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**Datasheet for the decision
of 6 May 2008**

Case Number: T 0336/06 - 3.4.03

Application Number: 97933107.1

Publication Number: 0909430

IPC: G07C 3/00

Language of the proceedings: EN

Title of invention:
Condition analyzer

Patentee:
SPM Instrument AB

Opponent:
Prüftechnik Dieter Busch AG
Siemens AG

Headword:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step - no"

Decisions cited:
-

Catchword:
-



Case Number: T 0336/06 - 3.4.03

D E C I S I O N
of the Technical Board of Appeal 3.4.03
of 6 May 2008

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Representative: -

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 10 January 2006
revoking European patent No. 0909430 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: R. Bekkering
Members: G. Eliasson
J. Van Moer

Summary of Facts and Submissions

- I. This is an appeal against the revocation of European patent 0 909 430 in particular for lack of novelty and inventive step (Article 100(a) EPC 1973).
- II. The following prior art documents, among others, were considered in the decision under appeal
- D2: DE 44 27 880 A and
D5: EP 0 211 212 B.
- III. The appellant proprietor sent new claim requests with the letter of 4 April 2008 in response to a summons to oral proceedings.
- IV. At the oral proceedings before the board, the appellant proprietor filed amended claims.

The parties made the following requests:

The appellant proprietor requested that the decision under appeal be set aside and the patent be maintained on the basis of

claims 1 to 27 of the main request filed during the oral proceedings, or

on the basis of the auxiliary request sent with letter of 4 April 2008 as first auxiliary request, with deletion of claims 1 to 12 and 27 and corresponding amendments to the main request.

Respondent opponents O1 and O2 requested that the appeal be dismissed.

V. Independent claim 1 of the main request reads as follows:

"1. A method for evaluating the condition of a machine (100) having a measuring point (90), by means of a portable analysis apparatus (10), said machine also having an information carrier (120) placed on the machine on or in the vicinity of the measuring point holding interpretation information specific to the measuring point (90), said method comprising the steps of

performing a measurement by means of a sensor (20) of the analysis apparatus at the measuring point (90) at a first point in time to obtain a first measured value,

acquiring said interpretation information specific to the measuring point,

obtaining a first condition value dependent on the actual condition of the machine at the first point in time based on the first measured value and the interpretation information,

characterized by

transmitting the first condition value from the portable analysis apparatus via an interface means (70) to the information carrier (120), which is

writable, to be stored in the information carrier (120) as a locally stored first reference condition value,

at a second point in time acquiring interpretation information specific to the measuring point

at the second point in time obtaining a second condition value based on a second measured value and the interpretation information,

acquiring the first reference condition value,

producing a relation value depending on the second condition value and the first reference condition value, which relation value indicates a change in the condition of the machine."

The main request further includes independent claims 8, 13 and 27 directed to a portable analysis apparatus, a system for evaluating the condition of a machine, and a non-volatile memory, respectively.

VI. The sole independent claim of the auxiliary request reads as follows (board's emphasis indicating difference with respect to claim 13 of the main request):

"A system for evaluating the condition of a machine having a measuring point, said system comprising

a device (80) having an information carrier (120) **specific to the measuring point**, holding interpretation information specific to the

measurement point, and placed on the machine, on or in the vicinity of the measuring point (90),

a portable analysis apparatus (30) having a sensor unit (20) for performing a first measurement at the measuring point at a first point in time, to produce a first measured value dependent on the machine's movement and

interface means (70) arranged to receive interpretation information from the information carrier (120); and

information processing means arranged to produce a first condition value (K ; K_{ref}) dependent on the first measured value and the interpretation information, the information processing means also being arranged to produce, at a second point in time, a second condition value based on a second measured value and the interpretation information;

said first condition value indicating the actual condition of the machine at the first point in time, and said second condition value indicating the actual condition of the machine at the second point in time; characterized by

the interface means (70) further being arranged to transmit the first condition value to the information carrier (120) at the first point in time, for storage as a first reference condition value in the information carrier (120), which is writable, and, at the second point in time, to

acquire the first reference condition value from the information carrier (120); and wherein the information processing means (50) is arranged to produce a relation value in dependence of the second condition value and the first reference condition value,

wherein the sensor (20) and the interface means (70) are integrated in a common casing."

VII. The appellant proprietor's arguments can be summarized as follows:

- (a) Document D5 was concerned with the problem of identifying the measuring point of a machine. In contrast to the claimed invention, the reference values for each measuring point were stored in the portable analysis apparatus. The method of document D5 furthermore did not include a step of measuring and storing reference condition values using the portable analysis apparatus. On the contrary, it appeared from the passage at column 2, lines 21 to 29 that standardised measurements for bearings were used as reference data.

Hence the technical problems solved by the claimed method related to eliminating the need for storing machine related data in the portable analysis apparatus, and secondly, improving the accuracy of the evaluation of the state of the machine.

- (b) Document D2 disclosed a method for monitoring the condition of an object, such as the components of a municipal sewage system, where object-relevant

data were stored in an information carrier placed at the object to be monitored. A portable analysis apparatus in the form of a portable computer had interface means in order to transfer data to and from the information carrier, but it did not comprise a sensor. Although document D2 taught storing "all relevant data" of the object in the information carrier, it insisted that the reference values should not be stored in the information carrier but in the portable computer (column 5, lines 24 to 33; column 7, lines 49 to 56). It was also not disclosed how the reference values were obtained. Hence document D2 led away from the claimed method.

- (c) As to the auxiliary request, the claimed system specified that the sensor and the interface means of the portable analysis apparatus were integrated in a common housing. In contrast, the interface means in the portable analysis apparatus (portable computer) of document D2 were in a housing without a sensor. Hence, even if the skilled person were to modify the system of document D5 using the teaching of document D2, they would be inclined to put the interface means in a housing separate from that of the sensor.

VIII. The arguments of respondent opponents O1 and O2 can be summarized as follows:

- (a) Document D5 disclosed that the information carrier placed on each measurement point not only contained information identifying the measurement point, but could also contain the interpretation

data relevant for the measurement point (column 6, line 55 ff). The information carrier of document D5 was also "writable" as the information coded in it could be altered (column 6, lines 51 to 54 and column 11, line 53 to column 12, line 3). The skilled person would furthermore deduce from the disclosure of document D5 that the reference condition values were empirical, ie measured (column 2, lines 41 to 45; column 8, lines 5 to 7). Hence, the claimed method only differed from that of document D5 in that the reference values were stored in the information carrier placed at the measurement point.

- (b) Document D2 taught how to store the state of the object and all other object-relevant data in an information carrier at the object, which also could be a "machine" (column 3, lines 27 to 36 and lines 43 to 47; column 6, line 36). Although it was disclosed as a preferred embodiment to store the reference values not in the information carrier but in the portable analysis apparatus, the skilled person seeking to improve the method of document D5 would nevertheless learn from document D2 that it would be advantageous to store all relevant data for the measuring point in an information carrier adjacent to the measuring point. The skilled person would also immediately appreciate from the teaching of document D2 that it would be advantageous to store the reference values as well in the information carrier, as this would be consistent with the overall teaching of document D2.

(c) As to the additional problem of improving accuracy of the measurements, it was well-known in the art that the accuracy would be improved by using empirical reference values and by calibrating the analysis apparatuses against these empirical reference values.

Reasons for the Decision

1. The appeal is admissible.

2. *Main Request - Inventive step*

2.1 Document D5 is considered closest prior art and discloses a method for evaluating the condition of a machine 1 having a measuring point 4 by means of a portable analysis apparatus 16, 21 (see Figures 1 and 2; column 1, lines 3 to 17; column 8, lines 40 to 49). In order to identify the measuring points, each measuring point of the machine has an information carrier in the form of magnetic coding 83 - 87 placed on a coupling piece 82 which is mounted on the measuring point 4 (Figure 11; column 11, line 53 to column 12, line 9). As respondent opponent O1 pointed out, it is also possible that the information carrier holds interpretation information specific to the measuring point in question (column 12, line 56 to column 13, line 2).

The method of document D5 includes the steps of performing a measurement by means of a sensor 21 of the measuring analysis apparatus at the measuring point to obtain a measured value (column 8, lines 50 to column 9,

line 10), followed by the steps of acquiring interpretation information specific to the measuring point and obtaining a condition value dependent on the actual condition of the machine based on the measured value and the interpretation information (column 12, line 49 to column 13, line 2; column 6, lines 31 to 54). The condition value is compared to a reference condition value stored in the measuring analysis apparatus to produce a relation value to indicate a change in the condition of the machine (column 13, lines 9 to 16).

2.2 The method of claim 1 of the main request differs from that of document D5 in that (i) the reference condition value is obtained by performing a measurement with the portable measurement apparatus at a first point in time, using this measured value and the interpretation information to obtain a reference condition value, and transmitting the reference condition value from the portable analysis apparatus via an interface means to the information carrier; and (ii) the condition value based on a measurement at a later point of time is compared with the reference condition value which is acquired from the information carrier.

2.2.1 The appellant proprietor contended that document D5 furthermore did not disclose a writable information carrier at the measuring point (see item VII(a) above). As respondent opponent O1 however pointed out, the magnetic coding disclosed in the embodiment of Figure 11 is rendered writable by turning the individual magnets 83 - 87 around.

2.2.2 The appellant proprietor further argued that the method of document D5 did not use a reference condition value obtained by measurements on the machine itself, but instead relied on standardized or computed values which were not specific to the measuring point in question (see item VII(a) above).

The board is not persuaded by this argument, since it appears from the whole content of document D5 that only empirically obtained reference condition values were intended to be used for comparison with the measured condition values (see column 2, lines 41 to 45 referring to prior methods). However document D5 does not disclose the use of the portable analysis apparatus for measuring and calculating the reference condition value.

2.3 The claimed method has the advantage that the portable measurement apparatus does not have to be fed with data relating to the specific measurement points, as all relevant data, including the reference condition value, are stored in the information carrier adjacent to each measurement point (see paragraph 0035 of the patent specification). Furthermore, as the reference condition value is determined by measurement using the portable measurement apparatus, the accuracy of detecting changes in the condition of the machine is improved (paragraphs 0006 and 0007).

2.4 The technical problems addressed by the claimed invention thus relate to (i) finding a measurement method where the portable measurement apparatus does not have to be provided with any information at all about the machine or its measuring point; and (ii)

improving the accuracy of the measurements of the machine condition.

- 2.5 The board cannot see any technical interrelationship between problems (i) and (ii) in the sense that the concomitant solutions to the above problems would have a synergy effect, nor has the appellant proprietor alleged the existence of such an interrelationship. Therefore, problems (i) and (ii) can be treated separately in the assessment of inventive step.
- 2.6 As to problem (i), document D2 discloses a method of keeping maintenance records of utilities and machines. An information carrier 1 containing a microprocessor and a non-volatile memory is placed at each piece of equipment (Figure 2; column 3, lines 27 to 66). When maintenance is carried out, the data in the information carrier is read out to a portable analysis apparatus 5 (a portable computer) using wireless technology. After the maintenance is completed, the data are updated and rewritten into the information carrier. According to document D2, the method makes it possible to keep all object-related data in the information carrier at the object (column 3, line 67 to column 4, line 9). Although the only example disclosed in document D2 relates to maintenance of a municipal sewage system, it is mentioned that the disclosed method could be used for managing maintenance of machines as well (column 6, lines 33 to 36).
- 2.6.1 The appellant proprietor argued that document D2 neither disclosed a portable measuring apparatus with a sensor nor a step of writing a reference condition value into the information carrier. On the contrary, in

- the method of document D2, the reference condition values for the objects to be controlled were stored in the portable analysis apparatus (column 5, lines 24 to 33; column 7, lines 49 to 56) (see item VII(b) above).
- 2.6.2 As respondent opponent O2 pointed out, the general teaching of document D2 is that all object-relevant data be kept in the information carrier of the object so that this information is kept on site (column 3, lines 27 to 36 and 43 to 47; column 3, line 67 to column 4, line 9). Thus, in the board's opinion, the skilled person would appreciate from document D2 the advantages of keeping all machine or object-relevant information in an information carrier located on or in the immediate vicinity of the machine (see item VIII(b) above).
- 2.7 The skilled person faced with problem (i) of avoiding having to provide the portable measurement apparatus with any data relevant to the machine and its measuring points would find that document D2 teaches the use of a writable information carrier placed on or at the measuring point of the machine, as document D2 highlights the advantage of storing all machine-relevant data in the information carrier. For the method of document D5 this information would be the reference condition value and the interpretation information for each measurement point.
- 2.8 Regarding problem (ii), document D5 mentions in connection with prior methods that reference condition data for machines are empirically determined but without specifying the analysis apparatus to be used for this purpose (column 2, lines 41 to 45). The

skilled person would as a matter of course use the same portable analysis apparatus for measuring the reference condition, as it would serve the purpose of improving the accuracy of detecting later changes in the condition of the machine to be monitored (see item VIII(c) above).

2.9 The skilled person taking the above measures to the method of document D5 in order to solve the above-mentioned technical problems (i) and (ii) would thus end up with a method having all features of claim 1 of the main request. Therefore, in the board's judgement, the subject matter of claim 1 of the main request does not involve an inventive step within the meaning of Article 56 EPC 1973.

3. *Auxiliary request - Inventive step*

3.1 Claim 1 of the auxiliary request defines a system for evaluating the condition of a machine having a measuring point. In addition to the corresponding features of method claim 1 of the main request, claim 1 of the auxiliary request further specifies that (a) the information carrier is specific to the measuring point (first paragraph); (b) the portable analysis apparatus has *interface means* arranged to receive interpretation information from the information carrier; (c) the interface means are arranged to transmit the reference condition value to the information carrier; (d) the portable analysis apparatus has *information processing means* for carrying out the tasks of producing condition values and relation values; and (e) the sensor and the interface means are integrated in a *common casing* (last paragraph).

3.2 It is noted that the additional features (a), (b), (d), and (e) are known from document D5: The information carrier 5, 6 is specific to the measuring point as it contains data identifying the measurement point (feature (a)) (Figure 1; column 8 lines 45 to 49; column 6, lines 37 to 54). The portable analysis apparatus also has interface means 25, 26 for reading the information stored in the information carrier (feature (b)) (Figure 4 with accompanying text). The portable analysis apparatus furthermore comprises information processing means 44 for carrying out the necessary calculations (feature (d)) (Figure 5 with accompanying text). Finally, the sensor 29-31 and the interface means 25,26 are integrated in a common casing (feature (e)) (Figure 4; column 4, lines 46 to 48).

3.3 Hence the system of claim 1 of the auxiliary request differs from that of document D5 in addition to features (i) and (ii) referred to in paragraph 2.2 above in that (iii) the interface means of the portable analysis apparatus arranged for receiving interpretation information from the information carrier are also arranged to transmit the reference condition value to the information carrier.

3.4 It is noted that feature (iii) is known from document D2, since the interface means 9 of the portable analysis apparatus 5 are used to transmit and receive data to and from the information carrier (see item 2.6 above), so that an application of the teaching of document D2 to the system of document D5 would necessarily incorporate this feature. Therefore, the reasons given above for claim 1 of the main request

apply *mutatis mutandis* for the subject matter of claim 1 of the auxiliary request as well.

3.5 The appellant proprietor argued in this connection that a skilled person seeking to combine the teachings of documents D5 and D2 would not integrate the sensor and the interface means in a common casing as this was contrary to the teaching of document D2 (see item VII(c) above).

3.5.1 This argument fails to convince the board, since firstly, the analysis apparatus of document D5 has the sensor 29 to 31 and the (albeit read-only) interface means 25, 26 integrated in a common casing (see Figure 4 with accompanying text). This construction makes it possible to make an automatic and unambiguous identification of the measurement point (column 4, line 54 to column 5, line 17). A physical separation of the sensor from the interface means would not only make the portable analysis apparatus more cumbersome to operate, but would also re-introduce the risk of mixing up reference and interpretation data from different measurement points, a risk which the system of document D5 explicitly seeks to eliminate (column 3, lines 48 to 57).

3.6 For the above reasons, in the board's judgement, the subject matter of claim 1 of the auxiliary request does not involve an inventive step within the meaning of Article 56 EPC 1973.

Order

For these reasons it is decided that:

The appeal is dismissed.

Registrar

Chair

S. Sánchez Chiquero

R. Q. Bekkering