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**Datasheet for the decision
of 24 September 2019**

Case Number: T 0116/16 - 3.2.06

Application Number: 07848741.0

Publication Number: 2094951

IPC: F01N3/08, F01N3/20, B01D53/94

Language of the proceedings: EN

Title of invention:
APPARATUS COMPRISING LEAN BURN IC ENGINE AND AN EXHAUST SYSTEM
THEREFOR

Patent Proprietor:
Johnson Matthey PLC

Opponent:
Umicore AG & Co. KG

Headword:

Relevant legal provisions:
EPC Art. 123(2), 84, 111(1)
RPBA Art. 12(4), 13(1), 12(1), 12(2)

Keyword:

Amendments - main request - added subject-matter (yes) -
auxiliary request 1 - added subject-matter (yes) - auxiliary
request 2 - added subject-matter (yes)
Remittal to the department of first instance - (no)
Late-filed request - auxiliary request 2 - admitted (yes)
Claims - clarity - auxiliary request 2 (no)

Decisions cited:

Catchword:



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Case Number: T 0116/16 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 24 September 2019

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
18 November 2015 concerning maintenance of the
European Patent No. 2094951 in amended form.**

Composition of the Board:

Chairman M. Harrison
Members: P. Cipriano
E. Kossonakou

Summary of Facts and Submissions

- I. Appeals were filed by both the opponent and the proprietor against the interlocutory decision of the opposition division in which it found that European patent No. 2 094 951 in an amended form met the requirements of the EPC. As both parties are appellants and thus also respectively respondents, they will continue to be referred to as (patent) proprietor and opponent.
- II. The proprietor requested with its grounds of appeal that the interlocutory decision be set aside and the patent be maintained as granted or according to auxiliary requests 1 or 2.
- III. The opponent requested with its grounds of appeal that the interlocutory decision be set aside and the patent be revoked.
- IV. With its reply to the appeal of the opponent, the proprietor filed auxiliary requests 1 to 15, replacing the previous auxiliary requests on file.
- V. The Board issued a summons to oral proceedings including a communication containing its provisional opinion, in which it indicated *inter alia* that the subject-matter of claim 1 of auxiliary requests 3, 5 and 15 appeared to extend beyond the content of the application as originally filed.
- VI. With letter dated 27 August 2019, the proprietor filed a new main request and auxiliary requests 1 and 2 (which corresponded to previous auxiliary requests 3, 5 and 15 respectively) as a replacement for all previous requests.

VII. Oral proceedings were held before the Board on 24 September 2019.

The patent proprietor requested that the decision under appeal be set aside and the European patent No. 2 094 951 be maintained on the basis of either the main request or one of auxiliary requests 1 and 2, all as submitted with letter dated 27 August 2019. The proprietor also requested the remittal of the case to the opposition division in case any of D9 to D12 were admitted into the proceedings.

The opponent requested that the decision under appeal be set aside and the patent be revoked. The opponent also requested remittal of the case to the opposition division should auxiliary request 2 be found to fulfil the requirement of Article 123(2) EPC.

VIII. Claim 1 of the main request reads as follows, with features denoted 1 to 11 by the Board and as per the feature denotation used by the parties during the oral proceedings:

"An apparatus (10) comprising:

(1) (i) a lean burn internal combustion engine (12);

(2) (ii) an exhaust system (14) for treating a flowing exhaust gas from the engine, which system comprising:

(3) (a) a first substrate monolith comprising a NO_x adsorber catalyst (NAC) (18);

(4) (b) a catalysed soot filter (CSF) comprising a filter substrate comprising

(5) platinum group metal oxidation catalyst components and

(6) a compound effective to remove and/or convert at least some hydrogen sulfide in enriched exhaust gas,

(6A) wherein the platinum group metal oxidation catalyst components and the compound effective to remove and/or convert at least some hydrogen sulfide in enriched exhaust gas are segregated by being located in separate discrete zones,

(7) which filter substrate having an inlet end and an outlet end, wherein the inlet end of the filter substrate is located downstream of the first substrate monolith in a flow direction of the exhaust gas; and

(8) (iii) means (24) for enriching the exhaust gas to provide an enriched exhaust gas composition intermittently during normal lean running operation for removing sulfate adsorbed on the NAC,

(9) wherein the filter substrate has a length extending from the inlet end to the outlet end thereof,

(10) wherein the compound effective to remove and/or convert at least some hydrogen sulfide is located in a zone (22) of substantially uniform length defined at an upstream end by a point more than one half way along the filter substrate length measured from the inlet end and defined at a downstream end by the outlet end of the filter substrate itself and

(11) wherein the compound effective to remove and/or convert at least some hydrogen sulfide is effective to remove and/or convert at least some hydrogen sulfide derived from removing sulfate adsorbed on the NAC."

Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that it further defines that the compound effective to remove and/or convert at least some hydrogen sulfide is NiO.

Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that the features corresponding to bullet point (b) of the claim (corresponding to features 4 to 7 of the main request) regarding the catalysed soot filter CSF read as follows:

"(b) a catalysed soot filter (CSF) comprising a filter substrate comprising platinum and/or palladium supported on a support material including alumina and ceria or a mixed oxide or composite oxide of ceria and zirconia, and a compound effective to remove and/or convert at least some hydrogen sulfide in enriched exhaust gas, which filter substrate having an inlet end and an outlet end, wherein the inlet end of the filter substrate is located downstream of the first substrate monolith in a flow direction of the exhaust gas;"

IX. The arguments of the proprietor may be summarised as follows:

Main request - Article 123(2) EPC

The subject-matter of claim 1 fulfilled the requirement of Article 123(2) EPC.

Claim 1 was a combination of:

- originally filed claim 1 which disclosed features 1, 2, 3, 4, 8 and 11,
- page 10, lines 11-16, which disclosed features 5, 6 and 6A,
- page 6, lines 27-29, which disclosed feature 7
- page 7, lines 21-26 which disclosed features 9 and 10.

Page 10, lines 11-16, provided basis for the feature 6A, which defined that hydrogen sulfide removing and/or converting compounds (from this point on referred to as H₂S-removing compounds) in general could be segregated from the platinum group metal oxidation catalyst components (PGM) by locating the materials in separate discrete zones or substrates).

NiO was an optional preferred compound. The word "hence" on page 10, line 14 did not refer directly to the NiO but to the first part of the previous sentence that referred to H₂S-removing compounds in general. Also the word "such" referred to H₂S-removing compounds in general as used in the first part of the previous sentence.

Auxiliary request 1 - Article 123(2) EPC

The subject-matter of claim 1 fulfilled the requirement of Article 123(2) EPC.

The subject-matter of claim 1 was a combination of originally filed claim 1, page 6, lines 27-29, page 7, lines 21-26, and page 10, lines 11-16, whereby this last paragraph disclosed further that the added feature that the H₂S-removing compound was NiO.

Page 7, lines 21-26 disclosed "another particular embodiment" of the third embodiment and was a specific explicit disclosure of all the layout features of the H₂S-removing compound corresponding to features 9 and 10 of the claim (sequence of catalysts as well as the exact position and extension of the H₂S-removing compound in the filter substrate). Thus, no selections were necessary to arrive at this disclosure.

It was clear that "another particular embodiment" referred to a sub-embodiment exclusively of the third embodiment of the invention, since there was an equivalent sub-embodiment at least for the second embodiment of the invention on page 6, lines 11-20.

Further, the disclosure of the CSF on page 10, lines 11 to 16, was a specific disclosure of the more general CSF catalyst defined on page 5, lines 1-3, but it was clear for the skilled person reading the application that the CSF defined on page 10 was combinable with any of the embodiments disclosed on the previous pages, including the "another particular embodiment" of page 7, lines 21-26 mentioned above.

The expression "whilst the hydrogen sulfide removing and/or converting compound" on page 10, line 11 referred to the H₂S-removing compound in every embodiment previously discussed and thus linked the CSF catalyst of page 10 and the "particular embodiment" on page 7, lines 21-26.

Admittance of auxiliary request 2

Auxiliary request 2 should not be held inadmissible.

Auxiliary request 2 corresponded to auxiliary request 1 filed with the proprietor's grounds of appeal and to auxiliary request 10 filed during opposition proceedings. Thus there was no fresh case.

Auxiliary request 2 - Articles 84 and 123(2) EPC

The subject-matter of claim 1 fulfilled the requirement of Article 123(2) EPC.

The skilled person reading page 5, lines 1-3 understood that the support material could either be of alumina and ceria, alumina and a mixed oxide of ceria and zirconia or alumina and a composite oxide of ceria and zirconia. For alumina and ceria to alternate both with the mixed oxide and the composite, a comma was necessary after "alumina and ceria". This feature of claim 1 was thus clear.

The added feature in claim 1 was a disclosed specific CSF catalyst from the general possibilities disclosed on page 5, lines 1-3.

- X. The arguments of the opponent may be summarised as follows:

Main request - Article 123(2) EPC

The subject-matter of claim 1 contravened Article 123(2) EPC.

Page 10, lines 11-16 only provided support for locating the materials in separate discrete zones when the H₂S-removing compound was NiO. The word "hence" referred to the preferred compound NiO immediately before. The

expression "such hydrogen sulfide removing and/or converting compound" also referred specifically to NiO.

Auxiliary request 1 - Article 123(2) EPC

The subject-matter of claim 1 contravened Article 123(2) EPC.

To arrive at the combination of features of claim 1 the skilled person was required to perform selections from four lists. They needed to select between the possible disclosed embodiments corresponding to sequences of the catalysts (the NO_x adsorber catalyst (NAC) and the catalyzed soot filter (CSF)). Then they needed to select the catalyst in which the H₂S-removing compound should be located. A third selection was required to determine the position of the H₂S-removing compound in the substrate. The fourth was a choice as to which oxidation catalyst should be applied to the CSF - the one from page 10, lines 11 to 16, or the one from page 5, lines 1 to 3.

Thus, the "another particular embodiment" of page 7, lines 21-26 and the CSF comprising PGM components and NiO as disclosed on page 10, lines 11-16 did not form a single disclosure.

Admittance of auxiliary request 2 and request for remittal

Auxiliary request 2 should not be admitted into the proceedings, since it did not converge with the previous requests.

Should the request be admitted, the case should be remitted to the opposition division for further

prosecution without any prior discussion, since it was a fresh case.

Auxiliary request 2 - Articles 84 and 123(2) EPC

Claim 1 was not clear and its subject-matter contravened Article 123(2) EPC.

It was necessary to perform at least two selections to arrive at the specific selection of catalyst material and support material. Thus, the specific claimed CSF catalyst of claim 1 was not originally disclosed in the application as filed.

In addition, it was not clear what the possible material combinations were for the support material, e.g. whether all the possibilities for the support material included alumina or not.

Reasons for the Decision

1. Main request - Article 123(2) EPC
 - 1.1 The subject-matter of claim 1 extends beyond the content of the application as originally filed.
 - 1.2 The proprietor argued that page 10, lines 11-16, of the published international application provided basis for *inter alia* the feature 6A of claim 1, wherein "the platinum group metal oxidation catalyst components and the compound effective to remove and/or convert at least some hydrogen sulfide in enriched exhaust gas are segregated by being located in separate discrete zones".

The Board finds that this passage on page 10 does not provide a basis for the features 6 and 6A. This passage discloses initially that H₂S-removing compounds in general may coexist with PGM components but in this context it is only unambiguously disclosed that the specific compound NiO can poison the hydrocarbon and carbon monoxide activity of the PGM catalyst. The possibility of other compounds also poisoning the activity of the PGM catalyst is not disclosed.

Consequently, as the word "hence" and the expression "such hydrogen sulfide removing and/or converting compounds" also emphasize, the segregation of compounds in separate discrete zones disclosed in the following sentence in the description necessarily refers to the compound NiO (the only compound disclosed unambiguously as affecting the activity of the PGM catalyst) and not to the first part of the previous sentence referring generally to H₂S-removing compounds, as the proprietor argued. There is no unambiguous disclosure of segregation for other compounds.

Feature 6A of claim 1 defines a segregation in separate discrete zones for H₂S-removing compounds in general and not specifically for NiO, which thus finds no basis on page 10, lines 11-16 of the application.

- 1.3 Since the proprietor did not provide any other basis for feature 6A and the Board also could not find any, the subject-matter of claim 1 extends beyond the content of the application as originally filed and does not fulfill the requirement of Article 123(2) EPC. Thus, the main request is not allowable.

2. Auxiliary request 1 - Article 123(2) EPC

2.1 Claim 1 of auxiliary request 1 differs from claim 1 of the main request by further defining that the compound effective to remove and/or convert at least some hydrogen sulfide is NiO.

Feature 6A taken together with the compound effective to remove and/or convert at least some hydrogen sulfide being specifically NiO, corresponds to the disclosure of page 10, lines 11-16.

2.2 However, the disclosure of page 10, lines 11-16 does not form a single disclosure with all embodiments previously disclosed on pages 5 to 7. As the proprietor also acknowledged during the oral proceedings, the CSF catalyst of page 10 is more specific than the more general defined on page 5, lines 1-3, as it comprises necessarily a H₂S-removing compound coexisting with or segregated from the PGM component. Since the application as originally filed contains a more general disclosure (on page 5) and a more specific disclosure (on page 10) of the CSF catalyst, it is not directly and unambiguously derivable that the more specific disclosure of a CSF catalyst on page 10, lines 11-16, applies to the "particular embodiment" of page 7, lines 21-26 (i.e. instead of e.g. the more general one on page 5).

The H₂S-removing compound disclosed on page 10, lines 4-11 is the one described immediately before on page 9, last two lines, as "capable of storing and/or converting" H₂S under "rich" conditions and not necessarily under the (broader) "enriched" conditions disclosed on page 4, lines 17-19 and as defined in claim 1. Thus, the H₂S-removing compound of the

"particular embodiment" on page 7 is not the one disclosed on page 10, lines 11-16.

Therefore, the proprietor's argument that the expression "whilst the hydrogen sulfide removing and/or converting compound" on page 10, line 11 referred to the H₂S-removing compound in every embodiment previously described and thus linked the CSF catalyst of page 10 to the "particular embodiment" on page 7, lines 21-26, is not persuasive.

- 2.3 Since there is no direct and unambiguous link between the CSF of page 10 (corresponding to features 6 and 6A) and the "particular embodiment" of page 7 (corresponding to features 9 and 10), the subject-matter of claim 1 of auxiliary request 1 extends beyond the content of the application as originally filed and thus does not fulfil the requirement of Article 123(2) EPC. Auxiliary request 1 is therefore not allowable.
3. Admittance of auxiliary request 2 and request for remittal
 - 3.1 The opponent requested the Board not to admit auxiliary request 2 into the proceedings and, should the request be admitted, that the case be remitted to the opposition division for further prosecution without any prior discussion.
 - 3.2 Auxiliary request 2 was filed with grounds of appeal as auxiliary request 1 and with the response to the grounds of appeal of the opponent, albeit then as auxiliary request 15, so it may be considered part of the party's complete case under Article 12(2) EPC; moreover, in the circumstances of the present case, in which higher ranking auxiliary requests filed with the response to the grounds of appeal that the Board

considered not allowable in its preliminary opinion were simply deleted, it does not constitute an amendment to the party's case under Article 13(1) RPBA.

Article 12(4) RPBA requires the Board to take into account everything presented by the parties under Article 12(1) RPBA, if and to the extent that it relates to the case under appeal and meets the requirements in Article 12(2) RPBA. However, according to Article 12(4) RPBA, the Board has the discretionary power to hold inadmissible facts, evidence and requests that could have been presented or were not admitted in the first instance proceedings.

- 3.3 Thus, contrary to the argument of the opponent, convergence is not a criterion that is taken into account under Article 12(4) RPBA for requests presented with the grounds of appeal or the response thereto, since convergence is a requirement which falls under the heading of procedural economy which is a requirement of Article 13(1) RPBA.
- 3.4 Auxiliary request 2 was originally filed during the opposition proceedings as a response to the negative opinion of the opposition division. It was also filed again with the grounds of appeal. The Board thus saw no reason to exercise its discretion to exclude it from the proceedings.
- 3.5 As regards the opponent's request that the case be remitted to the opposition division for further prosecution without any prior discussion, this was based on the argument that it was a fresh case.
- 3.6 Not least for reasons of procedural economy, the case should only be remitted for examination of auxiliary

request 2 if it overcame the objections found to be prejudicial against the previous requests and without introducing any new objections, e.g. under Article 84 EPC. For this, the Board had at least to examine whether the requirements of Articles 84 and 123(2) EPC were fulfilled.

3.7 For these reasons, the Board decided, in the exercise of its discretion conferred by Article 111(1) EPC, not to remit the case to the opposition division for further prosecution at that particular stage of the proceedings.

4. Auxiliary request 2 - Articles 123(2) and 84 EPC

4.1 Claim 1 of auxiliary request 2 defines *inter alia*:

"a filter substrate comprising platinum and/or palladium supported on a support material including alumina and ceria or a mixed oxide or composite oxide of ceria and zirconia".

4.2 The Board finds that it is not clear, contrary to Article 84 EPC, which support materials or combinations thereof are now defined in the claim. The expression "including alumina and ceria or..." does not allow the skilled person reading the claim to distinguish whether it is only ceria or both ceria and alumina that permutate in the possible disclosed combinations, i.e. whether the support material possibilities are for example:

alumina+ceria/alumina+mixed oxide of ceria and zirconia/alumina+composite oxide of ceria and zirconia

or

alumina+ceria/mixed oxide of ceria and zirconia/
composite oxide of ceria and zirconia.

Contrary to the argument of the proprietor, who argued that because no comma was present after "alumina" or after "ceria" all support material included alumina, the Board finds that it is not clear for the skilled person reading the wording of the text that all the possibilities include alumina, otherwise a comma would have seemingly been required after "alumina and ceria". The Board finds that at least the absence of a comma leaves several possibilities open. The added feature is therefore ambiguous and thus lacks clarity (Article 84 EPC).

- 4.3 In addition, the proprietor argued that page 5, lines 1-3 provided the basis for this amendment (Article 123(2) EPC). The Board however does not accept this. The original passage on page 5, lines 1-3 reads

"The CSF catalyst can be any suitable for the purpose including platinum and/or palladium supported on a suitable support material including alumina and ceria or a mixed oxide or composite oxide of ceria and zirconia."

- 4.4 The use of the expression "can be any suitable for the purpose including" does not restrict the catalyst materials to platinum and/or palladium. It is more generally disclosed that any catalyst suitable for the purpose may be used and that instead certain examples of what can be included are given.

- 4.5 Similarly, the expression "a suitable support material including" does not restrict the support material to

alumina and ceria or a mixed oxide or composite oxide of ceria and zirconia. It is, as with the catalyst materials mentioned in point 4.4. above, instead more generally disclosed that any suitable support material may be used.

- 4.6 Thus, to arrive at the claimed subject-matter, at least two selections from two lists need to be made, however without any pointer to such a selection being present. Contrary to the argument of the proprietor, the claimed specific combination of the CSF catalysts and support materials is thus not directly and unambiguously derivable from page 5, lines 1-3. No other basis for the introduced subject-matter was presented.
- 4.7 For the above reasons, the subject-matter of claim 1 does not meet the requirements of Articles 84 and 123(2) EPC.
- 4.8 Auxiliary request 2 is thus 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:



M. H. A. Patin

M. Harrison

Decision electronically authenticated