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**Datasheet for the decision
of 10 September 2021**

Case Number: T 2349/19 - 3.4.02

Application Number: 16197888.7

Publication Number: 3203226

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Language of the proceedings: EN

Title of invention:

DEVICE AND SYSTEM FOR DETECTING MALFUNCTION OF ROTATING
MACHINE USING ACOUSTIC EMISSION

Applicant:

Kabushiki Kaisha Kobe Seiko Sho

Headword:

Relevant legal provisions:

EPC Art. 84
RPBA Art. 12(4)
RPBA 2020 Art. 13(2)

Keyword:

Claims - clarity - main request (no)
Late-filed request - auxiliary requests 1 to 7 - admitted (no)

Decisions cited:

G 0007/93, T 0028/10

Catchword:



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Case Number: T 2349/19 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 10 September 2021

Appellant: Kabushiki Kaisha Kobe Seiko Sho
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 17 May 2019
refusing European patent application
No. 16197888.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman G. Decker
Members: A. Hornung
F. J. Narganes-Quijano

Summary of Facts and Submissions

- I. The applicant lodged an appeal against the decision of the examining division refusing European patent application No. 16197888.7 on the basis of Article 97(2) EPC because the main request then on file did not fulfil the requirements of Article 84 EPC. The sets of claims of the first to fourth auxiliary requests then on file were not admitted into the proceedings under Rule 116(1) EPC.
- II. With the statement setting out the grounds of appeal, the applicant filed sets of claims according to a main request and to first to sixth auxiliary requests and requested that the decision of the examining division be set aside and a patent be granted on the basis of one of these sets of claims. The sets of claims according to the main request and the first to fourth auxiliary requests are identical to the corresponding sets of claims of the main and the first to fourth auxiliary requests underlying the appealed decision, respectively. The sets of claims according to the fifth and sixth auxiliary requests were filed for the first time with the statement of grounds of appeal.
- III. Oral proceedings before the board were held on 10 September 2021. During the oral proceedings, the applicant submitted claims according to a seventh auxiliary request.
- IV. At the end of oral proceedings, the applicant confirmed its final requests as follows: that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request or of one of auxiliary requests 1 to 6 submitted with the statement of

grounds of appeal, or of the claims of auxiliary request 7 submitted at the oral proceedings of 10 September 2021.

V. Claims of the requests

Main request

Independent claim 1 according to the main request reads as follows:

"A device for detecting a malfunction of a rotating machine (5), the device comprising a detecting unit (1) configured to detect vibration of the rotating machine (5), sampling and detecting the vibration with a predetermined sampling frequency, and output, at a time at intervals of a predetermined period, a plurality of the sampled data detected within the predetermined period, a storage (22) configured to store the plurality of the sampled data outputted by the detecting unit (1), a frequency analyzer (23a) configured to analyze the frequency of the plurality of the sampled data outputted by the detecting unit (1), a determination unit (24) configured to perform a primary determination based on the result of the frequency analysis by the frequency analyzer (23a), a display unit (3) configured to display the result of the frequency analysis by the frequency analyzer (23a) in chronological order and in real time, and a transmitting unit (6) configured to transmit the plurality of the sampled data outputted by the detecting unit (1) to an information-processing device (200) for performing a secondary determination, wherein the frequency analyzer (23a) is configured to initiate the frequency analysis when the frequency analyzer (23a) has received the plurality of the sampled

data from the detecting unit (1), and wherein the analysis period from the initiation of the frequency analysis to the end of the frequency analysis is shorter than the predetermined period."

First auxiliary request

Independent claim 1 according to the first auxiliary request differs from claim 1 of the main request only in that the paragraph defining the display unit has been amended to read as follows (amendments are underlined):

"a display unit (3) configured to display the result of the frequency analysis by the frequency analyzer (23a) in chronological order and substantially in real time for allowing an operator to recognize a change in operation states of the rotating machine over time".

Second auxiliary request

Independent claim 1 according to the second auxiliary request differs from claim 1 of the main request only in that the paragraph defining the display unit has been amended to read as follows (amendments are underlined):

"a display unit (3) configured to display, using an image generating unit (25), the result of the frequency analysis by the frequency analyzer (23a) in chronological order and substantially in real time on a display screen (31) for allowing an operator to recognize a change in operation states of the rotating machine over time, wherein in case the period required for the image generating unit (25) to generate the image data for the display screen (31) is longer than the predetermined period, the image generating unit (25) is configured to use only the most current

frequency analysis processes to generate the image data for the display screen (31)".

Third auxiliary request

Independent claim 1 according to the third auxiliary request differs from claim 1 of the main request only in that the paragraph defining the display unit has been amended to read as follows (amendments are underlined):

"a display unit (3) configured to display the result of the frequency analysis by the frequency analyzer (23a) in chronological order and substantially in real time which is a timing for allowing an operator to recognize a change in operation states of the rotating machine over time".

Fourth auxiliary request

Independent claim 1 according to the fourth auxiliary request differs from claim 1 of the main request only in that "an image generating unit (25)" has been added to the device of claim 1 and in that the paragraph defining the display unit has been amended to read as follows (amendments are underlined):

"a display unit (3) configured to display, using the image generating unit (25), the result of the frequency analysis by the frequency analyzer (23a) in chronological order and substantially in real time on a display screen (31), which is a timing for allowing an operator to recognize a change in operation states of the rotating machine over time, wherein in case the period required for the image generating unit (25) to generate the image data for the display screen (31) is longer than the predetermined period, the image

generating unit (25) is configured to use only the most current frequency analysis processes to generate the image data for the display screen (31)".

Fifth auxiliary request

Independent claim 1 according to the fifth auxiliary request differs from claim 1 of the main request only in that the paragraph defining the display unit has been amended to read as follows (amendments are underlined):

"a display unit (3) configured to display the result of the frequency analysis by the frequency analyzer (23a) in chronological order and at respective times substantially in real time, which allows an operator to recognize a change in operation states of the rotating machine (5) over time".

Sixth auxiliary request

Independent claim 1 according to the sixth auxiliary request differs from claim 1 of the main request only in that "an image generating unit (25)" has been added to the device of claim 1 and in that the paragraph defining the display unit has been amended to read as follows (amendments are underlined):

"a display unit (3) configured to display, using the image generating unit (25), the result of the frequency analysis by the frequency analyzer (23a) in chronological order and at respective times substantially in real time, which allows an operator to recognize a change in operation states of the rotating machine (5) over time, on a display screen (31), wherein in case the period required for the image generating unit (25) to generate the image data

for the display screen (31) is longer than the predetermined period, the image generating unit (25) is configured to use only the most current frequency analysis processes to generate the image data for the display screen (31)".

Seventh auxiliary request

Independent claim 1 according to the seventh auxiliary request differs from claim 1 of the second auxiliary request only in that the paragraph defining the display unit has been amended to read as follows (amendments are underlined):

"a display unit (3) configured to display, using an image generating unit (25), the result of the frequency analysis by the frequency analyzer (23a) in chronological order and substantially in real time on a display screen (31) for allowing an operator to recognize a change in operation states of the rotating machine over time, the image data shows the result of the frequency analysis at the most current time point and previous time points in chronological order, thereby displaying the data in real time, wherein in case the period required for the image generating unit (25) to generate the image data for the display screen (31) is longer than the predetermined period, the image generating unit (25) is configured to use only the most current frequency analysis processes to generate the image data for the display screen (31)".

Reasons for the Decision

1. Main request - clarity

1.1 Claim 1 lacks clarity (Article 84 EPC) for the following reasons:

1.1.1 Claim 1 does not define the exact meaning of the expression "real time" in the feature of claim 1 reading "a display unit (3) configured to display the result of the frequency analysis by the frequency analyzer (23a) in chronological order and in real time". Depending on the concrete expectation on the speed of displaying the result of the analysis, the same display process could be considered to be "real time" or not. The expression "real time", in its broadest meaning and in the context of claim 1, has merely a relative meaning which does not enable a clear distinction of the claimed device over the prior art.

1.1.2 As explained in the appealed decision, point II.A.2, first paragraph, "according to the embodiment described in fig. 3 and page 30, lines 2-20 [*actually lines 2-22*] of the application, the time required to generate the displayed image is longer than the time required for sampling and analyzing the data". The examining division concluded that this did not correspond to the general understanding of the analysis result being displayed in "real time". Therefore, the expression "real time" was not clear and was not supported by the description. The board concurs with this view.

1.1.3 Furthermore, the board agrees with the examining division's statement in the appealed decision, point II.A.2, second paragraph, according to which "claim 1 does not present any technical apparatus features which would ensure that 'display in real time' is obtained. The feature was therefore seen as a result to be achieved".

1.2 The applicant's counter-arguments were not found to be convincing for the following reasons:

1.2.1 According to the applicant, the expression "real time" in claim 1 is not to be understood in the sense of "real-time computing", but "[t]he term 'real time' is directed to displaying the result of the primary determination 'as fast as possible' (i.e. only the time required for display processing), but without any further delay due to e.g. further data processing other than display processing" (statement of grounds of appeal, page 2, last paragraph, to page 3, third paragraph).

The applicant referred to the Guidelines for Examination in the European Patent Office, March 2021 ("Guidelines"), F-IV-4.2, according to which a term in a claim must be given the meaning it normally has in the relevant art, unless the application provides a specific meaning to the term, as in the present case. The applicant referred specifically to page 4, second paragraph, of the application as filed, disclosing a "device [which] displays, substantially in real time, the operating states of the rotating machine at respective times, which allows an operator to recognize a change in operation states of the rotating machine over time". The applicant also referred to page 21, lines 6 to 10, disclosing that the "image data also shows the two dimensional result (the result of the frequency analysis) at the most current time point and previous time points in chronological order, thereby displaying the data in real time and in three dimensions".

With respect to the clarity objection relating to the claim being defined as a result to be achieved, the applicant submitted that real-time display was enabled by the feature of claim 1 according to which the analysis

period was shorter than the predetermined period. The fact that the display of certain sets of data was skipped if a more recent set of data was available (see page 30, lines 16 to 22 of the patent application) did not contravene the subject-matter of claim 1 but, on the contrary, was evidence for real-time display.

- 1.2.2 The board is not convinced by these arguments referring essentially to the description of the application as filed. Indeed, a claim must be clear in itself. In general, it is not sufficient that an unclear feature of a claim is merely clarified by an explanation given in the description of the patent application. Secondly, the definition of "real time" proposed by the applicant, namely "as fast as possible", confirms that the expression "real time" has only a relative meaning and, hence, is unclear.

The additional passages in the description, referred to by the applicant, do also not provide a clear definition what exactly is to be understood by the expression "real time" in present claim 1. As a matter of fact, whether an operator recognizes or not a change in operation states of the rotating machine depends largely on the operator itself and, therefore, cannot clarify the meaning of the expression "real time" in claim 1. Similarly, referring to image data showing results of the frequency analysis "at the most current time" leaves open which point in time is exactly meant.

While a short analysis period (shorter than an undefined predetermined period) may be helpful for enabling quick display of the analysis results, this does not clarify the exact meaning of the term "real time", nor does it define how the result of real time display is actually achieved. In addition, in the board's view, skipping analysis

results in case of a slow displaying of the results is not compatible with, but contradicts the meaning of real-time displaying.

2. First to fourth auxiliary requests - Admissibility

2.1 The first to fourth auxiliary requests are not admitted into the proceedings (Article 12(4) RPBA 2007).

2.1.1 Auxiliary requests 1 to 4 on file are the same as auxiliary requests 1 to 4 submitted by the applicant during the oral proceedings before the examining division. These requests were not admitted by the examining division into the examination proceedings for being late filed (Rule 116(1) EPC) in combination with the fact that the examining division considered that auxiliary requests 1 to 4 *prima facie* infringed the requirements of Article 84 EPC because the amendments of claim 1 did not clarify the expression "real time". In addition, auxiliary requests 3 and 4 were considered by the examining division to infringe *prima facie* the requirement of Article 123(2) EPC. See the appealed decision, points II.B to II.D.

2.1.2 The two clarity objections raised by the examining division during the oral proceedings and relating to "real time" and to "frequency analysis shorter than the predetermined period" essentially had not changed since at least the issuance of the examining division's summons to oral proceedings. Hence, no change of the subject of the proceedings has occurred which could have justified the filing of auxiliary requests 1 to 4 only during the oral proceedings before the examining division. In fact, the applicant could and should have filed auxiliary requests 1 to 4 before the oral proceedings taking place before the examining division. Therefore, the board is not able to see an undue exercise of discretion in the way the

examining division handled the case. Following the principle laid down in the decision G 7/93, point 2.6, and applied, for instance, in T 28/10, point 2.1, principle according to which the exercise of discretion by the first instance should only be overturned by the board in case wrong criteria were applied or the discretion was exercised unreasonably, the board sees no reason that would justify reviewing and overturning the examining division's decision in this respect in favour of the applicant. In addition, according to Article 12(4) RPBA 2007 the board has discretion to hold inadmissible requests which were not admitted in the first instance proceedings, and the board sees no particular reason either that would justify exercising its discretion in the sense of admitting the auxiliary requests into the appeal proceedings.

2.1.3 Moreover, the board shares the view of the examining division that the amendments carried out in auxiliary requests 1 to 4 *prima facie* do not to overcome the present clarity objections. In particular:

- Auxiliary request 1: The amended feature is *prima facie* unclear since whether an operator recognises a change in operation states of the rotating machine over time depends on the capability of an operator not forming part of the claimed device.

- Auxiliary request 2: Claim 1 of auxiliary request 2 comprises *inter alia* the same amended feature as claim 1 of the auxiliary request 1, which is *prima facie* unclear (see above). The additional amended feature in claim 1 of auxiliary request 2 is *prima facie* also unclear since it defines the processing of the image generating unit only in a special situation which may or may not occur. In case that this special situation

does not occur, no clarification of the meaning of the expression "real time" is provided by the amended feature of claim 1 (see also the appealed decision, pages 6 and 7, point II.C.4). Defining only what happens in a special situation is unsuitable to clarify the meaning of the expression of claim 1 "to display the result (...) in real time" in all situations.

- Auxiliary request 3: Essentially the same objection of *prima facie* lack of clarity applies to auxiliary requests 1 and 3, since the added expression in claim 1 of auxiliary request 3, i.e. "which is a timing", does not modify the fact that in general a claimed feature of a device claim cannot be defined by referring to an operator not forming part of the claimed subject-matter.

- Auxiliary request 4: Auxiliary request 4 comprises the amended features of auxiliary request 2 and 3. Therefore, claim 1 of auxiliary request 4 *prima facie* lacks clarity for the same reasons as claim 1 of auxiliary requests 2 and 3.

2.2 The applicant's counter-arguments were not found convincing by the board.

2.2.1 The applicant submitted that "it turned out by handing out a printout of the 'Wikipedia' article and stating the (incorrect) interpretation of the term 'real-time' based thereon by the Examining Division (...) that a further clarification of the criticized term may be needful" (statement of grounds of appeal, page 8, fourth paragraph).

The applicant's argument cannot be followed since the objection of lack of clarity concerning the term "real time" had already been raised well in advance to the oral proceedings before the examining division, see communication dated 14 June 2018, point 1, and summons to oral proceedings, point 1.3. Moreover, the Wikipedia article was mentioned by the applicant also in advance to the oral proceedings, namely in its letter dated 29 August 2018, page 4, first paragraph. Therefore, as stated in point 2.1.2 above, no change of the subject of the proceedings occurred which would have justified the filing of auxiliary requests 1 to 4 only during the oral proceedings.

- 2.2.2 The applicant referred to the Guidelines, F-IV-4.2, according to which the examining division would require the claim to be amended if the claim was unclear. The applicant deduced therefrom that the examining division should have given the applicant an opportunity to amend the claim even during the oral proceedings before the examining division.

The board cannot agree with the applicant that the amendments filed during the oral proceedings before the examining division and intended to overcome clarity objections should have been admitted into the proceedings by the examining division because these clarity objections were raised in two previous communications by the examining division. The applicant had ample time to file these amendments before the oral proceedings. The applicant could and should have filed auxiliary requests 1 to 4 before the oral proceedings held before the examining division (Rule 116(1) EPC).

3. Fifth and sixth auxiliary requests - Admissibility

3.1 Fifth and sixth auxiliary requests are not admitted into the proceedings since they could and should have been filed during the first-instance proceedings (Article 12(4) RPBA 2007).

The clarity objections raised by the examining division against the expression "real time" remained unchanged during the whole first-instance proceedings. Moreover, the added feature in claim 1 of auxiliary requests 5 and 6, i.e. "at respective times substantially in real time", *prima facie* does not overcome the present clarity objections, since it is unclear which "times" are referred to in the expression "respective times".

3.2 The applicant argued that it became aware of the objection under Article 123(2) EPC raised against auxiliary requests 3 and 4 only when reading the written decision of the examining division. Therefore, auxiliary requests 5 and 6, filed with the intention to overcome the objections of added subject-matter, could not have been filed during the first-instance proceedings.

The board cannot agree with the applicant. According to the minutes of the oral proceedings held before the examining division, an objection of added subject-matter was effectively raised by the examining division against auxiliary requests 3 and 4 during the oral proceedings (see minutes of the oral proceedings, page 3). Therefore, the applicant could and should have filed auxiliary requests 5 and 6 during the oral proceedings.

4. Seventh auxiliary request - Admissibility

The seventh auxiliary request is not admitted into the proceedings (Article 13(2) RPBA 2020).

4.1 The set of claims of the seventh auxiliary request was filed at the end of the oral proceedings before the board. Claim 1 of the seventh auxiliary request differs from claim 1 of the second auxiliary request in that "the image data shows the result of the frequency analysis at the most current time point and previous time points in chronological order, thereby displaying the data in real time". This amendment is intended to clarify the meaning of the expression "display (...) in real time".

According to Article 13(2) RPBA 2020, "[a]ny amendment to a party's appeal case made after (...) notification of a summons to oral proceedings shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned". The board is unable to see any such exceptional circumstances justifying filing the seventh auxiliary request only at the oral proceedings. Indeed, the objection of lack of clarity was raised well before the oral proceedings before the examining division (see points 2.1.2 and 2.2.1 above) and has not changed in substance since then.

4.2 The applicant submitted that the circumstances had changed in that the board had recognised that there was an invention defined in the patent application and that only a minor lack of clarity persisted with regard to what happened if the specific case defined in claim 1 of the second auxiliary request, i.e. "in case the period required for the image generating unit (25) to generate the image data for the display screen (31) is longer than the predetermined period", does not occur. The added feature in claim 1 of the seventh auxiliary request clarified how the expression "display (...) in real time" is to be understood in case that the specific case defined in claim 2 of the second auxiliary request does not occur.

Moreover, the applicant submitted that oral proceedings before the board are there to discuss the case with the board. In the applicant's view, the present exceptional circumstances justifying the late filing of the seventh auxiliary request were:

- (a) The amendment is only a minor modification of the claim wording.
- (b) Due to the amendment claim 1 fulfils the requirement of Article 84 EPC.

The board cannot agree with the applicant's submission according to which the circumstances had changed. Since the requirements of novelty and inventive step had not been discussed at any time during oral proceedings before the applicant filed the seventh auxiliary request, the board had never recognised that there is an invention defined in the patent application. Rather, the board had indicated in point 7 of its communication under Article 15(1) RPBA 2020 that it was inclined to share the examining division's opinion that the claimed subject-matter lacked an inventive step over document D6.

Moreover, there is no distinction made in Article 13(2) RPBA 2020 as to whether the modification is a minor or a major one. The board acknowledges that oral proceedings serve the purpose of discussing the case with the board on the basis of requests filed in time and admitted into the proceedings. Still further, the board is not convinced that the amended feature clarifies the meaning of the expression "display (...) in real time". For instance, it is *prima facie* not clear which exact "time point" is referred to in the expression "at the most current time point".

5. In view of the above, none of the applicant's requests is allowable or admitted into the proceedings and, therefore,

there is no reason to set aside the contested decision.
Consequently, the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



L. Gabor

G. Decker

Decision electronically authenticated