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**Datasheet for the decision  
of 25 May 2021**

**Case Number:** T 2109/17 - 3.2.06

**Application Number:** 07865002.5

**Publication Number:** 2102461

**IPC:** F01N3/20, F01N3/02, F01N3/035,  
B01D53/94, F01N13/02

**Language of the proceedings:** EN

**Title of invention:**  
EMISSION TREATMENT SYSTEMS AND METHODS

**Patent Proprietor:**  
BASF Corporation

**Opponent:**  
Umicore AG & Co. KG

**Headword:**

**Relevant legal provisions:**  
EPC Art. 123(2)

**Keyword:**  
Amendments - added subject-matter (yes)

**Decisions cited:**

G 0002/10, T 0860/00

**Catchword:**



**Beschwerdekammern**

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**Case Number: T 2109/17 - 3.2.06**

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.06**  
**of 25 May 2021**

**Appellant:** Umicore AG & Co. KG  
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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
17 July 2017 concerning maintenance of the  
European Patent No. 2102461 in amended form.**

**Composition of the Board:**

**Chairman** M. Harrison  
**Members:** M. Dorfstätter  
E. Kossonakou

## **Summary of Facts and Submissions**

- I. An appeal was filed by the appellant (opponent) against the interlocutory decision of the opposition division finding that, on the basis of the second auxiliary request (then on file), European patent No. 2 102 461 (hereinafter "the patent") met the requirements of the EPC. It requested that the decision under appeal be set aside and the patent be revoked.
- II. In its response dated 27 March 2018, the respondent (patent proprietor) requested, as a main request, that the appeal be dismissed, subsidiarily that the patent be maintained according to a first auxiliary request submitted therewith.
- III. The Board issued a summons to oral proceedings and a subsequent communication containing its provisional opinion, in which it indicated *inter alia* that the Board had serious doubts whether there was an unambiguous basis in the application as filed for the subject-matter of claim 1 of the main request (see item 2 of the communication).
- IV. With letter of 15 March 2021 the appellant announced that it would not take part in the oral proceedings.
- V. Oral proceedings by videoconference were held before the Board on 25 May 2021 in the absence of the appellant.
- VI. The respondent's final requests remained as stated in its letter of response dated 27 March 2018 (see item II above).

VII. Claim 1 of the main request reads as follows:

"An emission treatment system for treatment of an exhaust stream comprising NO<sub>x</sub> and particulate matter, the emission treatment system comprising:  
a substrate having a plurality of passages and elements for trapping particulate contained in an exhaust stream flowing through the filter, the substrate having an inlet end an outlet end, the inlet end of the substrate having a quantity of precious group metal composition disposed thereon to light off fuel at a temperature of less than about 300°C and to produce an exotherm sufficient to burn off trapped particulate in the filter; and  
an NO<sub>x</sub> reducing catalyst comprising a selective catalytic reduction catalyst located downstream from the particulate filter,  
wherein the precious group metal is present in a loading amount of at least about 1.41g/l (40g/ft<sup>3</sup>), and extends for less than 50% of the axial length of the filter, and wherein the substrate is in the form of a wall flow monolith having a plurality of longitudinally extending passages bounded by longitudinally extending walls, the passages comprising inlet passages having an open inlet end and a closed outlet end, and outlet passages having a closed inlet end and an open outlet end, the walls having a porosity of at least 40% with an average pore size of at least 5 microns and precious group metal composition permeating the walls and extending from the inlet end towards the outlet end to a length that is less than the axial length of the walls to provide an inlet zone, wherein the longitudinally extending walls have a catalytic coating thereon underlying the precious group metal composition, the catalytic coating extending the entire axial length of the filter, wherein the catalytic

composition is a precious group metal composition in an amount less than 0.35g/l (10g/ft<sup>3</sup>)."

In the first (and only) auxiliary request, the following feature is added to claim 1 of the main request (inserted directly after the feature "an NO<sub>x</sub> reducing catalyst comprising a selective catalytic reduction catalyst located downstream from the particulate filter"):

"; and an introduction port located upstream from the SCR catalyst, the introduction port in fluid communication with an ammonia source or ammonia precursor"

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

The subject-matter of claim 1 of the main request did not meet the requirement of Article 123(2) EPC due to the incorporation of features that were only disclosed in the description as filed and which were selected from two lists. The selection from a first list was an SCR catalyst as the type of NO<sub>x</sub> reduction catalyst. A selection from a second list was established by defining a value of less than 10g/ft<sup>3</sup> for the catalytic composition, which was one of the three possibilities in the application as filed, namely less than 10g/ft<sup>3</sup>, equal to 10g/ft<sup>3</sup>, and less than or equal to 10g/ft<sup>3</sup>. The term 'catalytic composition' could be interpreted in different ways. The catalytic composition could thus include the precious group metals and the high surface area, refractory oxide onto which these were dispersed. In any way, there was no clear connection between the specific quantity of catalytic material in the filter

as claimed and an SCR catalyst having been selected as the NO<sub>x</sub> reduction catalyst.

IX. The respondent's arguments relevant to the decision may be summarised as follows:

The subject-matter of claim 1 of the main request met the requirement of Article 123(2) EPC. There was no need for literal support of the claim in the application as filed. The application had to be understood as it would be by a skilled person, to whom it was directed. Claim 1 of the main request corresponded to claim 8 as filed, which was dependent on claims 1, 4, 5 and 6 as filed, via direct and single dependencies. Furthermore, the loading of "less than or equal to about 20g/ft<sup>3</sup>" of the precious group metal composition contained in the catalytic composition as defined in claim 8 of the application as filed had merely been limited to "less than 10g/ft<sup>3</sup>". This was supported by lines 28 to 31 on page 15 of the application as filed. Based on this passage, it had been further specified that the catalytic composition of the catalytic coating "is a precious group metal composition". The definition of a loading of less than or equal to 10g/ft<sup>3</sup> did not constitute a list but rather presented alternatives. Paragraphs [0047] to [0054] gave a general description of the combination of an SCR catalyst together with zoning of the particulate filter, wherein it was indicated in paragraph [0050] that the catalyst loading of the undercoat was typically less than or equal to 10g/ft<sup>3</sup>. In this general description, no other range of loadings other than a loading of less than or equal to 10g/ft<sup>3</sup>, and no NO<sub>x</sub> reducing catalyst downstream of the filter other than an SCR catalyst was disclosed. The reference to an SCR catalyst located upstream of the filter in

paragraph [0049] was clearly a mistake made when drafting, as it did not fit to the rest of the application; all independent claims as filed referred to an NO<sub>x</sub> reduction catalyst located downstream of the filter. The last sentence on page 15 of the application as filed was incomplete but this did not affect its comprehensibility. It merely repeated what was stated immediately before. It was clear that the word 'filter' was omitted at its end.

### **Reasons for the Decision**

#### 1. *Main request*

1.1 The subject-matter of claim 1 extends beyond the content of the application as filed, contrary to the requirement of Article 123(2) EPC. It is not clearly and unambiguously derivable from the application as filed to provide a catalytic composition that "is a precious group metal composition in an amount of less than 0.35g/l (10g/ft<sup>3</sup>)" together with "an NO<sub>x</sub> reducing catalyst comprising a selective catalytic reduction catalyst located downstream from the particulate filter".

1.2 The basic principle, when determining whether the requirement of Article 123(2) EPC is met, is to be found in the jurisprudence of the Enlarged Board of Appeal, as summarised in its decision G2/10 (OJ EPO 2012, 376, Reasons 4.3).

Applied to the present case, it has to be established whether the amended subject-matter is directly and unambiguously derivable by a skilled person, using common general knowledge, and seen objectively and relative to the date of filing, from the whole of the



application as filed (i.e. description, claims and figures).

1.3 Claim 1 of the main request corresponds to the subject-matter of claim 8 as filed, however with three amendments. While claim 8 as filed defines that the catalytic composition comprises a precious group metal composition in an amount less than or equal to about 20 g/ft<sup>3</sup>, claim 1 of the main request includes the definition that the catalytic composition is (first amendment) a precious group metal composition in an amount less than 0.35 g/l (10g/ft<sup>3</sup>) (second amendment). Furthermore, claim 1 of the main request defines that the NO<sub>x</sub> reducing catalyst located downstream from the particulate filter (as was already defined in claim 1 as filed) comprises a selective catalytic reduction catalyst (SCR catalyst) (third amendment).

1.4 As argued by the respondent, the first and second amendments find their basis in the description as filed at the end of page 15. This passage reads: "In embodiments in which the underlying coating is a precious group metal composition, the loading is typically less than or equal to 10g/ft<sup>3</sup>".

1.4.1 In agreement with the respondent, the Board concludes that the claim, when defining the amount of the catalytic composition, refers to the loading of the underlying coating with a precious group metal composition. In other words, both the definition on page 15 of the application as filed and the one used in the claim of the main request mean that the precious group metals themselves are present in the coating at the given numerical value, without including further components in that numerical value.

The Board thus does not concur with the appellant's argument that the 'catalytic composition' in the given amount could be interpreted as including, in addition to the precious group metals, the high surface area, refractory oxide, onto which the precious group metals are dispersed.

- 1.4.2 The Board also concludes that the definition of "a loading of less than or equal to  $10\text{g}/\text{ft}^3$ " on page 15, lines 30/31 does not constitute a list but rather presents a single range for loadings up to a certain value. By amending this feature to " $\text{less than } 10\text{g}/\text{ft}^3$ ", the scope of the claim no longer contains the end value of  $10\text{g}/\text{ft}^3$  of this range, which otherwise remained the same. The Board thus finds that the feature " $\text{less than or equal to } 10\text{g}/\text{ft}^3$ " does not represent a selection from a list (as also argued by the respondent).
- 1.4.3 The reasons for these conclusions need however not be dealt with in this decision, as the main and first auxiliary requests fail to meet the requirement of Article 123(2) EPC for another reason, as explained below.
- 1.5 The third amendment relates to the selection of an SCR catalyst being comprised in the  $\text{NO}_x$  reducing catalyst located downstream of the particulate filter. In the application as filed, several alternatives were presented as possible types: a selective catalytic reduction (SCR) catalyst, a lean  $\text{NO}_x$  catalyst, a lean  $\text{NO}_x$  trap (LNT), or a combination of these (see paragraphs [0019], [0020] and [0070] of the application as filed). By defining that the type of the  $\text{NO}_x$  reduction catalyst comprises an SCR catalyst, one of these alternatives has been selected.

- 1.6 The combination of the range of "less than 10g/ft<sup>3</sup>" together with a selective catalytic reduction (SCR) catalyst, results in the claim defining subject-matter that is not directly and unambiguously derivable from the application as filed. From no disclosure in the application can this combination be unambiguously derived.
- 1.6.1 The respondent argued that the subject-matter of claim 1 was directly and unambiguously derivable from claim 8 as filed, together with the range of less than 10g/ft<sup>3</sup> from paragraph [0050] (at the end of page 15) and with the NO<sub>x</sub> reducing catalyst being a selective catalytic reduction (SCR) catalyst from several passages of paragraphs [0047] to [0054]. It further argued that paragraphs [0047] to [0054] gave a general description of the combination of an SCR catalyst together with zoning of the particulate filter. Whilst the Board accepts that the details presented therein are given in a general way and are not restricted to a particular combination of a single embodiment, they are not in any way presented in every possible combination. The paragraphs referred to by the respondent start with a statement that they describe 'several exemplary embodiments of the invention' (see paragraph [0046]). It is therefore necessary to consider the context of these paragraphs to determine which features are disclosed therein in which combination(s).
- 1.6.2 The respondent referred to paragraph [0048] which includes the following sentence (see page 13, line 22 of the application as filed): "In addition, in systems that include a NO<sub>x</sub> reducing catalyst, for example an SCR catalyst or lean NO<sub>x</sub> catalyst downstream from the integrated light-off oxidation/particulate filter provides a greater amount of heat for these downstream

devices compared to systems in which the particulate filter and particulate soot filter provided the separate components" (emphasis by the Board). The SCR catalyst is thus given as one example for the NO<sub>x</sub> reducing catalyst located downstream of the filter. The respondent's contention that in this general description, no NO<sub>x</sub> reducing catalyst other than an SCR catalyst was disclosed, hence does not hold true. Furthermore, no connection to a particular value of the loading with a precious group metal composition of the filter is apparent in this passage.

- 1.6.3 The respondent also referred to paragraph [0049] which described further particularities of the system when it includes an SCR catalyst. Its second sentence reads (see page 14, line 7 to 11): "With the fuel addition point (for filter regeneration) provided downstream of the SCR catalyst, the nitrogen reducing catalyst is not exposed to the extreme temperatures associated with the active regeneration of the particulate filter." As the fuel addition point can only be provided upstream of the filter to be regenerated by the added fuel, this paragraph clearly refers to a system in which the SCR catalyst is provided upstream of the filter. This part of the description is also not based on an error. It is borne out by the following sentences which explain the advantages of such an arrangement due to the absence of a high temperature exposure of the SCR catalyst caused by forced filter regenerations. Among these advantages it is mentioned that a broader range of materials can be used for the SCR catalyst composition or that the overall system volume can be reduced. In this context, no reference is made to the loading with a precious group metal composition of the filter, even less so to a particular value thereof. During the oral proceedings the respondent, who had also relied on this disclosure

initially, concurred with the Board's understanding of an upstream SCR being disclosed at this juncture.

1.6.4 Moving to paragraph [0050], this describes details regarding the "integration of the light-off/oxidation catalyst function and particulate removal functions into a single catalyst article" (which is referred to as 'the filter' in other passages of the application). Several examples for the length of the inlet zone, its application onto the filter, the materials for the catalytic coating and the loading thereof are given. At the end of page 15 an example is given for the underlying coating being a precious group metal composition with a loading of less than or equal to  $10\text{g}/\text{ft}^3$ . In this context however, no connection is apparent as regards the type of an  $\text{NO}_x$  reducing catalyst, nor for example whether it should, when having this particular loading, be located upstream or downstream of the filter.

1.6.5 The Board notes that the last sentence on page 15 is incomplete and the first sentence on the following page 16 only starts in line 5. It is therefore unclear how paragraphs [0050] and [0051] are related. Whether the respondent's argument is correct, that the last sentence on page 15 merely repeated what was stated immediately before and that it was clear that the word 'filter' was omitted at its end, can however be left unanswered (albeit this seems somewhat doubtful in view of the missing five lines on page 16). This sentence specifically refers to a precious group metal at a loading of  $10\text{g}/\text{ft}^3$ , which is outside the claimed range of less than  $10\text{g}/\text{ft}^3$ . It cannot thus provide a basis for the claimed subject-matter anyway.

1.6.6 Paragraphs [0051] to [0054], as were also referred to by the respondent, describe further details and include a mention of an SCR catalyst in paragraph [0052], but with reference to the figures. This is explicitly stated in the first sentence of paragraph [0051] and also apparent from the repeated citation of the same reference numerals as also used in the figures. The Board thus concludes that paragraphs [0051] to [0054] do not form part of the general part of the description but relate to specific embodiments as depicted in the drawings, which are presented in combination with further elements. They cannot thus form the basis for the claimed features in their generality, without constituting an inadmissible intermediate generalisation. The Board also notes that none of the embodiments described with reference to the figures nor any of the examples given therein include a filter with a catalytic composition being a precious group metal composition with a loading of less than 10g/ft<sup>3</sup>.

1.6.7 The respondent's argument that the reference to an SCR catalyst located upstream of the filter in paragraph [0049] was clearly a mistake upon drafting, as it does not fit to the rest of the application, is not accepted. This paragraph describes an arrangement that is different from the arrangement described in the paragraph before, and also different from the claimed arrangement. It is however technically sound in itself and not in contradiction to any other part of the application. A skilled reader would thus not ignore what is described therein.

The respondent's further argument in this context that all independent claims as filed referred to an NO<sub>x</sub> reduction catalyst located downstream of the filter, does not alter the Board's finding. The fact that not

all alternatives presented in the description have been claimed does not alter the content of the application. The non-claimed alternatives might just as well not have been considered to be important at the time of filing the application and have not been claimed for this reason; they might even have been included for other reasons.

Therefore, the application as filed describes several types (SCR catalyst, lean NO<sub>x</sub> catalyst, lean NO<sub>x</sub> trap) and positions (upstream or downstream of the filter) for the NO<sub>x</sub> reducing catalyst, none of which would be regarded as being erroneously mentioned in the application as filed by the skilled person.

- 1.7 The application as filed hence does not present a connection between the particular alternative of the claimed filter with its particular loading together with an SCR catalyst as the type of downstream NO<sub>x</sub> reduction catalyst, either in the general form as claimed, or in a particular embodiment comprising further non-claimed details.
  
- 1.8 The Board accepts the respondent's argument that there was no need for a literal disclosure of a combination of features in the application as filed, for the subject-matter to be derivable. The disclosure could also be implicit, which would encompass what any person skilled in the art would consider necessarily implied in the patent application as a whole (see e.g. T860/00, Reasons 1.1). There is however also no implicit disclosure for the combination of the range of less than 10g/ft<sup>3</sup> and an SCR catalyst located downstream of the filter.

- 1.9 The respondent's further argument that the application as filed is directed to a skilled person and not a language expert is not disputed, and indeed the Board has shown above how a skilled person must consider the disclosure when determining what is directly and unambiguously derivable. Merely because the specific combination defined in the claim might be considered as a possibility once the suggestion is made, does not make that combination something which the skilled person would derive directly and unambiguously because that "suggestion" for such a combination is simply not present.
- 1.10 Lastly, the respondent also argued that the application as filed "funneled down" from the amount given in claim 8 as filed to the precious metal content of  $10\text{g}/\text{ft}^3$  (now defined in claim 1) and would be understood "to culminate in Example 4" which used an SCR catalyst downstream of the filter, such that a skilled person would understand that the application as filed was actually directed to this combination as being preferred. However, this argument also fails, not least since a "funneling down" cannot be recognised due to the range of possibilities left open for a skilled person from which to choose, but also when considering Example 4; this relies (amongst other features described) on a filter having the loading given for that in Example 1, namely of  $10\text{g}/\text{ft}^3$  rather than less than  $10\text{g}/\text{ft}^3$  as claimed, and, moreover having a particular precious metal ratio (see e.g. page 36, lines 8 to 11), none of which is part of claim 1. Consequently, the Board can see no culmination point or extra pointer in the application as filed which directs the skilled person to the particular combination as claimed.



1.11 The main request is thus not allowable.

2. *First auxiliary request*

2.1 The subject-matter of claim 1 extends beyond the content of the application as filed, contrary to the requirement of Article 123(2) EPC.

2.2 Claim 1 includes the same combination of an SCR catalyst being located downstream of a particulate filter with a catalytic coating comprising a zone in which the catalytic composition is a precious group metal composition in an amount less than 10 g/ft<sup>3</sup>. The added feature concerning the introduction port for ammonia or a precursor thereof does not render the claimed subject-matter directly and unambiguously derivable from the application as filed. This was also not disputed by the respondent.

2.3 In its communication the Board indicated its preliminary opinion that the (first) auxiliary request did not appear to overcome the objections made in respect of the main request. To this preliminary opinion, the respondent presented no counter-arguments. Therefore, the Board herewith confirms that the subject-matter of claim 1 of the first auxiliary request does not meet the requirement of Article 123(2) EPC.

2.4 The first auxiliary request is thus also not allowable.

## 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:



D. Grundner

M. Harrison

Decision electronically authenticated