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**Datasheet for the decision
of 22 January 2019**

Case Number: T 0501/15 - 3.2.04

Application Number: 03782370.5

Publication Number: 1576289

IPC: F04B51/00, F04B49/06

Language of the proceedings: EN

Title of invention:

METHOD AND SYSTEM FOR MONITORING A RECIPROCATING COMPRESSOR

Patent Proprietor:

Nuovo Pignone Holding S.P.A.

Opponent:

Prognost Systems GmbH

Headword:

Reciprocating Compressor/NUOVO PIGNONE

Relevant legal provisions:

EPC Art. 108, 123(2)

EPC R. 99(2)

Keyword:

Admissibility of appeal - appeal sufficiently substantiated
(yes)

Amendments - extension beyond the content of the application
as filed (yes)

Decisions cited:

T 1045/02

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0501/15 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 22 January 2019

Appellant:

(Patent Proprietor)

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 5 January 2015
revoking European patent No. 1576289 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman

A. de Vries

Members:

S. Oechsner de Coninck

T. Bokor

Summary of Facts and Submissions

- I. The appellant (proprietor) lodged an appeal received on 5 March 2015 against the decision of the opposition division dispatched on 5 January 2015 on the revocation of the patent EP 1 576 289, and simultaneously paid the appeal fee. The statement setting out the grounds of appeal was received on 14 May 2015.
- II. The opposition was filed against the patent as a whole and based on Article 100(a) together with 52(1), 54(1) and 56 EPC, as well as Article 100(b) together with 83 EPC.
- III. The opposition division held that the subject-matter of granted claim 1 lacked novelty, and was insufficiently disclosed, and that none of the auxiliary requests then on file met the requirements of Article 123(2) or of Article 84 EPC.
- IV. Oral proceedings were held on 22 January 2019.
- V. The appellant (proprietor) requests that the decision under appeal be set aside, and the patent be maintained in an amended form on the basis of any of the Auxiliary Requests 1 to 7, all filed with the grounds of appeal dated 14 May 2015.
- VI. The respondent (opponent) requests that the appeal be rejected as inadmissible or at least be dismissed and that the revocation of European patent No 1 576 289 be confirmed.
- VII. The wording of the independent claim 1 of the relevant requests reads as follows:

Auxiliary request 1

"Method for monitoring a reciprocating compressor (2) enabling a real-time and predictive diagnosis of the faults and malfunctions of the compressor, comprising the following steps:

receiving a plurality of signals corresponding to parameters relating to the operating state of the compressor (2),

processing the parameters relating to the operating state of the compressor to produce operating parameters and comparing these results with reference parameters or with values obtained from mathematical relations or with corresponding values measured in the field to determine whether the machine is operating in design conditions and whether a variation found in the operating parameters is due to a physiological phenomenon/input factors or a pathological phenomenon/anomaly;

if it is due to a pathological phenomenon/anomaly comparing the measured values of these parameters with critical values contained in a database comprising a matrix in which each row represents critical values of the said parameters relating to the operating state of the compressor associated with a specific anomaly,

sending a signal according to the match between the measured values and the critical values, the signal representing said specific anomaly of the operating state of the compressor (2)."

Auxiliary request 2

- I. Method for monitoring a reciprocating compressor (2) enabling a real-time and predictive diagnosis of the faults and malfunctions of the compressor, comprising the following steps:
 - receiving data measured by a plurality of sensors associated with the reciprocating compressor corresponding to parameters relating to the operating state of the compressor (2) to be compared with data obtained from a design specification (34) of the compressor in a preliminary comparison step,
 - on the basis of the preliminary comparison step, comparing the measured values of these parameters with critical values contained in a database comprising a matrix in which each row represents critical values of the said parameters relating to the operating state of the compressor associated with a specific anomaly,
 - sending a signal according to the match between the measured values and the critical values, the signal representing said specific anomaly of the operating state of the compressor (2).

Auxiliary Request 3

1. Method for monitoring a reciprocating compressor (2) enabling a real-time and predictive diagnosis of the faults and malfunctions of the compressor, comprising the following steps:
 - receiving data measured by a plurality of sensors associated with the reciprocating compressor corresponding to parameters relating to the operating state of the compressor (2),
 - performing a first comparison to analyse reference parameters (33) with respect to data processed by a design program (36), data measured by the sensors (31) and data entered manually with respect to the reference parameters (33) and a second comparison to analyse the reference parameters (33) with respect to the data measured by the sensors (31) and to those entered manually (32);
 - if an anomaly is detected, comparing the measured values of these parameters with critical values contained in a database comprising a matrix in which each row represents critical values of the said parameters relating to the operating state of the compressor associated with a specific anomaly,
 - sending a signal according to the match between the measured values and the critical values, the signal representing said specific anomaly of the operating state of the compressor (2).

Auxiliary Request 4

1. Method for monitoring a reciprocating compressor (2) enabling a real-time and predictive diagnosis of the faults and malfunctions of the compressor, comprising the following steps:
 - receiving data measured by a plurality of sensors associated with the reciprocating compressor corresponding to parameters relating to the operating state of the compressor (2),
 - carrying out a first comparison (37) between the data measured by the sensors (31), manually entered data (32), data processed by a design program (36) and reference parameters (33) and a second comparison made between the manually entered data (32) and the reference parameters (33);
 - if an anomaly is detected, comparing the measured values of these parameters with critical values contained in a database comprising a matrix in which each row represents critical values of the said parameters relating to the operating state of the compressor associated with a specific anomaly,
 - sending a signal according to the match between the measured values and the critical values, the signal representing said specific anomaly of the operating state of the compressor (2).

Auxiliary Request 5

1. Method for monitoring a reciprocating compressor (2) enabling a real-time and predictive diagnosis of the faults and malfunctions of the compressor, comprising the following steps:
 - reading data from sensors (31) associated with the reciprocating compressor, reading manually entered data (32) and reading reference parameters (33) stored in a processing unit;
 - performing a preliminary comparison between the data measured by the sensors (31) and data obtained from the design specifications (34),,
 - carrying out a first comparison (37) between the data measured by the sensors (31), manually entered data (32), data processed by a design program (36) and reference parameters (33) and a second comparison made between the manually entered data (32) and the reference parameters (33);
 - if an anomaly is detected, searching (41) in a matrix of anomalies (40) until a row meeting the processed conditions is found and generating a message (42) which indicates the characteristics of the encountered anomaly.

Auxiliary Request 6

1. Method for monitoring a reciprocating compressor (2) enabling a real-time and predictive diagnosis of the faults and malfunctions of the compressor, comprising the following steps:
 - receiving a plurality of signals corresponding to parameters relating to the operating state of the compressor (2),
 - processing the parameters relating to the operating state of the compressor to produce operating parameters and comparing these results with reference parameters or with values obtained from mathematical relations or with corresponding values measured in the field to determine whether the machine is operating in design conditions and whether a variation found in the operating parameters is due to input factors or an anomaly;
 - if it is due to an anomaly comparing the measured values of these parameters with critical values contained in a database comprising a matrix in which each row represents critical values of the said parameters relating to the operating state of the compressor associated with a specific anomaly,
 - sending a signal according to the match between the measured values and the critical values, the signal representing said specific anomaly of the operating state of the compressor (2).

Auxiliary request 7

1. Method for monitoring a reciprocating compressor (2) enabling a real-time and predictive diagnosis of the faults and malfunctions of the compressor, comprising the following steps:
 - receiving a plurality of signals corresponding to parameters relating to the operating state of the compressor (2),
 - processing by a design program the parameters relating to the operating state of the compressor to produce operating parameters and comparing these results with reference parameters or with values obtained from mathematical relations or with corresponding values measured in the field to determine whether the machine is operating in design conditions and whether a variation found in the operating parameters is due to input factors or an anomaly;
 - if it is due to an anomaly comparing the measured values of these parameters with critical values contained in a database comprising a matrix in which each row represents critical values of the said parameters relating to the operating state of the compressor associated with a specific anomaly,
 - sending a signal according to the match between the measured values and the critical values, the signal representing said specific anomaly of the operating state of the compressor (2).

VIII. The appellant argues as follows:

- The appeal is admissible as the auxiliary requests were refused only on added subject-matter under Article 123(2) EPC and clarity under Article 84 EPC. The appeal, which pursues only the auxiliary requests, addresses these issues.
- With respect to added subject-matter, the features derived from the passages of the description that were added to claim 1 of each request are related to one of the steps already present in claim 1 as granted, they therefore are supported by the original disclosure of the application as filed.

IX. The respondent argues as follows:

- The appeal is inadmissible, as the grounds of novelty and sufficiency of disclosure considered in the decision for the main request are not addressed in the grounds of appeal. This assessment corresponds to the settled case law, e.g. decision T1045/02.
- Claim 1 of each of the requests lacks some of the features that were disclosed in combination in the passages of the description from which they were extracted.

Reasons for the Decision

1. Admissibility of the appeal
 - 1.1 The admissibility of the proprietor-appellant's appeal is contested, because according to the respondent it would fail to address the grounds of novelty and sufficiency that were part of the impugned decision.
 - 1.2 The decision indeed concludes that the main request is not allowable on the grounds of novelty and sufficiency. However, the appellant does not pursue the main request but rather the auxiliary requests 1 to 6, which have been re-filed together with a further new auxiliary request 7 with the statement of grounds. These requests were held in the decision to contravene the provisions of Article 123(2) and/or 84 EPC. For these requests the decision is silent regarding novelty and sufficiency of disclosure. Nor is the Board able to infer in some way or another from the decision, what the division's view might have been for these issues for these requests.

The grounds of appeal contain, in relation to each of the above auxiliary requests, arguments relating to the reason that lead the opposition division to hold that request not allowable (see e.g. page 2, reasons for compliance of the first auxiliary request with Art. 84 and 123(2) EPC, and on page 3 the issue of added subject-matter against the amended first auxiliary request). Consequently, the statement of grounds formally addresses all the grounds upon which the rejection of these requests, which are maintained upon appeal, is based. For this reason the respondent's opinion that the grounds fail to give arguments in support of novelty or sufficiency for these requests is not relevant for the question of admissibility.

1.3 The respondent furthermore refers to the case law and in particular to the decision T 1045/02 to support his view that the statement of grounds failed to meet the minimum requirements in that it dealt with only one of several grounds. The decision is quoted in the passage of the case law explaining the general principles that the examination of whether the requirements of Art. 108, third sentence, EPC are met, has to be made on the basis of the contents of both the statement of grounds of appeal and of the decision under appeal, and that whether a statement of grounds meets the requirements of Article 108 and Rule 99(2) EPC 1973 can only be decided on a case-by-case basis (Case Law of the Boards of Appeal, 8th edition 2016 (CLBA) IV.E.2.6.3, in particular that the statement of grounds are to be analysed vis-à-vis reasons in the decision (CLBA IV.E.2.6.3 b)).

1.4 Case law thus suggests a case-by-case approach that considers the contents of the statement of grounds and the decision under appeal, but is otherwise not

prescriptive as to particular principles that must apply when considering individual cases. Indeed T 1045/02 itself refers to these principles, see 1. of the Reasons. In the present case the Board has applied the general principle and considered both the statement of grounds and decision under appeal and found that, for the relevant requests of the present appeal, the impugned decision considered only added subject-matter and clarity, and that both issues are addressed in the statement of grounds. Both issues are moreover addressed to a degree that requires little or no effort on the part of the Board or the other party to understand why the appellant considers that the decision is wrong in its findings on these issues, nor indeed has this been argued.

- 1.5 In addition, the Board does not find the case considered in T1045/02 cited by the respondent to be sufficiently analogous to the present case. That case concerned an appeal against a decision by the examining division according to the state of the file where not the decision itself but the relevant communications contained the novelty and clarity objections. There, for amended claims of a main request filed in appeal the statement of grounds of appeal only addressed lack of clarity. However, the file itself contained an indication from the examining division that importing the subject-matter of claim 2 would not make claim 1 novel, see 3. of the Reasons in T 1045/02. In other words, the decision was seen as containing reasons on the issue of novelty for a relevant claim. In the present case the principal request is the unamended auxiliary request 1, which the decision under appeal considered not allowable solely on the grounds of added matter and lack of clarity; both issues are addressed in detail in the statement of grounds.

1.6 The Board thus concludes that the appeal is admissible pursuant Article 108, third sentence, and Rule 99(2) EPC.

2. Added subject-matter

2.1 The present European patent EP 1 576 289 B1 was filed as an international application PCT/EP2003/014059 which was published by WIPO under International publication number WO-A-2004/055372. Apart from the citation of relevant prior art in paragraph 7, the description of the granted patent has remained unchanged and is identical to the description of the application as filed. In the following reference is made to the relevant passages of the "B" publication, cited by the appellant, which for the purpose of Article 123(2) EPC are identical in content to those of the corresponding passages in the application as filed.

All requests submitted in appeal in particular comprise an independent claim 1 that has been amended by adding further limitations in isolation from specific passages of the description as originally filed where they appear in a particular context. When selected features are taken from passages of the description while other features of the same passage are not incorporated, this may result in an intermediate generalisation of the original specific disclosure. According to established jurisprudence, an intermediate generalisation is justified only in the absence of any clearly recognisable functional or structural relationship among the features of the specific combination or if the extracted features are not inextricably linked with those features cf. CLBA II.E. 1.7.

For all requests, it therefore needs to be established whether in the eyes of the skilled reader, the steps added from the description in the first or second bullet point of claim 1 are seen to be structurally and functionally unrelated to other steps that form part of the embodiment originally disclosed but which have not been incorporated into the amended claim.

2.2 Auxiliary requests 1, 6 and 7

2.2.1 Claim 1 according to the auxiliary request 1 has been amended by adding a step (second bullet point) that requires processing the parameters relating to the operating state of the compressor to produce operating parameters and comparing these results with reference parameters or with values obtained from mathematical relations or with corresponding values measured in the field to determine whether the machine is operating in design conditions and whether a variation found in the operating parameters is due to a physiological phenomenon/input factors or a pathological phenomenon/anomaly.

2.2.2 As support for this amendment the appellant cites paragraphs 37 to 39 of the "B" publication (page 10, lines 11 to page 11, line 8 of the published application as filed).

2.2.3 It is immediately clear and is also undisputed, that the cited passage does not provide a literal basis for the added step as worded. Moreover, cited paragraphs 37 to 39, appear in a given context, namely of a specific embodiment of a sequence of processing steps, as shown schematically in figure 2 and detailed in paragraphs [0027] to [0034] and then exemplified from paragraph [0035] onwards. This sequence involves reading sensed

data, manually entered data and reference parameters (paragraph [0028]), followed by a preliminary comparison of sensed data and design specifications (34) in a design program (36) (paragraph [0029]). Subsequently, a 1st comparison (37) of the sensed data, manually entered data, the data output by the design program and reference data, and a 2nd comparison (38) of the manually entered data and absolute data takes place, paragraphs [0031],[0032]. Depending on the results of the two comparisons a search (41) is made in a matrix of (known) anomaly conditions to identify the processed conditions and a signal generated to indicate the characteristics of the anomaly, paragraph [0034]. The totality of these features represent a diagnostic program that compares sensed, manual, design and reference input to identify deviations and their causes. This diagnostic depends on the particular interplay of the various inputs and outputs and the particular sequence in which they are compared and processed. Thus the various steps in this sole embodiment of the diagnostic program are operatively and functionally tightly bound together.

- 2.2.4 That paragraph 37 is to be read in context is apparent from its opening lines, where it starts off by referring to "aforesaid parameters with the exception of purely mechanical ones" that "are advantageously processed by the design program" as they provide an input thereof.

The second processing step added to claim 1 is more generally formulated in that it requires *all* the parameters relating to the operating state to be processed in an unspecified way, without the intervention of a design program. Therefore at least with respect to the parameters relating to the

operating state, claim 1 has been generalised. Likewise, paragraph [0037] specifies processing by a design program, which in the preceding paragraphs involves comparison of sensed data and design specifications (paragraph [0027]). That feature is omitted from the processing step added to claim 1. For the skilled person it is clear from paragraph [0037] read in context, that there is a clear functional link between processing of the "aforesaid" parameters with the exception of mechanical ones by the design program and the resultant operating parameters calculated by the design program. Consequently, omitting these features results in an unallowable intermediate generalization of the original specific disclosure. A similar conclusion is drawn when considering paragraph [0038] also cited as support. This paragraph also refers to "the aforesaid" and not just any reference parameters as claimed. The "aforesaid" reference parameters are in fact those read in reading step 33, paragraph [0028], and used in a first comparison, paragraph [0031], and analysed in a second comparison, paragraph [0032]. Thus, these reference parameters are disclosed in close functional relationship with these other steps, which have not been included in claim 1.

2.2.5 The same also applies to the action initiated in the processing step upon determination of whether a variation is due to "pathological" phenomena. Paragraph [0039] explicitly requires the program to "fill in" the matrix (see lines 8-11). This operation which sets additional parameters in the matrix that enable error or fault diagnosis in the subsequent comparison step will be understood by the skilled person as functionally linked to the step of determination of the type of variation as defined in the third bullet point

of the claim. Omission of this intermediate additional step results in a further unallowable intermediate generalization of the original specific disclosure. .

- 2.2.6 The above omissions are also not supported by the general operation outlined in paragraphs [0017] and [0027] relating to the diagnostic program using parameters measured by the sensors. Neither mention any intermediate processing of operating state parameters prior to the final diagnostic step (penultimate bullet point of claim 1). That feature only appears in the description of the detailed embodiment in relation to figure 2 mentioned in paragraph [0027] and of which it is an integral aspect.
- 2.2.7 The Board concludes that claim 1 according to the auxiliary request 1 contains subject-matter extending beyond the content of the application as filed, contrary to Article 123(2) EPC.
- 2.2.8 Claim 1 according to auxiliary request 6 deletes from claim 1 according to auxiliary request 1 the expressions "physiological phenomenon/" and "pathological phenomenon/", while claim 1 according to auxiliary request 7 adds to the processing step defined in the second bullet point of claim 1 according to auxiliary request 6 the expression processing by "*a design program*". Though these amendments address some aspects discussed above, both versions of claim 1 of these requests still lack the definition of the specific type of parameters representing the operating state of the compressor used by the design program to produce operating parameters, as well as the reading, comparison and analysis of reference parameters in corresponding steps, and the requirement that the added design program fills in the matrix also considered

functionally related to that step. Therefore the conclusion drawn for the auxiliary request 1 in respect of the subject-matter extending beyond the content of the application as filed also holds for both auxiliary requests 6 and 7. This has not been contested by the appellant.

2.3 Auxiliary request 2

2.3.1 Claim 1 according to auxiliary request 2 follows an alternative approach, and modifies the receiving step in the first bullet point of claim 1 as granted to read as follows: "receiving data measured by a plurality of sensors associated with the reciprocating compressor corresponding to parameters relating to the operating state of the compressor (2) to be compared with data obtained from a design specification (34) of the compressor in a preliminary comparison step". This amendment is said to be supported by paragraph [0029], relating to a preliminary comparison of data obtained from the design specification with data measured by the sensors.

As above the added formulation is not identical to the wording of paragraph [0029] cited as basis. Likewise, paragraph [0029] is meant to be read in the context of the preceding and subsequent paragraphs describing the operation of the specific scheme shown in figure 2. This is for example apparent from its opening lines "Additionally, other data to be compared", and subsequent paragraph [0030] describing the preliminary comparison in detail resulting in output for a design program outputting further comparison parameters. Within this context this preliminary comparison is functionally linked to the input feeding into it and the subsequent design and comparison steps to which it

outputs. None of these features appear in claim 1 of this request, which consequently results in an unallowable intermediate generalization of the specific disclosure of the figure 2 scheme.

2.3.2 For the above reason claim 1 according to auxiliary request 2 must also fail on the ground of added subject-matter pursuant Article 123(2) EPC.

2.4 Auxiliary requests 3 to 5

2.4.1 Claim 1 according to auxiliary request 3 adopts a further alternative approach rephrasing the initial receiving step and adding first and second comparison steps that read as follows: "performing a first comparison to analyse reference parameters (33) with respect to data processed by a design program (36), data measured by the sensors (31) and data entered manually with respect to the reference parameters (33) and a second comparison to analyse the reference parameters (33) with respect to the data measured by the sensors (31) and to those entered manually (32)"

These first and second comparison steps are submitted to be based on paragraphs [0031] and [0032]. As concluded by the opposition division, both these comparison steps occur after the step of reading all the data according to paragraphs [0028] and [0029], and performing a preliminary comparison step as explained in paragraph [0030], see above. This is evident from the opening lines of paragraph [0031] - "after the step of reading all the data" establishes a clear link with at least that former step as it is a prerequisite for the necessary input data to be compared in the newly defined comparison steps.

2.4.2 The appellant submits that the previous step of reading all the data is already present in the first step of receiving data measured by a plurality of sensors. However this step requires only data measured by sensors to be received as compared to "all the data" mentioned in paragraph [0031] and which also includes other data besides sensed data. For example, the first and second comparison steps also operate on reference parameters stored in the processing unit (last line of paragraph 28) and the output of the preliminary comparison described in the immediately preceding paragraph [0030]. As above, the reading, preliminary and following comparison steps are functionally closely related. Consequently, omission of these features results in an unallowable intermediate generalization of the original specific disclosure.

2.4.3 Claim 1 of auxiliary request 4 corresponds to that of auxiliary request 3 but with reformulated first and second comparison steps of auxiliary request 3. These amendments fail to address the problems identified for claim 1 of auxiliary request 3 so that claim 1 of auxiliary request 4 is found to contravene the provisions of Article 123(2) EPC for the same reasons. Additionally, where the description has the 2nd comparison "made between the manually entered data and the absolute values" (paragraph [0031]), or "analys[ing] the reference parameters with respect to the data measured by the sensors and to those entered manually", claim 1 requires a 2nd comparison "made between the manually entered data and the reference parameters". The claimed version is decidedly different; an original basis is not apparent nor has one been argued.

2.4.4 Claim 1 according to auxiliary request 5 apart from bringing reading and preliminary comparison steps in closer alignment to the original disclosure, still retains the second comparison steps in the objectionable form of auxiliary request 4, and for this reason alone fails the requirements of Article 123(2) EPC. Additionally, the Board notes that this claim omits the final signal sending step present in all other requests, in particular also in granted claim 1. Apart from extending the scope of protection contrary to Article 123(3) EPC, this omission also represents a further intermediate generalization vis-a-vis the originally disclosed method of which the final sending step is a functionally integral part.

3. As none of the submitted requests is allowable for added subject-matter contrary to Article 123(2) EPC, the Board can but confirm the impugned decision to revoke the patent.

Order

For these reasons it is decided that:

The appeal is dismissed

The Registrar:

The Chairman:



M. Kiehl

A. de Vries

Decision electronically authenticated