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**Datasheet for the decision
of 10 March 2022**

Case Number: T 0719/19 - 3.3.06

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Language of the proceedings: EN

Title of invention:
APPARATUS AND METHOD FOR QUANTITATIVELY COATING CATALYST
SUPPORT

Patent Proprietor:
Heesung Catalysts Corporation

Opponent:
Leeming, John Gerard

Headword:
HONEYCOMB COATING/Heesung Catalysts

Relevant legal provisions:
RPBA 2020 Art. 13(2)
EPC R. 80
EPC Art. 123(2), 56

Keyword:

(Main request and first to sixth auxiliary requests) amendment after summons - exceptional circumstances (no)

(Seventh to thirteenth auxiliary requests) amendment occasioned by ground for opposition - (no)

(Fourteenth auxiliary request) Amendment after summons (new objection of inventive step) - taken into account (no)

Amendment after summons - taken into account (no)

(Fourteenth auxiliary request) amendments - added subject-matter (no)

(Fourteenth auxiliary request) inventive step - (yes)

Decisions cited:

Catchword:



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Case Number: T 0719/19 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 10 March 2022

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
15 January 2019 to maintain European Patent
No. 2762230 in amended form.**

Composition of the Board:

Chairman J.-M. Schwaller
Members: P. Ammendola
C. Brandt

Summary of Facts and Submissions

I. This appeal lies from the interlocutory decision of the opposition division to maintain the patent in amended form on the basis of the main request filed on 27 November 2017, independent claims 1 and 5 thereof (hereinafter **maintained claims 1 and 5**) reading as follows (amendments vis-à-vis claims 1 and 5 as originally filed emphasised by the board):

"1. A method of coating a catalyst support, in which a monolithic catalyst support provided therein with a plurality of longitudinally formed channels is quantitatively coated with catalyst slurry applied to post-treatment of exhaust gas, comprising the following subsequent steps of:

introducing catalyst slurry into a quantitative container whose bottom is vertically moved;

moving a catalyst support to top of a container such that bottom of the catalyst support and top of the container are horizontally disposed each other;

sealing the bottom of the catalyst support and the top of the container from the outside;

moving the bottom of the container upward until the bottom of the container comes into contact with the bottom of the catalyst support; and

applying a vacuum to the channels of the catalyst support at the top thereof with vacuum means located over the top of the container."

"5. An apparatus for coating a catalyst support (60), comprising:

means for introducing a ~~predetermined~~ quantitatively-determined amount of catalyst slurry;

a volume-adjustable container (101) including an open top for introducing ~~a predetermined~~ the quantitatively-determined amount of catalyst slurry and a movable bottom;

a support fastener (103) for moving the catalyst support (60) to the top of the container (101) so that a bottom of the support (60) is horizontally matched with the top of the container (101);

means (102) for moving bottom of the container (101), the means having a shaft connected with the bottom of the container; and

vacuum means (105) located over the open top of the container."

II. The amendment in maintained claim 5 (hereinafter referred to as **the first amendment**) reading: "*means for introducing a ~~predetermined~~ quantitatively-determined amount of catalyst slurry*" was **already present in claim 5** of the patent **as granted**. Instead, the amendment (hereinafter referred to as **the second amendment**) reading: "*a volume-adjustable container (101) including an open top for introducing ~~a predetermined~~ the quantitatively-determined amount of catalyst slurry and a movable bottom*" was introduced for the first time in maintained claim 5 (and was **not already present in claim 5 as granted**).

III. With its grounds of appeal, the opponent (hereinafter **appellant**) argued, *inter alia*, that the second amendment was objectionable in view of Rule 80 EPC and that the maintained claim 1 was objectionable in view of Article 123(2) EPC. Moreover, the claimed subject-matter lacked an inventive step when starting from **D2** (GB 2477602 A) as closest prior art and considering the disclosure of **D5** (US 4550034).

IV. The patent proprietor (hereinafter respondent) replied with letter of 27 September 2019 and submitted seven sets of claims labelled as main request and first to sixth auxiliary requests. The main request (finally renumbered as **seventh auxiliary request**, see V below) is identical to the set of **maintained claims**. In each of the first to sixth auxiliary requests (finally renumbered as **eighth to thirteenth auxiliary requests**, see V below) the respective claim 5 comprises the second amendment.

V. Following the board's preliminary opinion, the respondent submitted with letter of 7 February 2022 fourteen sets of amended claims respectively labelled **main, first to sixth auxiliary request** and **fourteenth to twentieth auxiliary request**. With the same letter the previous main and first to sixth auxiliary requests were renumbered as seventh to thirteenth auxiliary requests.

These new main and first to sixth auxiliary requests differ from the seventh to thirteenth auxiliary requests already on file in that the second amendment is no longer present in the respective claim 5.

VI. In its reply the appellant argued for the first time that D5 would represent the closest prior art and that the combination of D5 with D2 rendered obvious the claimed method (hereinafter **CCS method**).

VII. At the oral proceedings the respondent disputed the admissibility of this new line of argument. The final requests of the parties were as follows:

The opponent/appellant requested that the decision under appeal be set aside and the patent be revoked.

The **patent proprietor/respondent** requested that the patent be maintained on the basis of the claims according to the main request, or alternatively, of the claims of one of the first to sixth auxiliary request, filed with letter dated 7 February 2022, or of one of the seventh to thirteenth auxiliary request, filed with the reply to the grounds of appeal, or of one of the fourteenth to twentieth auxiliary request, filed with letter dated 7 February 2022.

Reasons for the Decision

1. Admittance of new requests and objections

1.1 Pursuant to Article 13(2) RPBA, any amendment to a party's appeal case made after the notification of a summons to oral proceedings shall, in principle, not be taken into account unless there are exceptional circumstances.

1.2 In the case at issue the *main and first to sixth auxiliary requests* were filed about one month before the oral proceedings and only differ from those filed with the reply to the grounds of appeal in that the second amendment is no longer present in the respective claim 5.

Such amendment manifestly addresses the objection under Rule 80 EPC already considered in the decision under appeal and submitted again by the appellant with the statement of grounds of appeal.

1.2.1 The respondent argued that the very late filing of these requests was because it had "come to realize that overcoming the objection in view of Rule 80 EPC would reduce the number of matters to be discussed during the

oral proceedings and thus substantially contribute to procedural economy". The respondent also stressed that the amendment carried out would not rise any new issue nor possibly surprise the appellant.

- 1.2.2 The board finds that these justifications do not represent exceptional circumstances since the amendment could have been filed much earlier, the objections having been raised in the opposition proceedings and again in the grounds of appeal. Hence, the board has decided, pursuant to Article 13(2) RPBA 2020, **not to take into account** *the main and first to sixth auxiliary requests*.

- 1.3 As to the filing of the eighth to thirteenth auxiliary requests, this occurred with the reply to the appeal and thus, in accordance with Article 12(1)(c) RPBA 2020. The board therefore sees no reason for disregarding them under the provision of Article 12(4) EPC 2007 (see also Article 25 RPBA 2020).

- 1.4 The fourteenth auxiliary request has been filed very late, i.e. about one month before the oral proceedings, but its admittance into the proceedings was not challenged by the appellant.

- 1.5 As to the late-filed inventive step objection starting from D5 as closest prior art (and considering this latter in combination with the disclosure in D2), this had been submitted by the appellant for the first time about one month before the oral proceedings, and its admittance into the proceedings was disputed by the respondent in view of its unjustified late filing.
 - 1.5.1 The respondent argued that this objection was just another way of arguing the same objection already on

file and decided upon in the decision under appeal and submitted with the grounds of appeal, in which D2 was considered the closest prior art and combined with D5.

1.5.2 The board finds that this is not a justification for the very late filing of this new objection. Moreover, given the apparent substantial differences between the prior art disclosed in D5 and that disclosed in D2, the appellant's argument is manifestly unconvincing. Hence, the board has decided, pursuant to Article 13(2) RPBA 2020, not to take into account this new inventive step objection.

2. *Seventh auxiliary request (maintained claims) - Rule 80 EPC*

2.1 The opposition division found that the second amendment was occasioned by a ground of opposition because it aimed at overcoming the objection under Article 123(2) EPC (presumably directed against the first amendment in granted claim 5) that a different amount of slurry is introduced into the container than is applied to the catalyst support.

2.2 The board however notes that none of the appellant's submissions during the opposition and appeal proceedings appear to be indicative that this party had considered undisclosed in the application as originally filed that the amount of slurry introduced into the container was different from that applied to the catalyst support. Rather to the contrary, the appellant consistently argued since the beginning of the opposition that the original application only disclosed these amounts as inevitably different (see e.g. in point 3 of the notice of opposition the objection of

added subject-matter against the first amendment in granted claim 5).

- 2.3 In any case, the objection under Article 100(c)/123(2) EPC against the first amendment (in granted claim 5) derived from the fact that the expression "*predetermined amount of catalyst slurry*" present in original claim 5 had been replaced by the expression "*quantitatively-determined amount of catalyst slurry*" taken from the description of the original application.

Hence, the second amendment in claim 5 again consists in a second replacement of the same expression present in (another passage of) original claim 5 by the same expression taken from the description and thus, it cannot possibly be considered aiming at removing the addition of subject-matter to claim 5 allegedly caused by the first of such replacements.

Indeed if, as maintained by the appellant, the two relevant expressions are considered not equivalent by the skilled reader of the patent application as filed, then the second amendment would inevitably produce again an addition of previously undisclosed subject-matter vis-à-vis original claim 1, similar to that allegedly already caused by the first amendment.

If instead, as maintained by the respondent, the two expressions are considered equivalent by the skilled reader of the patent application as filed, then the second amendment cannot possibly modify the claimed subject-matter (and, similarly, also the first amendment would cause no change of subject-matter in comparison to original claim 1).

2.4 The respondent stressed that the first amendment in granted claim 5 had been occasioned by an objection raised during the substantive examination that the expression "*predetermined amount of catalyst slurry*" as present in original claim 5 lacked clarity. Hence, the respondent had feared that the opposition division would have raised again an objection of lack of clarity, in case the first amendment would have been removed by reintroducing the corresponding wording of claim 5 as filed. Moreover, this party also had considered that putting the claim's wording in order would have allowed to avoid further problems e.g. in national courts.

2.5 The board finds that these arguments manifestly relate to (hypothetical) issues of clarity and, thus, not to a ground of opposition. Accordingly, the board concludes that the second amendment in claim 5 of the seventh auxiliary request (i.e. of the set of maintained claims) is not occasioned by a ground of opposition and, thus, contravenes Rule 80 EPC. Hence, the seventh auxiliary request is found not allowable.

3. *Eighth to thirteenth auxiliary requests - Rule 80 EPC*

Since the second amendment is also present in each version of claim 5 in these requests, each of these versions of claim 5 is found to contravene Rule 80 EPC for the same reasons given above for claim 5 of the seventh auxiliary request. Hence, none of the eighth to thirteenth auxiliary requests is allowable either.

4. *Fourteenth auxiliary request*

The four claims of this request are respectively identical to the corresponding maintained claims.

Hence, the wording of claim 1 of this request is that recited in I *supra*, and the remaining claims 2 to 4 define preferred embodiments thereof.

The appellant only disputed the allowability of this request because claim 1 would contravene Article 123(2) EPC and its subject-matter would be obvious (Article 56 EPC).

- 4.1 Added subject-matter (Article 123(2) EPC) - claim 1
 - 4.1.1 The appellant argued in essence that the three amendments in claim 1 at issue (identical to maintained claim 1, whose text reported in I *supra* shows the amendments vis-à-vis original claim 1) would not be disclosed in the original application, or at least not disclosed therein in combination. To arrive at the wording of claim 1 required to combine a number of selections from passages in the original application, mostly referring to figures and to the apparatus rather than to the CCS method of the invention, in which the relevant features appeared only disclosed in connection with other features, not recited in claim 1. Thus, claim 1 would comprise subject-matter not disclosed in the application as filed.
 - 4.1.2 The board notes preliminarily that the three amendments in claim 1 of this request further specify features that were already present in original claim 1.
 - 4.1.3 In particular, it is a fact that claim 1 as filed, although not explicitly requiring the listed steps to occur in the given sequence, do recite these steps in a certain order (also present in last sentence in page 4 of the application as filed). The board notes further that at least the last two steps in original claim 1

manifestly only make technical sense if occurring after the preceding three steps and in the given order. Furthermore throughout the original disclosure there is no disclosure of a different sequence of the claimed steps, but rather the method of the invention described with reference to the sequence of Figures 3A to 3F (see from page 17, line 2 to page 18, line 20 of the application as filed) also only discloses the sequence of steps recited in original claim 1.

Hence, the board finds that the skilled reader of the application as filed can only directly and unambiguously conclude that the sole disclosed sequence for the steps of the CCS method of original claim 1 corresponds to the order with which these steps are actually recited in this latter.

Nor does it appear that this only disclosed sequence of steps must necessarily be technically connected to one or more method features, e.g. those also depicted in Figures 3A to 3F, not recited in original claim 1.

Thus, the board finds that the original application only discloses the step sequence actually recited in original claim 1 and does that without implying any mandatory combination of such sequence with other features of the CCS method of the invention. Hence the application as filed is found to provide a basis for the additional indication in claim 1 under consideration of the wording "*following subsequent*".

- 4.1.4 The board also stresses that original claim 1 already requires that the catalyst slurry (manifestly that initially introduced in the container) is coated on the channels of the support in a quantitative manner. Hence, the skilled reader of the application as filed

would consider of relevance for such method any disclosure therein that relates to such feature.

4.1.5 In particular, from the original description of the CCS method of the invention and in particular of its so-called "best mode" (see page 4, lines 1 to 8; page 5, lines 10 to 14; last full sentence on page 6 and, particularly, page 7, lines 7 to 11, in combination with page 8, lines 7 to 18; page 9, lines 2 to 7 and page 13, lines 10 to 17) it is apparent that such quantitative coating initially requires to charge the "entire" catalyst slurry (initially introduced in the container) by means of physical pressure into the channels of the support, followed by the application of vacuum to expand the distribution of the catalyst slurry in the channels.

4.1.6 Hence, and since the movement of the bottom of the container upward described in the sentence bridging pages 17 and 18 of the application (reading: "*[t]he upward movement of the bottom of the container stops when the bottom of the container comes into contact with the bottom of the support (refer to FIG. 3D)*") is not only the sole description present in the original application for the movement of the bottom of the container upward, but is also manifestly apt at achieving the aimed transfer of the entire catalyst slurry into the channels of the support, the skilled reader of the application as filed would consider this the only originally disclosed option for the movement of the bottom of the container upward defined in original claim 1.

Nor does it appear that this only disclosed option for the movement upward of the bottom of the container is necessarily connected to further specific features of

the CSS method described with reference to Figures 3D to 3F.

Thus, the original application is found to implicitly disclose such movement as generally applicable in the method of original claim 1 and, hence, provides a basis for the additional indication in claim 1 under consideration of the wording "*until the bottom of the container comes into contact with the bottom of the catalyst support*".

- 4.1.7 The board stresses again the relevance of the original disclosure relating to the "quantitative" nature of the CCS method of original claim 1 already discussed above, and in particular of the passage in the referred page 13, lines 10 to 17 (specifying that the "*slurry is charged into the lower space of the support, and then a part of the slurry is drawn to the upper space thereof by means of vacuum means", emphasis added).*

The board notes further the disclosure in original page 18, lines 7 to 14 and in original claim 5 of means that apply vacuum at the top of the channels and that are located over the top of the container, which not only represents the sole detailed description in the original application as to how to perform the application of vacuum required in original claim 1, but also is manifestly apt at drawing part of the slurry initially charged into the lower space of the support to the upper space of this latter.

Hence, the board finds that the skilled reader of the application as filed would consider this the only originally disclosed option for the application of vacuum to the channels of the catalyst support required in original claim 1.

Nor does it appear that this only disclosed option for the application of the required vacuum is necessarily connected to further specific features of the CSS method described with reference to Figures 3D to 3F or of the apparatus of claim 5.

It follows that the original application is found to implicitly disclose the application of vacuum to the top of the channels through vacuum means located over the top of the container, as generally applicable in the method of original claim 1 and, hence, provides a basis for the additional indication in claim 1 under consideration of the wording "*at the top thereof with vacuum means located over the top of the container*".

4.1.8 The board concludes that the appellant's objection of added subject-matter in claim 1 of the fourteenth auxiliary request is unconvincing. Thus, this auxiliary request is found to comply with the requirements of Article 123(2) EPC.

4.2 Inventive step (Article 56 EPC)

The sole validly filed inventive step attack finally maintained by the appellant is based on the combination of D2 with D5.

4.2.1 Closest prior art/technical problem solved

It is undisputed that the closest prior art is represented by the CCS method disclosed in D2 which, similarly to the presently claimed invention, aims at efficiently and uniformly coating honeycomb substrates with a measured amount of catalyst slurry (compare page 3, lines 28 to 32, of D2 with paragraphs [0009] and [0012] of the patent in suit).

In this CCS method (see D2, from page 3 line 34 to page 4, line 7; claim 1; Figures) a catalyst-containing liquid is introduced (e.g. by means of the upward movement of a piston) into a honeycomb monolith substrate via the open lower ends of the channels of the substrate, followed by inversion of the loaded substrate and application of vacuum at the lower channels' open ends (i.e. those opposite to the open ends through which the liquid had been initially introduced).

It is also undisputed that the subject-matter of claim 1 at issue solves vis-à-vis this prior art the technical problem of providing a further CCS method for efficiently and uniformly coating honeycomb substrates with a measured amount of catalyst slurry.

4.2.2 The solution

It is undisputed that the solution to this technical problem offered in claim 1 at issue consists in a CCS method in which the catalyst slurry is firstly forcibly loaded into the lower section of the channels of the support by means of the movement upward of the bottom of the container and thereafter subjected to vacuum, whereby the vacuum means are applied at the top of the channels.

Hence, it is undisputed that the claimed method differs from the closest prior art disclosed in D2 (at least) in that in former no inversion of the support occurs before the application of vacuum.

4.2.3 Obviousness of the solution

According to the appellant the claimed method would represent a solution to the posed technical problem that would be obvious in view of the CCS method disclosed in D5, in which the lower end of a monolith support is submerged in the catalyst slurry and this latter is drawn into the channels under the action of vacuum applied to the opposite end of the support (see D5: page 3, lines 10 to 27, in combination with claims 1 and 2). This teaching would render obvious to directly apply vacuum to the top of the substrate channels as it is done in the CCS method of D5 (and also required in the last step of claim 1 under consideration), also in the method of D2 instead of performing the intermediate substrate inversion step foreseen in D2 followed by vacuum application (see Figures 6 and 7 and the description of these figures on page 18 of D2), i.e. it would render obvious to draw the slurry by applying vacuum to the top of the channels after the step of the CCS method of D2 in which the channels have been forcibly charged with the slurry via the channels' lower ends through the movement of the bottom of the container.

- 4.2.4 The board finds this line of argument manifestly flawed because, even in the hypothetical case that a skilled person would explore the possibility of combining the steps of the CCS methods of D2 and D5 as suggested by the appellant, such skilled person would come to the conclusion that these steps cannot be simply combined because, as stressed by the respondent, a skilled person would necessarily consider that in D2 the inversion of the substrate and the subsequent application of vacuum are preceded by a slurry loading step in which the movement of the bottom of the container proceeds upwards until the channels lower ends are sealed.

Instead in the CCS method of D5, in order for the catalyst slurry to be drawn upwards (under vacuum applied to the top of the channels), it is explicitly required to leave a gap between the bottom of the container and said lower ends (see D5, column 4, lines 27 to 33).

- 4.2.5 Hence, even in the hypothetical case where the skilled person had looked into the method of D5 while searching for a possible replacement of the sequence of inversion and application of vacuum in the method of D2, he would have then concluded that the vacuum application of the method of D5, which requires the above-described gap, cannot be used as such after the step in which the catalyst slurry is forcibly charged into the substrate via the lower ends of the channels (because at the end of such step the "charge piston (18)" seals the channels' lower ends instead), and further modifications need to be made in order to enable such combination.
- 4.2.6 Thus, the teachings in D2 and D5 do not render obvious to simply replace the steps of inversion and application of vacuum of the method of D2 by means of the vacuum application step of the method disclosed in D5.
- 4.2.7 If only for this reason the board concludes that the appellant's objection of lack of inventive step of the subject-matter of claim 1 of the fourteenth auxiliary request is unconvincing. Thus, this request is found to comply with the requirements of Article 56 EPC as well.

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 with the order to maintain the patent in amended form on the basis of claims 1 to 4 according to the fourteenth auxiliary request filed with letter dated 7 February 2022 and a description and Figures to be adapted when appropriate.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated