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**Datasheet for the decision
of 1 October 2019**

Case Number: T 1454/15 - 3.2.06

Application Number: 05808839.4

Publication Number: 1815112

IPC: F01N3/023, F01N3/035,
B01D53/94, F01N3/08, F01N3/20

Language of the proceedings: EN

Title of invention:
EXHAUST SYSTEM COMPRISING EXOTHERM-GENERATING CATALYST

Patent Proprietor:
Johnson Matthey PLC

Opponent:
BASF Catalysts LLC

Headword:

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
Amendments - added subject-matter (yes)

Decisions cited:

G 0002/10

Catchword:



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Case Number: T 1454/15 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 1 October 2019

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 3 July 2015
revoking European patent No. 1815112 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman M. Harrison
Members: M. Hannam
J. Hoppe

Summary of Facts and Submissions

- I. An appeal was filed by the appellant (patent proprietor) against the decision of the opposition division revoking European Patent No. 1 815 112. It requested that the decision be set aside and the patent be maintained according to a main request or according to one of auxiliary requests 1 to 5 filed with its grounds of appeal.
- II. The respondent (opponent) requested that the appeal be dismissed.
- III. With letter of 31 May 2019 the appellant withdrew its main request, making previous auxiliary request 1 its new main request and making previous auxiliary requests 2 to 5 its new auxiliary requests 1 to 4.
- IV. The Board issued a summons to oral proceedings and a subsequent communication containing its provisional opinion, in which it indicated *inter alia* that the subject-matter of claim 1 of the main request seemingly failed to meet the requirement of Article 123(2) EPC. It furthermore indicated that, should the subject-matter of claim 1 fail to find basis in the application as filed, none of the auxiliary requests appeared to overcome this objection.
- V. Oral proceedings were held before the Board on 1 October 2019, during which the appellant withdrew its main request and auxiliary request 1. The final requests of the parties were thus as follows:

The appellant (patent proprietor) requested that the decision under appeal be set aside and

the patent be maintained in amended form based on the claims of auxiliary request 2, filed with letter dated 31 May 2019, or, as an auxiliary measure, based on the claims of one of auxiliary requests 3 or 4, filed with letter dated 31 May 2019.

The respondent requested that the appeal be dismissed.

VI. Claim 1 of auxiliary request 2 reads as follows:

"An apparatus comprising a compression ignition engine and an exhaust system (10) therefor comprising at least one exhaust system component (16) for treating exhaust gas and means for generating an exotherm for heating the at least one exhaust system component, which exotherm generating means consisting essentially of a catalyst (14) and means (15) for injecting hydrocarbon into exhaust gas for combustion on the catalyst, which catalyst consisting essentially of both a palladium (Pd) component and a platinum (Pt) component, and a support material, disposed on a substrate monolith in an arrangement where the Pt component and the Pd component are both supported on the same support material and are disposed on a downstream end of the substrate monolith and an upstream end (22) of the substrate monolith comprises a Pt component which is substantially free from Pd."

Claim 1 of auxiliary request 3 reads as follows:

"An apparatus comprising a compression ignition engine and an exhaust system (10) therefor comprising at least one exhaust system component (16) for treating exhaust gas and means for generating an exotherm for heating the at least one exhaust system component, which exotherm generating means consisting essentially of a

catalyst (14) and means (15) for injecting hydrocarbon into exhaust gas for combustion on the catalyst, which catalyst consisting essentially of both a palladium (Pd) component and a platinum (Pt) component, and a support material, disposed on a substrate monolith in an arrangement where the Pt component and the Pd component are in a single washcoat layer and are both supported on the same support material, and wherein the Pt component and the Pd component are disposed on a downstream end of the substrate monolith and an upstream end (22) of the substrate monolith comprises a Pt component which is substantially free from Pd."

Claim 1 of auxiliary request 4 reads as for claim 1 of auxiliary request 3 with the following feature appended:

"and wherein the means for injecting hydrocarbon into the exhaust gas comprises an injector for injecting the hydrocarbon into exhaust gas immediately upstream of the substrate monolith."

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

Auxiliary request 2

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

Claim 1 found basis in a combination of claims 1, 2 and 11 as filed, the 'regenerating means' necessarily being the 'catalyst of the exotherm generating means' so that the term 'regenerating means' could be deleted without adding subject-matter. The repeated use of the definite article 'the' when referring to the Pt component and

the Pd component of the regenerating means in claim 11 as filed clearly referred to the same Pt and Pd components as those recited in claim 1 and other previous claims as filed. Consequently the 'regenerating means' must necessarily be the 'catalyst of the exotherm generating means' of claim 1, there being nothing else that it could be. This was underscored by the use of the reference numeral 14 for both the regenerating means in claim 11 and the catalyst of claim 1.

Considering the wording of the claims when read in accordance with the technical teaching of the description, page 4 lines 25 to 29 provided a general teaching of the claimed Pt and Pd component arrangement on the substrate monolith such that the 'regenerating means' of claim 11, the 'catalyst of the exotherm generating means' of claim 1 and the 'exotherm generating catalyst zone' of page 4 were all synonymous to a skilled person. Whilst the term 'regenerating means' was not disclosed other than in claim 11 as filed, the description discussed 'regeneration' of filters (page 7, line 3; page 11, lines 26 to 27) and of a NO_x absorber (page 7, line 8) in a manner suggesting that regeneration required nothing more than an exotherm generating means to achieve it. The claimed 'exotherm generating means' must produce more than a minimal temperature increase in order to have any purpose; even so a minor temperature increase would still have some effect e.g. removal of water vapour. This was exemplified in example 2 in which Table 1 (see page 11) indicated even a minor temperature rise across the Pt/Pd catalyst as enabling significant HC removal performance 'for the regeneration of particulate filters'. Claim 19 as filed defined the SCR catalyst as being an exhaust system component for regeneration; the

disclosed regeneration in the application as filed was thus very broad and was thus fulfilled essentially by any reasonable exotherm generation since the amount of exotherm could be determined merely by the quantity of injected HC.

Regarding a basis for claim 1 solely from the description, this followed from a combination of features from page 3, lines 15 to 21 and lines 25 to 26 and from page 4, lines 27 to 31. This provided a direct link for the 'exotherm generating means' of page 3, line 18 to be realised by the Pt and Pt/Pd catalyst discussed on page 4, lines 27 to 31.

Auxiliary requests 3 and 4

Essentially the same arguments to those presented above applied also to the subject-matter of claim 1 of each of auxiliary requests 3 and 4, these thus meeting the requirement of Article 123(2) EPC as well.

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

The subject-matter of claim 1 of auxiliary request 2 failed to meet the requirement of Article 123(2) EPC. 'Regenerating means' were more than just a heater; they had to provide heat to achieve a certain temperature window in order to affect regeneration of a component. In contrast, an exotherm generating means had simply to provide an unspecified quantity of heat, which could be for any undefined purpose. 'Regenerating means' and 'exotherm generating means' were thus clearly not synonymous terms. Example 2 on page 11 of the description described catalyst activity for a flow through filter, solely indicating suitability for

regeneration of a filter as a corollary; it thus provided no direct and unambiguous basis for a general Pt/Pd catalyst to be considered as regenerating means. Page 4, lines 25 to 29 were also not to be considered as a general disclosure of the invention, the disclosure of 'zones' in this passage for example not even being reflected in claim 1.

Auxiliary requests 3 and 4 failed to overcome the objections under Article 123(2) EPC to auxiliary request 2.

Reasons for the Decision

Auxiliary request 2 (new main request)

1. *Article 123(2) EPC*

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

1.1 As regards the basis given, i.e. that the subject-matter of claim 1 resulted from a combination of claims 1, 2 and 11 as filed, the Board finds that the subject-matter of claim 1 is not directly and unambiguously derivable from the application as filed due to the omission of 'the regenerating means' feature originally present in claim 11 as filed.

1.1.1 The omission of 'the regenerating means' of claim 11 as filed from the present claim 1 results in the catalyst arrangement disclosed in relation to the regenerating means in claim 11 now being claimed solely in relation to the 'exotherm generating means consisting essentially of a catalyst'. The technical nature of 'exotherm generating means' and 'regenerating means' in

the context of catalytic exhaust treatment are known to the skilled person such that they understand the two expressions do not necessarily reflect the same thing. The former essentially simply generates an undefined quantity of heat for heating the exhaust component, but for an (otherwise) unspecified purpose; the latter also generates heat but to a quantity suited to regenerate something (see for example page 7, lines 6 to 10 where regeneration of the NO_x trap occurs within a temperature window). It is thus evident that exotherm generating means, producing anything from a minimal to a significant temperature increase, is a feature which may be of more general scope than regenerating means, which produce heat normally within a specified window in order to cause regeneration of a component of the exhaust system. As a consequence, the adoption in claim 1 of features of a catalyst originally disclosed in claim 11 solely in relation to specific 'regenerating means' cannot be associated with more general 'exotherm generating means' without extending beyond the content of the application as originally filed.

- 1.1.2 The appellant's contention that the 'regenerating means' necessarily have exactly the same meaning as the 'catalyst of the exotherm generating means' is not convincing. Whilst, in the present case, it can be accepted that 'regenerating means' can be subsumed under the scope of a 'catalyst of the exotherm generating means', these two expressions may well have different meanings and, as discussed in point 1.1.1 above, do not necessarily have the same scope, that of the 'regenerating means' being narrower than that of the 'exotherm generating means'. As a consequence, the claimed subject-matter including the features to the catalyst, originally disclosed in relation to the 'regenerating means', extends beyond this original

disclosure when claimed in relation to the 'exotherm generating means'.

1.1.3 The repeated use of the definite article 'the' when referring to the Pt component and the Pd component of the regenerating means in claim 11 as filed does not unambiguously refer to the same Pt and Pd components as those recited in e.g. claim 1. Claim 11 as filed reads '... wherein the Pt component and the Pd component of the regenerating means ...', which thus indicates that the Pt and Pd component disclosed therein are those related directly to the regenerating means. Without the regenerating means being included in the present claim 1, there is no direct and unambiguous basis on which to conclude that the Pt and Pd components in claim 11 as filed are necessarily those disclosed in claim 1 as filed. Therefore the equating of the two disclosures of Pt and Pd components in claims 1 and 11 as filed in the present claim 1 lacks any unambiguous basis, i.e. it is possible that the writer might have had the intention of referring to the same Pd and Pt components as in claim 1 but this is certainly not unambiguous.

1.1.4 The appellant's argument that the reference numeral 14 was used for both the regenerating means in claim 11 and the catalyst of claim 1, and that both features must thus be one and the same, is also not accepted. Whilst it is indeed possible that the common reference numeral 14 used for the regenerating means and the catalyst might indicate these to be the same items, this is not unambiguously the case. Firstly in this regard, the use of the reference numeral 14 is inconsistent in the application as filed e.g. used for 'a catalyst coating' (page 8 line 30) and for 'washcoat arrangements' (page 9 line 25) in addition to those for a 'catalyst' and the 'regenerating means' in the

claims. Furthermore, in the absence of any other factor pointing towards the regenerating means of claim 11 being the same feature as the catalyst in claim 1, the common reference numeral does not provide the required direct and unambiguous basis for such a conclusion to be made.

1.1.5 In conclusion, claims 1, 2 and 11 as filed alone do not provide a direct and unambiguous basis for the subject-matter of claim 1.

1.2 As regards the basis for the subject-matter of claim 1 resulting from claims 1, 2 and 11 as filed in combination with the description, this is also not persuasive. No passage in the description provides an unambiguous link for the 'regenerating means' of claim 11 as filed to be equated to the 'catalyst of the exotherm generating means' which would be necessary for the requirement of Article 123(2) EPC to be fulfilled.

1.2.1 The appellant's reference to page 4 lines 25 to 29 in order to conclude that the 'regenerating means' of claim 11, the 'catalyst of the exotherm generating means' of claim 1 and the 'exotherm generating catalyst zone' of page 4 were all synonymous, is not accepted. Whilst the appellant's conclusion may indeed be possible, that is not the standard applied in establishing whether the subject-matter of a claim meets the requirement of Article 123(2) EPC. With reference to the Enlarged Board of Appeal decision G 2/10, and indeed as the appellant also indicates with reference to the 'Gold Standard' in its letter of 18 September 2019, an amendment may only be made within the limits of what a skilled person would derive directly and unambiguously, using common general knowledge, and seen objectively and relative to the

date of filing, from the application documents as filed. In this regard, that the above expressions are unambiguously all synonymous is not accepted not least due to a 'regenerating means' in the context of catalytic exhaust systems necessarily having to raise the temperature to e.g. a specific window in which regeneration of an exhaust system component can take place. This is not the case for 'exotherm generating means' or 'exotherm generating catalysts' which functionally increase the temperature in a system but not necessarily to an appropriate degree for any component of the exhaust system to be regenerated. At least the 'regeneration means' can thus not necessarily be equated with the other exotherm generating elements referred to by the appellant.

1.2.2 The appellant argued that the description discussed regeneration of filters (page 7, line 3; page 11, lines 26 to 27) and regeneration of a NO_x absorber (page 7, line 8) in a manner suggesting that this required nothing more than an exotherm generating means to achieve regeneration. However, the Board does not find this persuasive. Each of these references to 'regeneration' and to 'exotherm generating means' in the description indeed show that an exotherm can achieve regeneration when appropriately designed but they fail to provide the general teaching that the 'exotherm generating means' of claim 1 as filed unambiguously must be the specific 'regenerating means' with a specific catalyst arrangement as defined in claim 11 as originally filed.

1.2.3 The appellant's further reference to claim 19 as filed to suggest that the regeneration disclosed in the application was a very broad concept is not convincing. Claim 19 in fact simply defines an SCR catalyst as

being one of the possible exhaust system components (in fact the exhaust system component may even include further elements, not least due to the wording 'comprises' in this claim, which may make use of any generated exotherm), yet fails to indicate that this is regenerated in any way by the exotherm generating means of claim 1 as filed. This claim therefore casts no further light on what scope the term 'regeneration' might possibly have in the application as filed.

- 1.2.4 In response to the respondent's argument that 'exotherm generating means' need produce nothing more than a minimal temperature increase, the appellant countered that such would still have some regenerating effect for a catalyst e.g. removal of water on the catalyst (albeit that no such 'regeneration' of this particular type is actually described). As already indicated in points 1.2.1 and 1.2.2 above, the argument that an 'exotherm generating means' may have some regenerative activity associated with it is not disputed. However, it is the generality with which 'regenerating means' and 'catalyst of the exotherm generating means' have been equated in the present claim 1 (i.e. by omission of the term 'regenerating means' on the basis that it is allegedly implicitly present) which cannot be directly and unambiguously derived from claims 1 and 11 as originally filed, nor the description in which these terms are present. Since 'regenerating means' may logically be more limited in scope than 'exotherm generating means', the substitution in claim 1 of the expression 'regenerating means' from claim 11 as filed with the expression 'exotherm generating means consisting essentially of a catalyst' extends the subject-matter beyond the content of the application as filed.

- 1.2.5 The appellant's reference to example 2 and table 1 on page 11 of the application changes nothing in this regard since this example in the description simply concludes that a Pt/Pd catalyst may be suitable 'for the regeneration of particulate filters'. This is not disputed. The example however fails to provide any justification to conclude that the 'regenerating means' of claim 11 as filed is necessarily the same feature as the 'exotherm generating means' of claim 1 as filed.
- 1.2.6 In summary therefore, claims 1, 2 and 11 as filed in combination with the description fail to provide a direct and unambiguous basis for the subject-matter of claim 1.
- 1.3 A further basis for the subject-matter of claim 1, this one based solely on the description, was argued by the appellant to be the combination of features from page 3, lines 15 to 21 and lines 25 to 26 and from page 4, lines 27 to 31. The first reference essentially recites claim 1 as filed, the second defines that the Pd and Pt component are supported on the same support material. To this portion of the basis there is no objection. However, the reference to page 4, lines 27 to 31 is, contrarily to the contention of the appellant, not found to be directly and unambiguously linked to the previous description passages of page 3 such that a basis for the claimed subject-matter from the passages of the description referred to is missing.
- 1.3.1 As indicated with reference to G 2/10 in point 1.2.1 above, a direct and unambiguous basis in the application as filed is required for any subject-matter claimed. This is missing in the appellant's argument based on the above referenced passages from the description due to the Pt/Pd catalyst composition

referred to on page 4, lines 27 to 31 not being clearly or directly linked to the referenced disclosures on page 3. Not least this is down to page 4, lines 27 to 31 defining 'zones' of the substrate monolith on which the Pt catalyst and the Pt/Pd catalyst respectively are disposed. Such 'zones' have not been included when the catalyst compositions have been adopted into claim 1 which results in the claimed catalyst being defined in relation to the upstream/downstream ends of the substrate monolith in a manner for which there is no unambiguous basis in the description passages relied upon by the appellant. Not least for this reason, the basis provided by the appellant does not meet the required criterion for a direct and unambiguous disclosure.

1.3.2 The subject-matter of claim 1 thus lacks basis also from the description alone.

1.4 To summarise, therefore, none of the arguments and passages presented by the appellant provide the requisite direct and unambiguous basis for the subject-matter of claim 1. The subject-matter of claim 1 of auxiliary request 2 therefore fails to meet the requirement of Article 123(2) EPC. Auxiliary request 2 is thus not allowable.

Auxiliary requests 3 and 4

2. *Article 123(2) EPC*

2.1 The subject-matter of claim 1 of each of auxiliary requests 3 and 4 still lacks the 'regenerating means' feature found with respect to the subject-matter of claim 1 of auxiliary request 2 not to meet the requirement of Article 123(2) EPC. The appellant

offered no further arguments beyond those already presented with respect to auxiliary request 2 in defence of the subject-matter of claim 1 of auxiliary requests 3 and 4.

2.2 The subject-matter of claim 1 of each of auxiliary requests 3 and 4 thus also fails to meet the requirement of Article 123(2) EPC. Auxiliary requests 3 and 4 are consequently also not allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



M. H. A. Patin

M. Harrison

Decision electronically authenticated