed with the statement of grounds as sole request.

As a precautionary measure, oral proceedings were requested.

The appellant's request consisted thus of the following application documents:

claims: 1-10 as filed on 4 September 2007;

description pages:

1, 4, 7-19 as originally filed;

2, 2a, 3, 5, 6 as filed on 6 November 2006;

drawing sheets: 1/5-5/5 as originally filed.

Independent claims 1 and 6 on file are, in essence, identical to claims 1 and 6 underlying the decision in suit (see below for details of the claims wording).

- IV. At the appellant's request, the Board issued a summons to attend oral proceedings, which were scheduled to take place on 28 July 2010.

In preparation of the oral proceedings, the Board issued a communication pursuant to Article 15(1) Rules of Procedure of the Boards of Appeal (RPBA) on 11 May 2010, expressing its provisional opinion with regard to the request on file. In the Board's preliminary view, no fault could be identified in the examining division's analysis of document D1 which had led to the refusal of the application for lack of novelty.

By letter dated 28 May 2010, the appellant withdrew its request for oral proceedings, which were accordingly cancelled, and requested a decision.

- V. Independent claims 1 and 6 read as follows (the differences from claims 1 and 6 underlying the decision in suit being emphasized in bold type by the Board).

"1. A system (100) for diagnosing a machine (104) by analyzing a data file generated by the machine, **the system** comprising:  
a trained database (126) which contains a plurality of trained data associated with a plurality of fault types;  
a feature extractor (112) which extracts a plurality of feature values from the data file;  
a fault detector (114) which receives said plurality of feature values extracted and produces a candidate set of faults based on said plurality of trained data;  
a user interface (122) which presents said candidate set of faults produced by said fault detector (114) to a user and allows said user to interactively input a faulty condition associated with the machine (104); and  
a learning subsystem (124) which updates said plurality of trained data based on said faulty condition input by said user."

"6. A method for diagnosing a machine (104) by analyzing a data file generated by the machine, **the method** comprising:  
receiving the data file generated by the machine (104);  
extracting a plurality of feature values from the data file received;  
accessing a plurality of trained data associated with a plurality of known fault types;  
producing a candidate set of faults based on said plurality of feature values extracted and said plurality of trained data accessed;  
presenting said candidate set of faults produced to a user;

allowing said user to interactively input a faulty condition associated with the data file; and updating said plurality of trained data based on said faulty condition input by said user."

Claims 2 to 5 and 7 to 10 are dependent claims.

- VI. This decision is issued after the entry into force of the EPC 2000 on 13 December 2007. Reference is made to the relevant transitional provisions for the amended and new provisions of the EPC, from which it may be derived which Articles of the EPC 1973 are still applicable to the present application and which Articles of the EPC 2000 are to apply.

Where Articles or Rules of the former version of the EPC apply, their citations are followed by the indication "1973" (cf. office's EPC, Citation practise, pages 4-6).

#### **Reasons for the Decision**

1. The appeal and the corresponding statement of grounds were filed before EPC 2000 entered into force; they both comply with the requirements of Articles 106 to 108 EPC 1973 and Rule 64 EPC 1973. The appeal is, thus, admissible.
2. Novelty - Article 54(1),(2) EPC 1973
  - 2.1 Document D1 discloses a system for diagnosing a machine by analysing a data file generated by the machine (cf. page 2, lines 3, 4, 23; page 5, lines 9,10). In this respect, any new artefact image 54 referred to on page 5, lines 9, 10 can be equated with a data file in the sense of the present application.

The system of D1 comprises a trained database which contains a plurality of trained data, i.e. artefact images 30, associated with a plurality of fault types (cf. page 2, lines 24-29; page 3, lines 23-33). As an aside, it is stressed that, in the absence of any definition of the notion of "trained data", such trained data could as well be identified in the set of images obtained after subtraction of ideal images or, alternatively, in the basic images ( $B_1, B_2 \dots B_N$ ) further elaborated on the basis of the initial artefact images (cf. page 4, lines 8-50).

Moreover, a feature extractor is foreseen in D1 which extracts a plurality of feature values from the data file. While it is acknowledged that, as submitted by the appellant (cf. letter filed on 26 February 2004), the extraction of a plurality of features from a data file differs from the mere comparison of such files, the Board observes that the process disclosed in D1 is not limited to a mere comparison of data but further incorporates additional steps relating to the analysis of the collected artefact images. In the

Board's judgement, the analysis carried out in D1 defines a step of extracting a plurality of feature values from the data file. Document D1 thus also implicitly discloses the corresponding processing means. In particular, in the absence of any clear definition of the concept of "feature values", the Board considers that various items or parameters referred to in D1 can be equated with "feature values extracted from the artefact image". In fact, any data or data set obtainable from the artefact image and somehow representative of at least a part of its content may qualify as a "feature value". This would, for example, apply to the image obtained after subtraction of the ideal image from the artefact image: each pixel value constituting a characteristic (feature value) obtained from the original artefact image (cf. page 5, lines 23, 24). Similarly, the set of coefficients ( $\cdot_1, \cdot_2 \dots \cdot_N$ ) determined in order to define this intermediary image in a hyperspace also represents characteristics (feature values) of the original data file (cf. page 5, lines 24-30). Finally, the various "measures" (Ma•e) referred to in D1, designed to allow the identification of a specific artefact picture within the collection of historical pictures, are also considered to constitute feature values extracted from the data file (cf. page 2, lines 34-38; page 5, lines 36-38).

A fault detector is likewise provided. It produces, on the basis of the obtained feature values, a candidate set of faults based on said plurality of trained data (cf. page 5, lines 39-42). A user interface is disclosed as well. It presents the candidate set of faults produced by the fault detector to a user, thus allowing him to interactively input a faulty condition associated with the machine (cf. page 5, lines 46-53).

Finally, a learning system updates the plurality of trained data based on the faulty condition input by the user (cf. page 5, lines 53-57), as recited in independent claim 1.

Consequently, all the features of independent claim 1 are known in combination from document D1. The claimed subject-matter is therefore not new in the sense of Article 54 EPC 1973.

- 2.2 The above analysis applies *mutatis mutandis* to the method for diagnosing defined in independent claim 6 which is therefore also not new, contrary to the requirement of Article 54 EPC 1973. Particular reference is made in this respect to page 2, lines 39-51, and page 5, lines 58-61, in D1.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:

R. Schumacher

H. Wolfrum