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**Datasheet for the decision
of 20 September 2007**

Case Number: T 0792/05 - 3.5.02

Application Number: 99202388.7

Publication Number: 0978907

IPC: H01R 13/52

Language of the proceedings: EN

Title of invention:

Sealing arrangement between an electrical connector and an electrical conductor

Patentee:

Delphi Technologies, Inc.

Opponent:

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Headword:

-

Relevant legal provisions:

EPC Art. 54, 123(2)

Keyword:

"Novelty (main and auxiliary request - no)"

"Amendments - added subject-matter (auxiliary request - yes)"

Decisions cited:

-

Catchword:

see point 3.2 of the reasons



Case Number: T 0792/05 - 3.5.02

DECISION
of the Technical Board of Appeal 3.5.02
of 20 September 2007

Appellant: Delphi Technologies, Inc.
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Representative: Denton, Michael John
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 7 February 2005
refusing European application No. 99202388.7
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: M. Ruggiu
Members: G. Flyng
E. Lachacinski

Summary of Facts and Submissions

- I. The appellant (applicant) appealed against the decision of the examining division refusing the European patent application No. 99 202 388.7.
- II. In the contested decision, the examining division found, *inter alia*, that the subject-matter of claim 1 then on file was not new in view of the prior art disclosed in each of the following documents:
- D1: FR-A-2 660 118,
- D2: WO-A-96 29760.
- III. Oral proceedings were held before the board on 20 September 2007.
- IV. The appellant requested that the decision under appeal be set aside and that a patent be granted in the version specified in the decision under appeal, i.e. on the basis of claim 1 filed with the letter of 29 October 2004 and claims 2 to 9 as originally filed (hereinafter *main request*), or, if that was not possible, on the basis of claim 1 filed with the letter of 16 August 2007 (hereinafter *auxiliary request*).
- V. Claim 1 of the appellant's main request reads as follows:
- "A sealing arrangement (10) between an electrical connector (12) and an electrical conductor (14) in which the electrical conductor extends through an aperture (18) in a housing (16) of the electrical connector, the sealing arrangement being positioned adjacent the

aperture and comprising a flap member (22) which is pivotally mounted and movable between an open position and a closed position, the flap member being positioned on one side of the electrical conductor; a wall (20) positioned on the opposite side of the electrical conductor to the flap member; and a compressible seal (24) positioned around the electrical conductor; characterised in that, in the closed position of the flap member, the flap member, the wall and the electrical conductor lie in planes which are substantially parallel; and in that the seal is compressed between the flap member and the wall and partially extruded into the aperture."

- VI. Claim 1 of the appellant's auxiliary request differs from claim 1 of the main request in that the following has been added at the end of the claim:

"and in that the compressible seal (24) is preformed and of predetermined size."

- VII. The appellant's arguments relevant to the present decision may be summarised as follows:

Main Request

Document D1 did not disclose the claimed feature that "in the closed position of the flap member, the flap member, the wall and the electrical conductor lie in planes which are substantially parallel".

The gel 38 in D1 was a self-healing pasty mass, adhering to the cover of the connector, which was capable of flowing around the conductor. The gel was not a

"compressible seal" as claimed. A "gel" did not fall within the normal and usual meaning given by a skilled person to the term "compressible seal". Using the arrangement of D1 the connection module could not be disassembled without damage to the components because the gel would adhere to the wire and bind to the housing and the adjacent module (page 2, lines 17 and 18).

There was no difference in practice between the gel of D1 and the traditionally used potting compound as referred to on page 1, lines 12 to 28 of D1. The D1 gel had to be fluid and would squeeze everywhere, because there was no control over the direction it flowed in.

D1 did not disclose that the seal was partially extruded into the aperture in the housing.

Hence, in the appellant's view, the combination of features recited in claim 1 of the main request was novel with respect to D1 (Article 54 EPC).

Auxiliary Request

It was evident from the drawings of the application and from the references to the compressible seal being formed in two parts (column 3, lines 8 to 12 of EP-A-0 978 907) that the compressible seal was "preformed". Hence claim 1 of the auxiliary request did not introduce subject-matter which extended beyond the content of the application as filed (Article 123(2) EPC).

The statements in D1 that the gel was applied to the cover and polymerised at the factory could not be taken

as meaning that D1 disclosed a compressible seal which was preformed in a predetermined size.

Hence, in the appellant's view, the combination of features recited in claim 1 of the auxiliary request was novel with respect to D1 (Article 54 EPC).

Reasons for the Decision

1. The appeal is admissible.

Main Request

2. *Novelty*
 - 2.1 Document D1 discloses, in particular in figures 1 and 2, a sealing arrangement between a modular electrical connector 14 and an electrical conductor 36 in which the electrical conductor 36 extends through an aperture which is defined between partitions 16 in a housing 14 of the electrical connector module. The sealing arrangement is positioned adjacent the aperture and comprises:
 - a flap member (covercle) 24 which is pivotally mounted and movable between an open position and a closed position (page 4, lines 23 to 29) and which is positioned on one side of the electrical conductor module 14 (the left side as viewed in figure 2);
 - a wall, constituted either by the flap 24 of an adjacent module or by the housing 10, which is positioned on the opposite side of the electrical

conductor to the flap member (the right side as viewed in figure 2); and

- a mass of gel 38 positioned around the electrical conductor (abstract; page 4, line 34 to page 5, line 1).

2.2 The board considers it to be immediately evident from figure 2 that in the closed position of the flap member 24, the flap member 24, the wall (i.e. flap member 24 of the adjacent module or the housing 10) and the electrical conductor 36 lie in planes which are substantially parallel. In figure 2, these parallel planes extend in the vertical direction of the page and in the direction almost perpendicular to the page. The appellant has not submitted any explanations as to why figure 2 should not be understood in this way.

2.3 The mass of gel 38 is described in D1 as being a pasty material based on silicone (page 2, lines 7 to 11). By comparison, the present application states that the compressible seal is preferably formed from silicone gel (see claim 7 and the description at column 3, lines 2 to 5 and 53 to 56 and column 4, lines 40 to 43 of the printed specification EP-A-0 978 907). Hence, the sealing material employed in D1 cannot be distinguished in this respect from that preferred in the present application, namely a silicone gel.

2.4 Document D1 does not explicitly state that the mass of gel 38 is "compressible". It does however state on page 5, lines 30 to 34 that the flaps 24 are provided with a gel precursor which is then reticulated to obtain a gel having the properties of a pressure deformable

grease conserving a certain elasticity. The mention of elasticity clearly indicates that the gel when deformed would tend to return to its original shape. The Board therefore takes the view that the gel disclosed in D1 is compressible.

2.5 Document D1 states at page 2, lines 12 to 18 that the mass of gel in the flap can be made such that the gel is driven along the wires and spreads transversely beyond the flap, and further states at page 4, line 34 to page 5, line 1 and page 7, lines 13 to 18 that the gel is able to deform so as to flow over laterally or flow over adjacent parts. These indications, together with the open structure between the cover and the modular housing 14 as shown in figures 1 and 2, convince the Board that the laterally driven gel would overflow not only vertically upwards as clearly indicated in figure 4, but also vertically downwards into the aperture defined between the partition walls 16 within the housing 14.

2.6 In summary, document D1 discloses a sealing arrangement which comprises, either explicitly or implicitly, all of the features recited in claim 1 of the appellant's main request. The Board concludes that the subject-matter of claim 1 of the appellant's main request is not new within the meaning of Article 54 EPC.

Auxiliary Request

3. *Extension beyond the content of the application as originally filed*

3.1 The added feature that the compressible seal 24 is "preformed" is not disclosed explicitly in the

application as filed. Furthermore, in the context of the present application, the Board cannot be certain as to the precise meaning of the term "preformed". For example, it could mean that the compressible seal is formed before being positioned around the electrical conductor, or it could mean that the seal is formed before it is compressed between the flap member and the wall. At least in view of the uncertainty as to the meaning of the feature "preformed" in the context, it cannot be said that the feature is clearly and unambiguously disclosed in the application as filed. The addition of the feature "preformed" thus adds subject-matter contrary to Article 123(2) EPC.

- 3.2 In the application as originally filed, it is consistently stated that the seal is of a predetermined size to ensure that the seal is compressed on moving the flap member to the closed position (column 3, lines 2 to 4 and 53 to 55 and column 4, lines 40 to 42 of EP-A-0 978 907). The skilled person reading the original application was thus informed that the size is predetermined in order to achieve the particular effect of ensuring that the seal is compressed on moving the flap member to the closed position. The Board considers that by taking the feature of "predetermined size" and adding it to claim 1 in isolation from the effect that was originally consistently disclosed and implied conditions on the predetermined size that would be suitable, subject-matter has been added which goes beyond the content of the application as filed, Article 123(2) EPC.

4. *Novelty*

4.1 The gel in document D1 is applied to the flap (cover 24) in the factory (see page 5, lines 30 to 31). Thereafter the contacts on the wires 36 are inserted (page 5, line 35 to page 6, line 4). Later the module 14 is inserted into the housing 10 and the cover 24 moves, displacing the gel (page 6, lines 9 to 13). It is thus evident that the gel seal is formed in the cover before the seal is compressed onto the wire. At least in that sense the D1 seal can be considered to be preformed.

4.2 Furthermore, according to document D1, (page 2, lines 12 to 18) the mass of gel in the flap may be made sufficient that the gel is driven along the wires and spreads transversely beyond the flap. It follows that the amount of gel must have been determined in advance in order to ensure the desired spread of the gel. In that sense at least the seal is of predetermined size.

4.3 In summary, document D1 discloses a sealing arrangement which comprises all of the features recited in claim 1 of the appellant's auxiliary request. The Board concludes that the subject-matter of claim 1 of the appellant's auxiliary request is not new within the meaning of Article 54 EPC.

Order

For the above reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

U. Bultmann

M. Ruggiu