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D E C I S I O N
of 17 October 2005

Case Number: T 0902/03 - 3.2.04

Application Number: 99303884.3

Publication Number: 0959245

IPC: F02M 55/02

Language of the proceedings: EN

Title of invention:
Fuel feeding system

Applicant:
Wärtsilä Finland OY

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 123(2)

Keyword:
"Inventive step (yes, after amendment)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0902/03 - 3.2.04

D E C I S I O N
of the Technical Board of Appeal 3.2.04
of 17 October 2005

Appellant: Wärtsilä Finland OY
Tarhaajantie 2
FI-65380 Vaasa (FI)

Representative: Zipse + Habersack
Wotanstrasse 64
D-80639 München (DE)

Decision under appeal: **Decision of the Examining Division of the European Patent Office dated 10 March 2003 refusing European application No. 99303884.3 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: M. Ceyte
Members: M. Poock
T. Bokor

Summary of Facts and Submissions

I. This appeal is directed against the decision of the examining division dated 10 March 2003 in which European patent application No. 99 303 884 was refused.

The appellant (applicant) lodged the appeal on 8 May 2003 and paid the prescribed appeal fee simultaneously. The statement of grounds of appeal was received on 17 July 2003.

II. The examining division held that the subject-matter of claim 1 does not involve an inventive step having regard to the documents:

D2: DE-A-19 539 885 and

D5: Patent Abstracts of Japan, vol. 1995, no. 05 & JP-A-07 054 731.

III. Oral proceedings before the board were held on 17 October 2005.

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1-9 as filed in the oral proceedings as main request, or, alternatively as 1st auxiliary request, on the basis of claims 1-9 filed as 2nd auxiliary request with the letter of 19 September 2005.

IV. Claim 1 of the main request reads as follows:

"A fuel feeding system for a heavy fuel oil operated large diesel engine with several cylinders, in which

the fuel is fed from a fuel tank (1) to pressure supply means by means of a high pressure pump means (4) and from the pressure supply means to the cylinders of the engine by means of injectors (15), whereby the pressure supply means includes at least two separate pressure accumulator units (12) having pressure spaces continuously in connection with each other, each accumulator unit being connected to at least two injectors (15) and being provided with a separate high pressure pump (4) of said high pressure pump means, characterized in that it includes a low pressure pump (2) for feeding fuel from the fuel tank (1) through the high pressure pumps (4) and into the pressure accumulator units (12), and in that one of the pressure accumulator units (12) is provided with a valve (16) for connecting the pressure space of said one pressure accumulator unit and the pressure space(s) in connection therewith to the fuel tank (1), and in that each high pressure pump is provided with a control valve (6) by means of which the connection between the high pressure pump (4) and the low pressure pump (2) can be closed."

V. The appellant argued that the subject-matter of claim 1 according to these requests is inventive over the cited prior art and meets the requirements of the EPC.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC. Therefore, it is admissible.

Main request

2. *Amendments*

2.1 Claim 1 as originally filed was amended so that it now relates to a system for a heavy fuel oil operated large diesel engine. This amendment is supported by page 2, paragraphs 2 and 3 of the original description where it is expressed that the invention solves those problems of engines being related to the usage of heavy fuel oils.

The addition of the first characterizing feature in claim 1 is supported by original claim 2 and the addition of the last feature in claim 1 is supported by page 6, lines 14-18 of the original description.

The dependent claims 2-9 correspond to original claims 3, 4 and 6-11.

The description was amended to include a reference to document D5 and to be in line with the amended claims.

2.2 Therefore, Article 123(2)EPC is not contravened.

3. *Novelty (Article 54 EPC)*

3.1 D2 (see e.g. fig. 1) is the only document of the search report in which a low pressure pump 6 is disclosed for feeding fuel from the fuel tank 2 through a high pressure pump into a pressure accumulator unit 44. The other documents of the search report do not disclose the first characterizing feature of claim 1.

However, D2 does not disclose the last feature of claim 1 which requires that the connection between the high pressure pump 12 and the low pressure pump 6 can be closed by the control valve. In contrast, it discloses a check valve 12a which permits fluid flow from the low pressure pump 6 to the high pressure pump 12. Thus, the connection between the high pressure pump 12 and the low pressure pump 6 cannot be closed.

3.2 It is therefore concluded that none of the documents cited in the search report discloses all features of claim 1. Consequently, the subject-matter of claim 1 is new.

4. *Inventive step (Article 56 EPC)*

4.1 Closest state of the art, problem and solution

A fuel feeding system for a heavy fuel oil operated large diesel engine having the features of the first portion of claim 1 is known from document D5. The board concurs with the appellant that this system represents the closest state of the art.

The problem to be solved is, in essence, to provide an improved fuel feeding system (see page 2, paragraph 3 of the original description).

The solution is achieved in the known fuel feeding system with the features of the second portion of claim 1. They ensure that the fuel can be selectively circulated in the high pressure circuit before the engine is started which is of importance for rapidly and reliably heating up a cold engine when heavy fuel

oil is utilized. Further the pressure in the high pressure circuit can be controlled more accurately and the system can be de-pressurized.

4.2 Non-obviousness of the solution

4.2.1 DE-A-5 433 182 (D1) and D2 are the only documents of the search report in which the high pressure pump is provided with a valve (fig. 4 of D1: 38, 39; D2: 12a).

However, as already stated above (see item 3.1), the check valve 12a of D2 is not a control valve in the meaning of the last feature of claim 1.

Moreover, also D1 fails to disclose this feature. It is appreciated that the valves 38 and 39 could be considered as control valves because their purpose is for timing the beginning of the injection and for shutting down a faulty supply conduit (see col. 3, lines 47–53). The position of the valves is not explicitly described in D1, but the skilled person would position them at the high pressure end of the high pressure pumps 15, 16 so that they can achieve their intended purpose. In this position the valves 38, 39 cannot close the conduit at the low pressure side of the high pressure pumps 15, 16. Thus, D1 does not disclose the last feature of claim 1 even if low pressure pumps were to be provided upstream of the high pressure pumps 15, 16.

4.2.2 Since none of the documents cited by the examining division or mentioned in the search report discloses the last feature of claim 1, no combination thereof would reveal all features of claim 1.

It is therefore concluded that the claimed solution is not obvious to the person skilled in the art having regard to these documents and in view of the advantageous effects achieved (see item 4.1 above). Consequently, the subject-matter of claim 1 according to the main request involves an inventive step.

5. Under these circumstances it was not necessary to consider the auxiliary request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent in the following version:

Description: Columns 1-5 as filed in the oral proceedings

Claims: No. 1-9 as filed in the oral proceedings

Drawings: Sheet 1/1 as published

The Registrar: The Chairman:

G. Magouliotis M. Ceyte