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**Datasheet for the decision  
of 10 January 2012**

**Case Number:** T 1373/09 - 3.2.03

**Application Number:** 00204029.3

**Publication Number:** 1111318

**IPC:** F25D 21/14, F25B 39/02,  
F28F 1/12, F28D 1/03

**Language of the proceedings:** EN

**Title of invention:**  
Evaporator with enhanced condensate drainage

**Patentee:**  
Delphi Technologies, Inc.

**Opponent:**  
Behr GmbH & Co. KG

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 84, 123(2), 54  
EPC R. 80

**Keyword:**  
"Novelty (yes)"  
"Remittal for further prosecution"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 1373/09 - 3.2.03

**DECISION**  
of the Technical Board of Appeal 3.2.03  
of 10 January 2012

**Appellant:** Delphi Technologies, Inc.  
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**Representative:** Manitz, Finsterwald & Partner GbR  
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**Respondent:** Behr GmbH & Co. KG  
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**Representative:** Grauel, Andreas  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 15 April 2009  
revoking European patent No. 1111318 pursuant  
to Article 101(3)(b) EPC.

**Composition of the Board:**

**Chairman:** U. Krause  
**Members:** C. Donnelly  
K. Garnett

## Summary of Facts and Submissions

- I. The appeal lies from the decision of the opposition division, posted on 15 April 2009, revoking European Patent no. EP-B-1111318.
- II. The patentee (hereinafter - the "appellant") filed a notice of appeal against this decision on 24 June 2009 and paid the fee on the same day. The grounds of appeal were filed on 21 July 2009.
- III. The opponent (hereinafter - the "respondent") replied to the appeal by letter of 20 August 2009 requesting that the appeal be dismissed.
- IV. Both parties made a subsidiary request for oral proceedings.
- V. In its letter of reply the respondent referred in particular to the following state of the art:
- ES1 to ES12 - Documents relating to public prior uses of an "OKV-Kondensator";  
O11: DE-A-195 23 285.
- In support of its case the appellant referred to:
- D12: US-A-5289698;  
D13: "Evaporator with Behroxal" ("Verdampfer mit Behroxal"), ATZ 09/2005, pages 784 to 788.
- VI. In a communication dated 26 September 2011, pursuant to Article 15(1) RPBA annexed to the summons to oral proceedings, the board informed the parties of its

provisional opinion. In particular, the board indicated that it provisionally considered claim 1 of the main request to meet the requirements of Articles 84 and 123(2) EPC and that the most relevant art appeared to be disclosed in the documents relating to the "OKV-Kondensator" prior uses.

VII. Oral proceedings were held on 10 January 2012.

At the close of the debate the parties confirmed the following requests:

The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained on the basis of the main request, alternatively the first or second auxiliary requests, all filed with the grounds of appeal.

The respondent (opponent) requested that the appeal be dismissed.

VIII. **Claim 1** according to the appellant's main request reads:

"An automotive air conditioning system evaporator (10) having substantially parallel, substantially vertically oriented refrigerant flow tubes (12), said tubes having opposed pair of surfaces (14) spaced apart by a distance  $c$ , between which tube surfaces (14) corrugated air fins are located, said fin corrugations comprised of adjacent pairs of fin walls (18) joined at integral crests having an interior radius  $r$  and a fin pitch  $p$ , said fin walls (18) also comprising louvers (22) having a length  $l$ , whereby the integral crests have a V-shape; characterised in that

said tube surface spacing  $c$ , crest interior radius  $r$ , fin pitch  $p$ , and fin louver length  $l$  have the following relationships:

$$0 \leq r/c \leq 0.057$$

and  $0.89 \leq l/c \leq 1.01$

and  $0.29 \leq p/c \leq 0.43.$ "

IX. Appellant's case

(a) Article 84 EPC, Clarity, Rule 80 EPC

The object of claim 1 is an automotive air conditioning system evaporator, i.e. an evaporator *suitable for use in* an automotive air conditioning system. This definition cannot be construed as being directed at the complete automotive air conditioning system. The amendment "an automotive air conditioning system evaporator" (as opposed to "In an evaporator") limits the claim to a particular class of evaporators and was made in response to the novelty objection and, thus, meets the requirements of Rule 80 EPC.

Further, the feature of the "substantially vertically oriented refrigerant flow tubes" is clear and cannot simply be neglected since it implies that the evaporator must be constructionally adapted to be fitted into an automobile air conditioning system such that flow tubes have this orientation.

(b) Art. 123 (2), Extended subject-matter

The originally filed application clearly concerns automotive air-conditioning system evaporators. At line 1 of paragraph [0003] of the published application it is mentioned that "automotive air conditioning system evaporators are subject to water condensate formation...". Further, at line 4 of paragraph [0020] a "hypothetical automotive designer" is addressed. Thus, since the problem to be solved only arises in the context of automobile evaporators and the person being addressed with the solution is an automotive designer, it is evident that the invention itself must concern an automotive air-conditioning system evaporator.

(c) Art. 54, Novelty

The skilled person would not consider that the condenser disclosed in the OKV-Kondensator prior uses is suitable for use as an evaporator in an automobile air conditioning system.

The evaporator and condenser of an automobile conditioning system are very different, as set out in the comparison table filed with the submission of 11 February 2009. From the table it is clear that the evaporator and condenser of an automobile air-conditioning system are not interchangeable. All attempts at using heat-pump systems where this is the case have failed. Later developments, such as that disclosed in D12 (see in particular, column 4, lines 26-32) teach away from using the condenser as the evaporator and vice-versa since it results in a non-optimal heat-exchanger design.

Furthermore, the flow tubes of the OKV-Kondensator are oriented substantially horizontally, as opposed to the vertical orientation required by the claim. This feature cannot simply be ignored on the basis that it has no meaning before the evaporator is connected into the air-conditioning system since it implies certain constructional adaptations.

D11 also teaches against using a condenser as an evaporator since it relates to a system using a pair of condensers and a single evaporator in the cooling mode in order to compensate for the inherent heat exchanger capacity imbalance.

Thus, the subject-matter of claim 1 as granted is new.

X. The arguments of respondent to support its main request can be summarised as follows:

(a) Art. 84, Clarity

Claim 1 does not meet the requirements of Article 84 since it is not clear whether an evaporator *for* an automobile air-conditioning system or an evaporator *in* an air-conditioning system is meant.

Further, should the first interpretation be accepted then the feature of the "substantially vertically oriented refrigerant flow tubes (12)" is unclear since the orientation of the evaporator cannot be determined when it is viewed as a separate component.

Also it must be questioned whether the amendment meets the requirements of Rule 80 EPC and is not just a cosmetic relabelling of the claim rather than a valid response to a ground of opposition.

(b) Art. 123, Extended subject-matter

The feature of "an automotive air conditioning system evaporator" introduced into the claim is not originally disclosed since the application as filed only concerns evaporators in general. There is no specific description or mention of an automotive air conditioning system evaporator.

(c) Art. 54, Novelty

A heat-exchanger exhibiting all the constructional features of claim 1 is known from the prior use of the OKV-Kondensator. This condenser is also intended for use in an automobile air-conditioning system and is suitable for use as an evaporator since it comprises all the features of claim 1 which, according to appellant, define an evaporator.

Further, it is known that the same heat-exchanger in an automobile air-conditioning system can function as either an evaporator or a condenser depending on whether heating or cooling is required in the passenger compartment - see for example O11, column 1, line 4 and lines 13 to 17).



## Reasons for the decision

1. The appeal is admissible.
2. *Article 84 EPC, Rule 80 EPC*
  - 2.1 It is clear that the object of claim 1 is an evaporator *suitable for use in* an automotive air conditioning system rather than the complete assembly of the evaporator in the automotive air conditioning system since it does not specify that the evaporator is actually *in* a system.
  - 2.2 The amendment, limiting the claim to a particular class of evaporators, was made in response to the novelty objection and, thus, meets the requirements of Rule 80 EPC.
  - 2.3 Formally, the feature of the "substantially vertically oriented refrigerant flow tubes (12)" cannot be objected to under Article 84 EPC since it was present in claim 1 as granted and lack of clarity is not a ground for opposition.
  - 2.4 The Board is also of the view that this feature does have identifiable constructional implications and cannot simply be neglected on the grounds that the evaporator is to be considered in isolation. This is all the more so since this feature plays a central role in the idea behind the alleged invention of improving condensate drainage.
  - 2.5 In the Board's opinion, this feature requires that the evaporator be adapted for fitting into an automotive

air-conditioning system such that when mounted its flow tubes are oriented substantially vertically.

Accordingly, it necessarily determines the relative positions of such components as the collector pipes, anchoring points and various elements for completing the connection of the evaporator into the system. Consequently, this feature confers distinguishable constructional characteristics on the evaporator even when considered in isolation.

3. *Art. 123(2), Extended subject-matter*

3.1 The respondent's objection in this respect cannot be accepted since the amendment is a limitation (as opposed to a generalisation) to a particular type of evaporator, and indeed to the only specific type of evaporator disclosed in the application.

3.2 More specifically, the limitation to an automotive air conditioning system evaporator is originally disclosed since the application as filed clearly and unambiguously concerns automotive air-conditioning system evaporators. As indicated by the appellant, mention is made at line 1 of paragraph [0003] of the published application that "automotive air conditioning system evaporators are subject to water condensate formation....". Further, at line 4 of paragraph [0020] a "hypothetical automotive designer" is addressed.

3.3 Further, the application as filed is mainly concerned with solving the problem of condensate drainage which is a problem generally associated with automotive evaporators since air is not recycled and moist air is continuously passing over the fins. Reference is also

made to the use of a screen to cover the downstream face of the core at lines 25 to 26 in paragraph [0015] of the A- publication which also implies an automotive application.

3.4 In conclusion, since the problem to be solved is principally associated with automobile evaporators and the person being addressed with the solution is an automotive designer, it is evident that the invention itself must concern an automotive air-conditioning system evaporator.

4. *Art. 54, Novelty*

4.1 The most relevant prior art is disclosed in the OKV-Kondensator prior uses - see in particular the two drawings ES2 and ES4, since these disclose the claimed tube surface spacing and fin geometry. The validity of the prior use has not been contested and the Board has no reason not to accept this either.

4.2 The Board agrees with the appellant that the feature requiring the evaporator to be adapted such that when fitted into an automotive air-conditioning system the refrigerant flow tubes are substantially vertically oriented is not directly and unambiguously derivable from the documents relating to the prior use. On the contrary, drawing ES2 suggests that the condenser is adapted to be fitted such that the refrigerant flow tubes are horizontally oriented since this is the way the evaporator is represented in the drawing.

4.3 Thus, in order to arrive at the subject-matter of claim 1, the skilled person studying the documents

relating to the prior uses has not only to decide that the "OKV-Kondensator" condenser is suitable for use as an evaporator in an automotive air-conditioning system, but also to then adapt it such that, when installed, the flow tubes are substantially vertically oriented.

4.4 Thus, the subject-matter of claim 1 of the appellant's main request is new. Whether such differences are sufficient to make the subject-matter patentable is a matter to be considered under the heading of inventive step.

5. Since the issue of inventive step has not been considered by the opposition division in the impugned decision, the Board considers that it is appropriate to remit the case 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 Opposition Division for further prosecution.

Registrar:

Chairman:

D. Hampe

U. Krause