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**Datasheet for the decision
of 4 July 2017**

Case Number: T 0302/13 - 3.2.04

Application Number: 04797679.0

Publication Number: 1690010

IPC: F04D17/12, F04D29/62

Language of the proceedings: EN

Title of invention:
MULTISTAGE CENTRIFUGAL COMPRESSOR

Patent Proprietor:
Nuovo Pignone Holding S.P.A.

Opponent:
Siemens Aktiengesellschaft

Headword:

Relevant legal provisions:
EPC Art. 100(b), 83

Keyword:
Grounds for opposition - insufficiency of disclosure (no)

Decisions cited:

Catchword:



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Case Number: T 0302/13 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 4 July 2017

Appellant: Nuovo Pignone Holding S.P.A.
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted on 26 November 2012 revoking European patent No. 1690010 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman A. de Vries
Members: J. Wright
W. Van der Eijk

Summary of Facts and Submissions

- I. The Appellant-Proprietor lodged an appeal, received on 4 February 2013, against the decision of the opposition division posted on 26 November 2012 revoking European patent No. 1690010 pursuant to Article 101(3)(b) EPC. The appeal fee was paid simultaneously. The statement setting out the grounds of appeal was received on 3 April 2013.
- II. Opposition was filed against the patent as a whole and based *inter alia* on insufficient disclosure, Article 100(b) EPC with Article 83 EPC. The opposition division held that this ground prejudiced maintenance of the patent as granted.
- III. Oral proceedings before the Board were duly held on 4 July 2017.
- IV. The appellant-proprietor requests that the decision under appeal be set aside and the patent be maintained as granted, alternatively that the patent be maintained in amended form according to one of the auxiliary requests 1 to 7, as filed with the statement of grounds dated 3 April 2013. Furthermore, he requests that the case be remitted to the first instance should one of the requests be found to meet the requirements of Article 83 EPC.
- V. The respondent-opponent requests that the appeal be dismissed and, in case the decision under appeal should not be confirmed, that the case be remitted to the first instance.
- VI. Claim 1 of the main request (as granted) reads as follows:

"A multistage centrifugal compressor comprising at least one stage (10) which, in turn, comprises a lower half-tank (11) and an upper half-tank (12) to contain the compressor stage (10), a series of lower half-diaphragms (16), a shaft (13) equipped with a series of rotors (14), a series of upper half-diaphragms (18), a lower suction half-diaphragm (51), and an upper suction half-diaphragm (52), wherein the lower suction half-diaphragm (51) and the upper suction half-diaphragm (52) include a portion (71) and a portion (72), respectively, suitable for being coupled with the lower half-diaphragms (16) and with the upper half-diaphragms (18), respectively, to form a first pile (41) of lower half-diaphragms (16) and a second pile (42) of upper half-diaphragms (18), respectively."

VII. The appellant-proprietor argued that the skilled person would be able to carry out the invention according to claim 1 as granted because they would be able to make a technically meaningful interpretation of the claim, including the word "stage".

VIII. The respondent-opponent argued that the skilled person would be unable to arrive at a meaningful interpretation of claim 1 as granted, even when considering the rest of the specification. Therefore the invention as claimed is insufficiently disclosed.

Reasons for the Decision

1. The appeal is admissible.
2. Main request, sufficiency of disclosure

2.1 The essence of the reasoning of the decision under appeal (see reasons, points 11.1.2 to 11.1.4 and 11.2) regarding lack of disclosure is that the term "stage" in claim 1 is used in such a fundamentally contradictory way that the skilled person would not be able to arrive at any meaningful interpretation of the claim and therefore not be able to carry out the invention. This is broadly also the position taken by the respondent opponent in their submissions. The Board disagrees.

2.2 Granted claim 1 is directed at "a multistage centrifugal compressor" (line 1). Here the prefix "multi", as with its cognate "multiple" means more than one or many. Thus the claim establishes in its first line the underlying subject matter of the claim to be a multiple-staged centrifugal compressor.

In the Board's view, the skilled person understands this to mean that compression is achieved using a series of elementary compressor units, a concept with which they are familiar from their general knowledge. This is confirmed by the description (published specification, paragraph [0005]) which lists the fundamental elements forming a multistage centrifugal compressor in terms of series of certain parts, inter alia a series of rotors, resulting in "various stages" in the plural. In other words, the elementary compressor units are stages and the compressor of claim 1 has a plurality of these. In the Board's view it is with this framework in mind that the skilled person reads the remainder of the claim.

2.3 The Board acknowledges that the claim is not ideally formulated, nor is this disputed by the appellant-proprietor. Indeed, having established the technical

framework of a compressor with multiple stages, the claim goes on to define that the compressor comprises "at least one stage (10)", thus in the limit only one "stage 10", which appears contrary to the idea of multiple stages. Furthermore, the "at least one stage 10" is said to comprise tank halves "to contain the compressor stage (10)". Read literally therefore, the stage 10 is defined as containing itself, as the respondent-opponent has pointed out.

2.4 The skilled person will therefore immediately recognise that the claim contains manifest inconsistencies surrounding the word "stage", as indeed the respondent-opponent has argued.

2.5 In accordance with established jurisprudence, when the skilled person construes the claim, they do so with a mind willing to understand, not desirous of misunderstanding. They will rule out interpretations that make no technical sense and try, by "building up rather than tearing down" to arrive at an interpretation that is technically sensible and takes into account the whole disclosure of the patent, see Case Law of the Boards of Appeal, 8th edition, 2016 (CLBA), II.A.6.1, and the decisions cited therein.

Thus, in the present case the skilled person will read the claim and endeavor to give, inter alia, the claim word "stage" a meaningful and technically sensible interpretation.

2.6 As explained above, the skilled person reads the claim knowing it to define a centrifugal compressor having multiple compressor stages, that is having a plurality of elementary compressor units. To interpret the claim, with its evident inconsistencies around the term

"stage", they will therefore endeavor to understand how these multiple stages are reflected in the claim as a whole, where necessary by seeking clarification from the description and drawings.

- 2.7 The description (specification, paragraph [0009]) tells the skilled person that "the whole set of each rotor together with the relative diffusers and return channels forms a stage, which is separated from the adjacent ones by annular diaphragms..". Thus, at the heart of each elementary compressor stage is a rotor. Furthermore, this passage confirms the idea already introduced (paragraph [0005]), that diaphragms lie between the various stages, in other words the diaphragm is not part of the elementary compressor stage but rather separates them.
- 2.8 The single figure shows how this is to be arranged. There multiple rotors 14 are mounted on a shaft 13. Between each rotor 14 there is a diaphragm, made up of lower 16 and upper 18 half diaphragms (see specification, paragraph [0037]). Thus, recalling the definition of a stage given in paragraph [0009] (inter alia comprising a rotor, whereby stages are separated by annular diaphragms), the figure can but show a plurality of fundamental compression stages separated by diaphragms, not a single stage as the wording "at least one stage 10" in paragraph [0037], in conjunction with the reference sign 10 of the figure, with its arrow pointing to the entire arrangement (bottom right), might at first sight seem to suggest.
- 2.9 Turning again to the claim, it is common ground that the list of features appearing after the wording "which in turn comprises" are the elements the claim defines as comprising the "at least one stage 10". These are,

inter alia, a series of rotors on a shaft and a series of diaphragms.

- 2.10 As explained above, from the patent as a whole (in particular specification, paragraphs [0005] and [0009]), the skilled person knows that at the heart of each elementary compressor stage is a rotor, and furthermore, that the diaphragm is not part of this elementary compression stage, but rather lies between each stage. Thus, far from concluding that the "at least one stage 10" of the claim is such an elementary compression stage, the skilled person will reject this view. Instead they read "stage 10", with its "...series of rotors 14" as comprising some fundamental elements of a plurality of elementary compression stages, as well as other parts, inter alia diaphragms, which are not parts of such elementary compression stages.

Accordingly, what ever the word "stage" in isolation might conjure up for the skilled person, with their mind willing to understand, they do not read the claim term "stage 10" as being one of the elemental compressor stages implied by the word "multistage" in the claim's first line, but rather merely see it as a collective identifier, or label, for the group of features the stage 10 is said to comprise in the claim.

- 2.11 Inter alia "stage 10" of claim 1 comprising upper and lower half tanks 11, 12 is consistent with the description paragraph [0037]. In this respect, and as already explained, the skilled person will immediately dismiss as impossible a literal reading of the claim feature that the "stage 10 comprises [a tank] to contain the stage 10" because this would have the tank contained within itself. Again, with their mind willing to understand, the skilled person will seek to resolve

the relationship between the "stage 10" and the tank 11, 12, using the patent specification as a whole.

As already explained, the single figure shows a group of elements which all appear to be referenced "10" by an arrow-headed pointer. The tank, with its two halves 11 and 12, is seen to surround, thus contain, all the remaining elements of the group of elements 10, inter alia, the shaft 13, rotors 14 and diaphragms 16, 18. Thus the skilled person will not interpret the lower and upper half tank as containing themselves, but rather as containing the remaining features of the group comprised in the "stage 10".

2.12 In summary, the Board holds that the skilled person will interpret the claim term "at least one stage 10" as a collective term representing a group of elements (in summary: tank halves, shaft with its series of rotors, and diaphragm parts) wherein the tank halves are specified to contain all the elements of the group except themselves.

2.13 Armed with this interpretation, the Board has no doubt that the skilled person would be able to carry out the invention as claimed in granted claim 1. In particular, as already explained, the claim itself provides a list of the elements that should be comprised in the "stage 10", and this is confirmed by the detailed description (specification, paragraph [0037]). Furthermore, the drawing provides the skilled person with an example of how to arrange the principle components of the multistage centrifugal compressor claimed, with, inter alia, its tank halves 11, 12, shaft 13, rotors 14 and diaphragm halves 16, 18. Moreover, the components are described in detail, see for example paragraphs [0041] to [0050]. Nor would any of the components mentioned in

the claim appear to be, as such, unusual components with which the skilled person, an engineer in the field of compressors, might not be familiar from their general knowledge, and therefore unable to reproduce.

2.14 In conclusion, the Board finds that the invention according to claim 1 as granted is disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. Therefore the opposition ground under Article 100(b) EPC does not prejudice maintenance of the patent as granted and the appellant's auxiliary requests need not be considered in this decision.

3. The impugned decision considered only sufficiency of disclosure. However, the opposition division has yet to consider the opposition grounds under Article 100(a) EPC (novelty and inventive step), which may require considerable investigative effort. In order to allow the parties consideration of these remaining issues before the first instance, as requested by both parties, the Board considers it appropriate to exercise its discretion under Article 111(1) EPC by remitting the case to the department of first instance for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution.

The Registrar:

The Chairman:



G. Magouliotis

A. de Vries

Decision electronically authenticated