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**Datasheet for the decision
of 25 June 2019**

Case Number: T 0535/14 - 3.4.03

Application Number: 01916132.2

Publication Number: 1260125

IPC: H01L21/48, H01L23/373, H05K7/20

Language of the proceedings: EN

Title of invention:
THERMAL MANAGEMENT SYSTEM

Patent Proprietor:
NeoGraf Solutions, LLC

Opponent:
SGL Carbon SE

Headword:

Relevant legal provisions:
EPC Art. 123(2), 123(3)
RPBA Art. 13(1)

Keyword:
Late-filed requests - admitted (no)

Decisions cited:

Catchword:



Beschwerdekammern

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Case Number: T 0535/14 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 25 June 2019

Appellant: SGL Carbon SE
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Respondent: NeoGraf Solutions, LLC
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Representative: TL Brand & Co
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
6 January 2014 concerning maintenance of the
European Patent No. 1260125 in amended form.**

Composition of the Board:

Chairman G. Eliasson
Members: T. M. Häusser
W. Van der Eijk

Summary of Facts and Submissions

- I. The appeal of the opponent concerns the interlocutory decision of the opposition division maintaining the European patent EP-B-1 260 125 as amended during the opposition proceedings (Article 101(3)(a) EPC).
- II. The opposition had been filed against the patent as a whole. Grounds of opposition were added subject-matter, insufficiency of the disclosure and lack of inventive step (Articles 100 and 56 EPC 1973).
- III. At the oral proceedings before the board the appellant (opponent) requested that the decision under appeal be set aside and that the contested patent be revoked.

The respondent (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained on the basis of its main request or auxiliary request, both filed at the oral proceedings before the board.

- IV. Reference is made to the following document:

D17: "SIGRAFLEX, Produkte aus flexibler Graphit-folie", SGL CARBON GROUP, printed June 1997.

- V. The wording of the independent claims of the main and auxiliary requests and of the granted set of claims is as follows (board's labelling "(a)", "(b)", "(c)", and "(d) "):

Main request:

"1. A thermal management system comprising a heat source having an external surface and a heat spreader

which comprises a single anisotropic flexible graphite sheet formed of compressed particles of exfoliated natural graphite, the sheet

- (a) having a density in the range of from 0.05 grams per cubic centimetre to 1.8 grams per cubic centimetre and
 - (b) having a planar area greater than the area of the external surface of the heat source,
- the heat spreader being in operative connection with the heat source, wherein the heat spreader has
- (c) a "c" direction thermal conductivity of no greater than 7 W/m-K and an "a" direction thermal conductivity of at least 150 W/m-K, and thus
 - (d) a thermal anisotropic ratio of about 20:1 or higher and functions to increase the effective surface area of the heat source to facilitate heat dissipation from the heat source."

Auxiliary request:

Claim 1 of the auxiliary request differs from claim 1 of the main request in that feature (c) is deleted.

Granted set of claims:

Claim 1 as granted differs from claim 1 of the main request in that feature (a) is deleted and a comma is inserted before "and functions to increase" in feature (d).

VI. The parties argued essentially as follows in relation to the question whether the main and auxiliary requests should be admitted into the proceedings:

The *appellant* argued that the main request and the auxiliary request should be held inadmissible as late-filed.

The *respondent* was of the opinion that the requests should be admitted into the proceedings as they were filed as early as possible and met the requirements of Article 123(2) and (3) EPC.

Reasons for the Decision

1. Main and auxiliary requests - admission
 - 1.1 The main request and the auxiliary request were only filed during the oral proceedings before the board. They constitute therefore an amendment to the respondent's case after it has filed its reply to the grounds of appeal and may be admitted into the proceedings and considered at the board's discretion (Article 13(1) RPBA).
 - 1.2 In accordance with established case law, late-filed requests are held inadmissible if - *prima facie* - they do not overcome the outstanding objections under the EPC or give rise to new objections, in particular if there is no proper justification for the late filing of the requests (*Case Law of the Boards of Appeal of the EPO*, 8th edition 2016, sections IV.E.4.1.3 and 4.4.1-4.4.3).
 - 1.3 In the present case both requests were filed at the oral proceedings before the board replacing the requests on file after the board had indicated its conclusion that feature (c), which was comprised in respective claim 1 of the former requests, contained

subject-matter extending beyond the content of the application as filed, contrary to the provisions of Article 123(2) EPC. In particular, the two open ranges of the thermal conductivities in the "c" and "a" directions implied by the expressions "no greater than 7 W/m-K" and "at least 150 W/m-K", respectively, were not considered to be directly and unambiguously derivable from the application as filed.

- 1.4 The respondent was of the opinion that the requests were filed as early as possible.

However, the board notes that the objection that the claimed ranges in feature (c) constituted added subject-matter had already been discussed in the decision under appeal (see points 15 to 28 of the Reasons) and had in fact been raised by the appellant in its notice of opposition, i. e. at the earliest possible stage of the opposition proceedings (see point III.2 of the letter dated 16 May 2012). Already when drafting the response to the notice of opposition the respondent was therefore in a position to file the present main request and auxiliary request. This objection was also maintained in the statement of the grounds of appeal (see point III, fifth paragraph and following).

The fact that the board announced its conclusion in this respect only at the oral proceedings constitutes in no sense a new development justifying the late filing of the requests as it was entirely based on arguments which had been raised by the appellant as early as in its notice of opposition.

Hence, there is no proper justification for the late filing of the main request and the auxiliary request.

1.5 The respondent argued that the thermal conductivities of the graphite sheet were controlled by its density. Feature (a), which was added to claim 1 of the main request as compared to claim 1 of the previously pending requests, provided a basis for feature (c) overcoming the added subject-matter objection.

According to the board's view, feature (a) relates to the claimed graphite sheet having a density within a relatively wide range of values (the upper end of the range being 36 times larger than the lower end) and does not appear to limit the thermal conductivities of the sheet to the only values disclosed in the application as filed, namely 7 W/m-K in the "c" direction and 150-200 W/m-K in the "a" direction (see page 6, last sentence of paragraph 2 of the description of the application). Rather, features (a) and (c) of claim 1 of the main request appear to relate to different physical characteristics of the claimed graphite sheet and to provide two independent - albeit related - constraints that the graphite sheet has to fulfill.

Since the offending feature (c) is still present in claim 1 of the main request, the board is of the opinion that - *prima facie* - the amendments effected in relation the main request do not overcome the objection that feature (c) contravenes Article 123(2) EPC.

1.6 The respondent was further of the opinion that the thermal conductivity ranges of the graphite sheet implied by the density range of feature (a) of claim 1 of the auxiliary request fell within the thermal conductivity ranges of feature (c) as could be seen from document D17. Hence, the deletion of feature (c) in claim 1 of the auxiliary request as compared to granted claim 1 did not contravene Article 123(3) EPC.

The board notes that claim 1 of the auxiliary request differs from granted claim 1 - apart from the mere deletion of a comma - in that feature (c) is replaced by feature (a), so that the scope of protection of granted claim 1 is limited by feature (c) whereas that of claim 1 of the auxiliary request is limited by feature (a). Since these features relate to different physical characteristics of the claimed graphite sheet (see point 1.5 above), the scope of protection of claim 1 of the auxiliary request appears to have been shifted in relation to that of granted claim 1. Hence there appear to be systems which are outside the scope of protection of the patent as granted but fall within the scope of protection of claim 1 of the auxiliary request. This would appear to be exemplified by some of the graphite sheets described by Figure 2 of the commercial brochure D17, e. g. the graphite sheet having "a" direction thermal conductivity of about 85 W/m-K (thus falling outside the scope of protection defined by feature (c)) and a density of 0.5 g/cm³ (thus falling within the scope of protection defined by feature (a)).

Therefore, the board concludes that - *prima facie* - the amendments effected in relation to claim 1 of the auxiliary request give rise to a new objection under Article 123(3) EPC.

1.7 In view of the above, the main request and the auxiliary request are not admitted into the appeal proceedings (Article 13(1) RPBA).

2. Conclusion

As the board does not admit the main request and the auxiliary request into the proceedings, there is no admissible request on file on the basis of which the patent could be maintained. Consequently, the patent has to be revoked (Article 101(3) (b) EPC and Article 111(1) EPC 1973).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



S. Sánchez Chiquero

G. Eliasson

Decision electronically authenticated