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**Datasheet for the decision
of 3 March 2009**

Case Number: T 0377/07 - 3.2.03

Application Number: 03718662.4

Publication Number: 1502066

IPC: F28F 1/00

Language of the proceedings: EN

Title of invention:

Cooling unit and flow distributing element for use in such unit

Applicant:

Danfoss Silicon Power GmbH

Opponent:

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Headword:

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Relevant legal provisions:

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Relevant legal provisions (EPC 1973):

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Keyword:

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Decisions cited:

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Catchword:

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Case Number: T 0377/07 - 3.2.03

D E C I S I O N
of the Technical Board of Appeal 3.2.03
of 3 March 2009

Appellant:

Danfoss Silicon Power GmbH
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Representative:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 11 October 2006
refusing European application No. 03718662.4
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: U. Krause
Members: Y. Jest
K. Garnett

Summary of Facts and Submissions

I. European patent application No. 03718662.4, based on International application PCT/DK2003/000303 published as WO2003/095922, was refused by a decision of the Examining Division posted on 11 October 2006.

The reason given for the decision was that both independent claims 1 and 14 lacked clarity (Article 84 EPC) and further that the subject-matter of claim 14 lacked novelty (Article 52(1) and 54 EPC).

II. A notice of appeal against this decision was filed on 06 November 2006 and the fee for the appeal paid at the same time. The statement of grounds of appeal was received on 27 December 2006.

III. Oral proceedings took place on 3 March 2009. The Appellant (applicant) requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 12 according to the main request filed during the oral proceedings.

IV. The Appellant essentially argued as follows:

Single independent claim 1 was clear since it defined all the essential components of the cooling unit according to the invention.

The cooling unit defined in claim 1 was now explicitly and unambiguously directed to a structure provided with means enabling parallel flow of cooling fluid through several cells of said cooling unit.

The originally filed second independent claim directed to only parts of the cooling unit of claim 1, namely independent claim 14, which had been objected in the impugned decision under both Articles 84 and 54 EPC, has been excised from the set of claims on file. The grounds of the refusal relative to originally filed claim 14 have therefore become obsolete.

V. Claim 1 has the following wording:

"Cooling unit (1) comprising at least one plate (3) and at least one distributing element (4), especially for liquid cooling of power semiconductors, which unit cools component(s) arranged on the upper side (2) of said at least one plate (3), the bottom side of said at least one plate being cooled by a liquid, which is guided along said plate by means of said distributing element (4), **characterised in that** the distributing element (4) is divided into at least two cells (7), the cells are defined by the said at least one plate (3) and through-going walls (22,23), each cell having a liquid inlet (5) and a liquid outlet (6) arranged perpendicular to said plate, wherein the side of the distributing element facing away from the said at least one plate is provided with a separating wall (10) creating a first chamber (8), which connects all liquid inlets with each other, and a second chamber (9) which connects all liquid outlets with each other, when said distributing element is mounted on a bottom plate (11), so that the liquid passes through the cells in parallel."

Reasons for the Decision

1. The appeal is admissible.
2. *Formal requirements under Articles 123(2) and 84 EPC*
- 2.1 Amended set of claims

The set of claims filed during the oral proceedings comprises a single independent claim, based on the combination of originally filed claims 1 and 2, and dependent claims 2 to 12, corresponding substantially to originally filed dependent claims 3 to 13. The requirements of Article 123(2) EPC are therefore met by the set of claims on file.

The originally filed independent claim 14 and its dependent claim 15 directed to a flow distributing element have been deleted, so that the objections raised against claim 14 in the impugned decision are no longer relevant.

- 2.2 Claim 1

Amended claim 1 contains the features of originally filed claims 1 and 2.

The Board came to the conclusion that the definition of the cooling unit as defined in amended claim 1 was clear in the sense that it comprised all the essential features of the invention, namely the arrangement of flow directing means on both sides of the distributing element.

The concept of cells has been clarified in that claim 1 comprises features defining the components forming those cells, namely the distributing element, especially its through-going walls, and the said at least one plate receiving the products to be cooled by the unit.

By adding the features of originally filed dependent claim 2, the specific technical means enabling a parallel flow of cooling fluid through at least two cells have been clearly defined as part of the claimed invention.

Dependent claims 2 to 12 have been adapted to or brought into conformity with the definition of the invention as given in amended claim 1.

2.3 The amended set of claims thus satisfies the formal requirements of both Articles 123(2) and 84 EPC.

3. *Remittal*

Since the grounds given in the impugned decision for rejecting originally filed claim 1 were limited to the issue of clarity, its subject-matter has not been discussed with respect to the requirements of patentability under the provision of Article 52(1) EPC.

In order to give the Appellant the opportunity to have the application examined at two levels, the Board has decided to remit the case (Article 111(1) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division for further prosecution on the basis of claims 1 to 12 according to the main request filed during the oral proceedings.

The Registrar:

The Chairman:

A. Counillon

U. Krause