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**D E C I S I O N**  
of 1 September 1998

**Case Number:** T 0606/95 - 3.3.5

**Application Number:** 90850180.2

**Publication Number:** 0399972

**IPC:** B01F 15/00

**Language of the proceedings:** EN

**Title of invention:**  
Impeller for aseptic purposes

**Patentee:**  
Steridose Systems AB

**Opponent:**  
PRG Präzisions Rührer GmbH

**Headword:**  
Impeller/STERIDOSE

**Relevant legal provisions:**  
EPC Art. 54, 56, 83, 84, 69

**Keyword:**  
"Interpretation of the claims"  
"Novelty and inventive step (yes)"

**Decisions cited:**  
T 0219/83, G 0001/95

**Catchword:**  
-



Case Number: T 0606/95 - 3.3.5

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.5  
of 1 September 1998

**Appellant:**  
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**Respondent:**  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 30 May 1995  
rejecting the opposition filed against European  
patent No. 0 399 972 pursuant to Article 102(2)  
EPC.

**Composition of the Board:**

**Chairman:** R. K. Spangenberg  
**Members:** G. Dischinger-Höppler  
J. H. Van Moer

## Summary of Facts and Submissions

I. This appeal is against the decision of the Opposition Division to reject the Opposition against European Patent No. 0 399 972. The decision under appeal was based on the claims as granted, Claim 1 reading as follows:

"1. An impeller for aseptic purposes, rotatable by inductive drive means (20) in a predetermined direction within a vessel (11) for stirring and mixing sterile fluids, comprising a plurality of radially extending stirring blades (15) located on an outer surface (10) of the impeller and bearing means (10a,13) on an inner surface of said impeller for rotatably mounting the impeller on the vessel wall, characterized by through-flow passages (22,23) which outwardly extend from the inside of the impeller (10) in a direction away from the axis of rotation (24), to orifices (25, 26) situated on the outer surface on the impeller immediately adjacent and behind each blade, (15) seen in said direction of the rotation, so that cleaning fluid can be sucked through the passages (22, 23) due to the low pressure region occurring behind each blade."

II. Of four documents cited during the opposition proceedings, the following were regarded as relevant in the decision of the Opposition Division:

D1: US-A-4 933 841, published on Feb. 19, 1991;

D2: Steridose Manual Sterimixer; and

D4: EP-A-0 148 738.

The Opposition Division relied upon the Proprietor's acknowledgment that the impeller described in D1 and in the Steridose manual D2 had been available to the public before the priority date of the patent in suit. Both documents were, therefore, considered to be prior art in the sense of Article 54(2) EPC.

In its decision, the Opposition Division held that the claimed subject-matter was novel due to the fact that the cited prior art did not disclose orifices situated in the low pressure region occurring behind each impeller blade. In the assessment of inventive step, they further held that the problem to be solved in view of D1 or D2 as the closest prior art consisted in the provision of an improved impeller for aseptic purposes. The solution was found to consist in placing the orifices directly behind the blades, which resulted in a better pumping effect. This solution was found to be non-obvious, even if D4 was taken into consideration.

III. On 1 September 1998 oral proceedings were held, during which the Board questioned whether D1 formed part of the state of the art as defined in Article 54(2) and (3) EPC. In the discussion, both parties based their arguments primarily on D2. The Respondent filed an amended Claim 1 as an auxiliary request.

IV. The Appellant (Opponent) criticized the wording of Claim 1 of the contested patent, which in his opinion gave no clear information as to the precise location of the orifices on the surface of the impeller. He argued that according to physical laws a high pressure region existed behind the blades, which meant that the fluid could not be sucked through the passages from the inside of the impeller. The desired improvement over D2 was therefore not attained. The Appellant further drew

attention to Figure 1 of the contested patent, and argued that it was shown therein that the blades were behind the orifices, when seen in the direction of rotation, and with a certain distance from the blades. This was in contradiction to the claims and the description.

He further contested the novelty of the claimed subject-matter in view of the figures on pages 19 and 33 of D2. In his opinion, it was clear from a comparison of the figures on pages 19 and 33 on the one hand, and on page 24 on the other hand, that the orifices shown on page 19 must be located somewhere near to the blades.

In addition, the claimed subject-matter was obvious in the light of D2. Firstly, any improvement of the cleansing effect over the impeller of D2 might result from an increased number or a different size of the borings. If, however, the problem to be solved by the claimed impeller had to be seen in an improved pumping or sucking effect when compared with the impellers of D2, the solution consisted in finding the appropriate low and high pressure regions which depended on the rotational speed of the fluid. The critical places were, however, known.

- V. According to the Respondent (Proprietor), a person skilled in the art would construe the term "immediately adjacent and behind each blade" to indicate a position where it is possible that fluid can be sucked through the orifices and through-flow passages so that an improved cleansing effect is achieved. It was therefore irrelevant whether there was a distance between the orifices and the blades or whether the fluid was sucked from the inside of the impeller to the outside or vice versa. Both directions were possible.

According to D2, the orifices were clearly in a mid-position between the impeller blades. Since this was not covered by the above definition of a position immediately adjacent and behind the blades, the claimed impeller was novel.

The patent in suit sought to provide an impeller for aseptic purposes having an improved self-cleaning capability as compared to that known from D2. To attain this object, there were numerous possibilities in the art such as using a different cleansing medium or greater number or larger size of through-flow passages, working at a higher temperature or using pumps. By the specific positioning of the orifices, the invention provided a simple solution which was not hinted at in the prior art, because there was no indication anywhere that the placement of the passages might influence the cleansing effect. In this context it was also irrelevant whether a person skilled in the art knows about the existence of any pressure differences on the surface of an impeller in action.

VI. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed and that the patent be maintained as granted or, auxiliarily, according to the auxiliary request filed at the oral proceedings.

## Reasons for the Decision

1. The appeal is admissible.
2. Lack of novelty and inventive step was contested in respect of D2, in particular in view of the figures shown on pages 19, 24 and 33. These figures show an impeller according to the preamble of Claim 1 of the patent in suit and having through-flow passages which outwardly extend from the inside of the impeller in a direction away from the axis of rotation to orifices situated on the outer surface of the impeller (see also pages 8 to 11 concerning the cleaning and sterilization procedure). Compared with this, Claim 1 of the contested patent specifies that the orifices are situated in a position "immediately adjacent and behind each blade, seen in the direction of rotation, so that fluid can be sucked through the passages due to the low pressure region occurring behind each blade".
3. The Appellant argued that this specification of the position of the orifices was not precise enough to permit a distinction from the disclosure of D2 for the following reasons:
  - (a) As was shown in Figure 1 of the patent in suit and in contrast to the wording of Claim 1, the orifices were in front of the blades rather than "behind" them, when seen in the direction of rotation.
  - (b) Figure 1 of the contested patent further revealed a certain distance between the orifices and the blades. Since this distance was not defined, the meaning of the term "immediately adjacent" was uncertain.

- (c) According to physical law and contrary to Claim 1 of the contested patent, pressure conditions on the surface of an impeller under rotation were such that the low pressure region existed in front of the blades, whereas the pressure was high behind the blades.

Hence, it was doubtful what position of the orifices was actually covered by Claim 1 of the contested patent. In its broadest sense, Claim 1 defined the position of the orifices to be somewhere near the blades.

Such a position was, however, already known from D2 which not only disclosed an impeller with orifices in a mid-position between the blades (see page 24), but also one with orifices near the blades. The sectional view of the impeller on pages 19 and 33 of D2 was identical with Figure 2 of the contested patent and showed in the same way a passage extending to an orifice on the outer surface of the impeller. Since, further, the blade at least to a large extent could be seen, the orifice, when seen from the top, must be somewhere near to the blade. As confirmation of this, no through-passages could be seen in the sectional view along the horizontal axis of the plan view of an impeller with orifices in mid-position between the blades, i.e. in a line along two opposite blades (see page 24).

In contrast, the Respondent took the view that the only matter for protection was an impeller with orifices in those positions behind the blades where, in comparison with an impeller with orifices right in the middle between the blades, improved cleansing due to an enhanced through-flow in any direction was possible. Such a positioning was, in his opinion, not disclosed in D2.



4. In the present case, the interpretation of Claim 1 with respect to the definition of the position of the orifices is under dispute. It is, therefore, of crucial importance to determine the correct interpretation of the wording of Claim 1 prior to any assessment of novelty and inventive step. In accordance with Article 100 EPC a patent may not, however, be opposed on the ground that the claims or the description are unclear (Article 84 EPC). Any claim must, therefore, be understood as it stands and, if necessary, be interpreted in the light of the description and drawings as laid down in Article 69(1) EPC and the Protocol on its interpretation (see Case Law of the Boards of Appeal of the European Patent Office, 1996, Chapter VI, D-5.2, second and last paragraph).

The Board cannot agree with the Appellant's assertion that the term "behind each blade", as used in Claim 1 of the contested patent, did not specify the position of the orifices. Certainly, this position when seen in relation to the blades is generally dependent on the viewer's position. However, in Claim 1 the term "behind each blade" is related to the direction of rotation which is "predetermined" by inductive drive means. In this context, the Board holds that "behind each blade" unmistakably indicates a position where, while the impeller is rotating, the orifices pass a stationary and imaginary line - which radially extends from the axis of rotation to the periphery of the impeller - after a first blade, and where the period of time between the passing of the first blade and the following orifices is shorter than that between these orifices and the next blade. As a consequence thereof, the term "behind each blade" does not, in the Board's judgment, include a mid-position between the blades.

Likewise, the term "immediately adjacent" must exclude such a position right in the middle between two blades, irrespective of whether or not Figure 1 of the contested patent shows an undefined distance between the orifices and the blades. Otherwise the term itself would become meaningless.

Finally, the question whether a low pressure region occurs somewhere behind the blades, such that cleaning fluid can be sucked through the passages, is in the Board's view essentially dependent on the prevailing pressure difference between the inside and the outside of the impeller, rather than on the pressures existing behind and in front of the blades.

The Board takes into consideration that it follows from the acknowledgement of the prior art in the description of the patent in suit that it had already been proposed in the art to provide an impeller with radial passages allowing a cleaning fluid to flow in to the impeller's inner surfaces and over the bearing means (see page 2, lines 10 to 12), and that it is not in dispute that such prior art is represented by D2. Since it is further stated in the description that the problem to be solved vis-à-vis this state of the art consists in providing an impeller with a considerably greater self-cleaning capability so that sterilization can occur in a considerably shorter time (see page 2, lines 15/16), the Board holds that the language of Claim 1 of the contested patent in its broadest sense can be construed so as to define an impeller with orifices located off a mid-position between the blades, such that during rotation in a direction where the orifices pass an imaginary line, as above identified, later than the

blades, but earlier than orifices located in a mid-position as is shown on page 29 of D2, an improved through-flow in any direction takes place in comparison with the impeller disclosed in D2.

5. As a consequence of this interpretation, the Board cannot follow the Appellant's line of argument concerning lack of novelty in the light of D2. This document clearly discloses an impeller with orifices right in the middle between the blades (see page 8, first paragraph, in combination with the figures in plan view on pages 24 and 29). While the Board agrees with the Appellant insofar as the figures on pages 19, 33 and 39, which show orifices in a sectional view but not in a plan view, suggest that the orifices may also be elsewhere, off said mid-position, ie "nearer" to one of the adjacent blades, there is nothing in D2 which indicates a specific position of the orifices in the area defined above.

However, whether or not it is possible to derive such a specific position from D2, is not decisive to the present case and for the assessment of novelty, since one main requirement according to Claim 1 of the contested patent consists in the "functional" feature that the orifices must be positioned such that an improved through-flow takes place. D2 nowhere teaches such a possibility. Therefore, the subject-matter of Claim 1 of the patent in suit is considered to be novel in the sense of Article 54 EPC.

6. Turning to the issue of inventive step the Board considers D2 as the closest prior art which, as indicated under point 4 above, constitutes the starting point as presented in the patent specification, in view of which it was intended to improve the self-cleaning capability of the impeller (page 2, lines 10 to 16).

As a solution to this problem it is suggested in Claim 1 of the contested patent to position the orifices off the median line between the blades such that during rotation the orifices pass an imaginary line after the blades in the way defined in point 4 above and that through-flow of the cleansing medium is enhanced.

The Appellant contested that any improvement of the cleansing effect actually results from the positioning of the orifices, because it could just as well be ascribed to an amended design of the impeller, such as an increased number or different size of the borings. On the other hand, the Respondent asserted that the basis for the comparison leading to the statement in the patent in suit, referred to in point 4 above, was the modified version of the standard impeller of D2, where, according to page 8, eight holes were drilled through the body between the four impeller blades. On that basis the Board accepts that the Respondent's comparative tests have been made with impellers having the same constructional features except for the positioning of the orifices. In this situation, the Appellant carries the burden of proof for his assertion that the said statement in the patent in suit is wrong (see T 219/83, OJ 1986, 211, reasons No. 12). However, the Appellant did not support his assertion by evidence. Taking further into account that Claim 1 contains a functional feature excluding all positions where the orifices do not provide the required enhanced through-flow (see interpretation of the wording of Claim 1 in point 4 above, last paragraph), the Board is satisfied that the above problem has actually been solved.

The Board wishes to add in this context that the question whether any modifications resulting in an improved cleansing effect exist at all, must be left unanswered. Having regard to the above-mentioned functional feature, this question would have to be addressed in the light of Article 83 EPC. This would, however, amount to an introduction of a fresh ground of opposition which is not possible in an appeal proceedings without the agreement of the Patentee (see G 1/95, OJ 1996, 615, reasons No. 6). In the present case, the Patentee had explicitly refused to give his consent.

It remains, therefore, to be decided whether or not the solution of the above problem as proposed in Claim 1 of the patent in suit was obvious for someone skilled in the art.

D2 itself does not contain any information which could give the skilled person any hint that the positioning of the orifices on the surface of the impeller could have any influence on the self-cleaning capability of the impeller. This also applies to the other citations. In this connection it is noted that D1 was published after the priority date of the patent in suit and does not belong to the state of the art according to Article 54(2) and (3) EPC at all. It discloses a similar impeller to that in D2, with the exception that it does not give any information concerning the position of the orifices. Even if an impeller according to D1 had been made available to the public before the priority date of the patent in suit (as admitted by the Respondent), there is nothing on file from which the Board could draw any conclusions as to exactly what kind of impeller has exactly been made available. In any case, the Respondent did not confirm that all the information in D1 was available before the priority date of the contested patent. Concerning D4, the Board

observes that it does not relate to the problem of self-cleaning, nor does it suggest anything from which a solution to this problem could be gathered. Anyway, the Appellant did not further rely upon these documents.

Therefore, the only question left to be answered is whether the skilled person would, on the basis of the common general knowledge, have arrived at the above solution of the problem.

As the Appellant states, it is credible that the skilled person would know about the existence of pressure differences in the area of a rotating impeller and that these differences depend on certain parameters. However, the Appellant's line of argument, according to which the problem could be seen in an improvement of the pumping or sucking effect and the solution in the corresponding exploitation of the prevailing pressure conditions, is in the Board's judgment based on an ex post facto analysis which inadmissibly makes use of knowledge of the invention insofar as it assumes that the skilled person would interpret the "active transport" of rinsing fluid through the internal open spaces mentioned in D2 (see page 9) exclusively as a sucking or pumping effect and at least expect that there would exist positions where an improved pumping or sucking effect can be obtained. However, this possibility was not recognized in D2, although D2 already indicates modifications of an impeller where the orifices are not in mid-position between two blades but elsewhere on the impeller surface. The Board further holds that it is also credible, as pointed out by the Respondent, that the skilled person had numerous other possibilities for trying to solve the problem of enhancing the self-cleaning effect, such as varying the cleansing medium, the number or size of through-flow passages, or even

varying the operating conditions or constructional elements. The Board cannot, therefore, see any reason why a person skilled in the art, without any guidance, should suppose that the search for positions where different pressure conditions exist, was a practicable way to enhance the self-cleaning capability of the impeller disclosed in D2.

Therefore, the Board is satisfied that the basic idea underlying the claimed subject-matter, i.e the idea that the variation of the position of the orifices was sufficient for the solution of the relevant problem, could not be derived in an obvious manner from the state of the art.

7. It follows that the subject-matter of Claim 1 of the main request is based on an inventive step as required by Article 56 EPC. The same applies to the subject-matter of Claims 2 and 3 which are dependent on Claim 1, so that the patent can be maintained as granted.

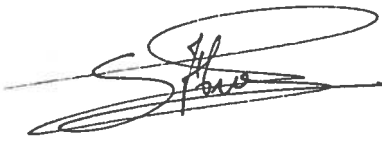
In these circumstances, there is no need to examine the auxiliary request.

**Order**

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

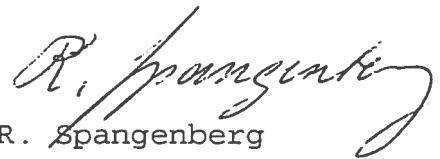
The appeal is dismissed.

The Registrar:



S. Hue

The Chairman:



R. Spangenberg

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