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Datasheet for the decision of 23 October 2014

Case Number: T 1458/11 - 3.3.05

Application Number: 03010821.1

Publication Number: 1364699

IPC: B01D53/94, B01J23/63, B01J37/02

Language of the proceedings: EN

Title of invention:
NO_x storage catalyst

Patent Proprietor:
TOYOTA JIDOSHA KABUSHIKI KAISHA

Opponent:
Peugeot Citroen Automobiles S.A.

Headword:
NO_x storage catalyst/Toyota

Relevant legal provisions:
EPC R. 103(1)(a)
EPC Art. 54, 56, 83, 123(2), 123(3)

Keyword:

Oral submissions by an accompanying person in opposition proceedings (yes allowable - in conformity with G 4/95)
Requirements of G 4/95 to be met throughout the oral proceedings (yes - duty of the opposition division to ensure)
Party's obligation to inform the opposition division that requirements of G4/95 are not met (yes - as soon as it becomes aware thereof)
Procedural violation (no) - reimbursement of the appeal fee (no)
Novelty - main request (yes)
Inventive step - main request (no) - obvious alternative
Auxiliary request 1 - sufficiency of disclosure (yes)
Auxiliary request 1 - amendments (allowable)
Auxiliary request 1 - inventive step (yes)

Decisions cited:

G 0004/95, R 0002/08

Catchword:

See reasons 8 to 8.4

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Case Number: T 1458/11 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 23 October 2014

Appellant 2: (Patent Proprietor)	TOYOTA JIDOSHA KABUSHIKI KAISHA 1, Toyota-cho, Toyota-shi, Aichi-ken, 471-8571 (JP)
Representative:	TBK Bavariaring 4-6 80336 München (DE)
Appellant 1: (Opponent)	Peugeot Citroen Automobiles S.A. Route de Gisy 78140 Velizy Villacoublay (FR)
Representative:	Renous Chan, Véronique Peugeot Citroen Automobiles SA Propriété Industrielle - LG081 18 rue des Fauvelles 92250 La Garenne Colombes (FR)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 6 May 2011 concerning maintenance of the European Patent No. 1364699 in amended form.**

Composition of the Board:

Chairman G. Raths
Members: A. Haderlein
D. Prietzel-Funk

Summary of Facts and Submissions

I. The present appeals of the opponent (appellant 1) and of the patentee (appellant 2) lie from the interlocutory decision of the opposition division according to which European patent No. 1 364 699 in amended form and the invention to which it relates were found to meet the requirements of the EPC. The patent in suit concerns an NO_x storage catalyst.

II. Opposition was filed based on Article 100(a) together with 52(1) and 54(1) EPC, Article 100(a) together with 52(1) and 56 EPC, and on Article 100(b) EPC. It was based *inter alia* on the following documents:

D1: FR 2 793 164 A1
D2: EP 1 166 855 A1
D3: EP 1 127 603 A1
D4: Cuif, J.-P., et al., (Ce, Zr)O_2 Solid Solutions for Three-Way Catalysts, SAE Technical Paper Series 970463
D5: FR 2 736 343

III. The opposition division held that the patent as amended according to the auxiliary request filed during the oral proceedings before the opposition division met the requirements of the EPC.

In particular, it found that the subject-matter of claim 1 of the patent as granted was novel over D1 and D2, but lacked an inventive step in view of D2 alone, and that the subject-matter of claim 1 of the auxiliary request involved an inventive step in view of D2 as the closest prior art and D1.

At the oral proceedings before the opposition division,

appellant 2 was represented by a professional representative, Mr Chivarov, accompanied by Mr Huber, who was said to be a trainee in the law firm of Mr Chivarov. Appellant 2 requested that Mr Huber be allowed to speak "on selected issues during the oral proceedings under his (Mr Chivarov's) supervision and responsibility". Appellant 1 agreed to this with the proviso that Mr Huber would "not make the complete case". The opposition division allowed Mr Huber to speak "on selected issues under Mr Chivarov's responsibility". After the impugned decision was pronounced, appellant 1 submitted that, according to its observations, Mr Huber had spoken "for more than 50% of the time" and that this was not what had been agreed at the beginning of the oral proceedings.

IV. Appellant 1 filed an appeal against the interlocutory decision of the opposition division.

V. Appellant 2 also filed an appeal against the interlocutory decision of the opposition division.

VI. In the reply to the statement of the grounds of appeal of appellant 1, appellant 2 filed eight new auxiliary requests, the sixth auxiliary request corresponding to the auxiliary request that was found by the opposition division to comply with the requirements of the EPC.

VII. In the reply to the statement of the grounds of appeal of appellant 2, appellant 1 objected to the requests of appellant 2 and requested the revocation of the patent.

VIII. The parties were summoned to oral proceedings.

IX. Appellant 1 informed the board that it would not attend the oral proceedings.

X. Oral proceedings were held on 23 October 2014. During the oral proceedings, appellant 2 filed a new auxiliary request 1 corresponding to the previously filed sixth auxiliary request.

XI. Independent claim 1 of the main request (patent as granted) and of auxiliary request 1 read (amendments with respect to the main request being underlined) as follows:

Main request

"1. A storage-reduction type NO_x purifying catalyst comprising a monolith substrate having formed thereon a coat layer containing a cerium-zirconium composite oxide and a cerium-free oxide both oxides being present in the same layer, wherein a noble metal and an NO_x storing material are supported on said single coat layer,
characterised in that
the cerium content of said cerium-zirconium composite oxide is from 0.5 to 10 mol% based on the total molar number of metal atoms contained."

Auxiliary request 1

"1. A storage-reduction type NO_x purifying catalyst comprising a monolith substrate having formed thereon a coat layer containing a cerium-zirconium composite oxide and a cerium-free oxide both oxides being present in the same layer, wherein a noble metal and an NO_x storing material are supported on said single coat layer,

characterised in that
the cerium content of said cerium-zirconium composite oxide is from 5 to 10 mol% based on the total molar number of metal atoms contained."

XII. Appellant 1's arguments are summarised as follows:

Main request - novelty

D2 disclosed in particular the feature

"*a noble metal and a NO_x storing material are supported on said single coat layer*"

because the single layer was made of a powder A1, a powder B1 and a powder which included palladium impregnated aluminium oxide and which was mixed with barium hydroxide as an NO_x storing material in an aqueous medium together.

The expression "supported on" was not to be construed so as to mean grafted on an already existing layer. Whether the coating was prepared by a single liquid suspension sprayed onto a substrate and subsequently calcined or whether it was prepared by two liquid suspensions sprayed onto the substrate one after the other, the result was the same.

There was no explanation of the term "supported" in the patent specification which could call into question the fact that a layer is obtained comprising the entirety of the aforementioned compounds. D2 also disclosed the remaining features of claim 1 of the main request. The subject-matter of claim 1 was therefore not new in view of D2.

According to example 1 of D1, the composition comprising aluminium oxide and a mixed cerium-zirconium oxide and barium as an NO_x storing material had a molar cerium content of 7%. The composition was deposited as a single layer on a ceramic support. D1 was therefore also novelty-destroying for the subject-matter of claim 1.

Main request - inventive step

The subject-matter of claim 1 lacked an inventive step in view of D2 and D1. The skilled person was aware of the consequences of the increase in cerium content. For instance, D3 taught that an increase in the zirconium content in mixed Ce-Zr-Sr oxides resulted in an increase in the resistance to poisoning by sulfur. D4 showed that an increase in cerium content resulted in an increase in oxygen storage capacity and an increase in zirconium content led to an increase in thermal resistance. In view of this, the skilled person would have concluded that a mixed cerium-zirconium oxide having a high zirconium content was preferred for the treatment of gasses having a high sulfur content. D5 proposed mixed oxides having a high zirconium content for the desulfurisation.

Auxiliary request 1 - amendments

The patent as amended according to auxiliary request 1 contained added subject-matter. The restriction in terms of the molar cerium content was arbitrarily chosen from two examples of the application as filed without specifying the content of the remaining compounds. In particular, the examples relied upon as a basis for the amendments required the presence of three earth alkali metals which were absent from claim 1.

Auxiliary request 1 - sufficiency of disclosure

There was also a lack of sufficiency of disclosure of the subject-matter of claim 1 according to auxiliary request 1. The restricted molar cerium percentage range corresponded to examples in which the oxygen storage capacity was kept constant. The patent in suit, however, did neither disclose said oxygen storage capacity nor how it could be determined. Moreover, other parameters such as the zirconium content influenced the performance of the layer as evidenced by D4.

Auxiliary request 1 - inventive step

As evidenced in particular by D3 and D4, the skilled person was aware that a cerium-zirconium composite oxide having an increased zirconium content and, therefore, a decreased cerium content, had a higher resistance against sulfur poisoning. Decreasing the cerium content was thus obvious in view of the prior art.

Request to reimburse the appeal fee and to remit the case to the opposition division

Mr Huber, the accompanying person of the representative of the proprietor (now appellant 2) within the meaning of G4/95 at the oral proceedings before the opposition division, had not been previously announced. The opposition division agreed that Mr Huber could talk upon specific points under the responsibility of the professional representative Mr Chivarov. Under these circumstances, appellant 1 had no other option than to continue to attend the oral proceedings or to withdraw therefrom. Appellant 1 could

not have foreseen whether Mr Huber would indeed only talk about specific points in order to support the otherwise exhaustive submissions by the professional representative or whether he would take the floor for a longer time.

However, during the oral proceedings the professional representative, Mr Chivarov, did not speak more than two sentences in the period up until the lunch break. After the break, the professional representative intervened a few times but did not present the entire case. This was in fact done by Mr Huber. As a result, Mr Huber took the floor for presenting the vast majority of the submissions by appellant 2.

Since in the morning of the day of the oral proceedings, Mr Chivarov did not speak for more than two minutes in total, Mr Huber did not make submissions relating only to specific points as agreed at the beginning of the oral proceedings. The criteria developed by the Enlarged Board of Appeal concerning the authorisation of an accompanying person had been violated. This amounted to a substantial procedural violation.

The board should therefore order the reimbursement of the appeal fee and the remittal of the case to the opposition division.

XIII. Appellant's 2 arguments are summarised as follows:

Main request - novelty

Appellant 2 concurred with the finding of the opposition division that the subject-matter of claim 1 was novel.

Main request - inventive step

D1 appeared to be a more promising starting point for assessing inventive step than D2 since it had more features in common than the latter.

Claim 1 did not exclude the possibility that the catalyst comprised further layers or coatings. The subject-matter of claim 1 differed from the catalyst disclosed in Example 1 of D3 in that the cerium content was from 0.5 to 10 mol%. The problem solved, starting from D3, was the provision of an alternative storage-reduction type NO_x purifying catalyst having about the same properties, in particular in view of sulfur poisoning resistance, as the one known from D3. Moreover, the catalysts according to claim 1 had a thermal resistance comparable to the one of the catalysts of D3, because they resisted temperatures in the order of 600^{o}C as evidenced by the examples of the patent in suit.

There was no motivation in the state of the art for the skilled person to lower the cerium content used in experiment 1 of D3. In particular, D1 mentioned cerium contents of as low as 10 wt.%, corresponding to 7 mol%. But this value referred to a part of the layer and, taking into account the general teaching of D1 and the examples thereof, the total cerium amount was always significantly higher than 10 mol%. Moreover, the focus in D1 was not on the cerium content and, therefore, the skilled person would not derive any motivation therefrom to modify the cerium content in the catalyst known from D3.

Auxiliary request 1 - amendments

In the application as filed, the cerium content was clearly disclosed as the central aspect of the invention. There was a basis for this in the description: Table 1, page 8, lines 19 to 23, page 14, lines 10 to 19 and claims 1 to 3 of the application as filed. The skilled person would readily recognise that the values disclosed in Table 1 were not so closely linked to the remaining features of the experiments on which the results were based. Thus, limiting the cerium content to 5 to 10 mol% did not lead to added subject-matter.

Auxiliary request 1 - inventive step

The problem to be solved starting from D3 was to improve the resistance to sulfur poisoning. This problem was indeed solved as evidenced by Table 1 of the patent in suit. There was nothing in the prior art that would have prompted the skilled person to lower the cerium content in D3 to values falling within the claimed range in order to improve the resistance to sulfur poisoning.

Request to reimburse the appeal fee and to remit the case to the opposition division

Appellant 1 did not show that it was negatively affected by the submissions made by Mr Huber. The minutes of the oral proceedings before the opposition division did not include any remarks or warnings by the opposition division regarding the alleged improper presentation by the authorised representative. Appellant 1 had, as evidenced by the minutes of the oral proceedings, agreed to the oral submissions by

Mr Huber. There was no evidence that the oral submissions by the accompanying person were incomprehensible. It was apparent that the opposition division had been satisfied that the oral submissions by the accompanying person were made under the continuing responsibility and control of the professional representative. Appellant's 1 assertion according to which the professional representative did not speak for more than two minutes was not true and also was not credible in view of the minutes of the oral proceedings. Appellant 1 objected to the submissions only after the decision was pronounced, but could have raised this objection beforehand.

XIV. Requests

Appellant 1 requested that the decision under appeal be set aside and that the patent be revoked. It also requested that the appeal fee be reimbursed and that the case be remitted to the opposition division.

Appellant 2 requested that the decision under appeal be set aside and that the patent be maintained on the basis of the claims as granted or alternatively on the basis of auxiliary request 1 submitted during the oral proceedings or else on the basis of one of the auxiliary requests submitted with the letter dated 30 January 2012.

Reasons for the Decision

1. Main request - novelty

1.1 The board does not agree with appellant 1 that the feature "supported on said single layer" was also disclosed in catalysts obtained by forming a mixture of

the noble metal and the NO_x storing material together with the cerium-zirconium composite oxide and the cerium-free oxide, applying said mixture onto a monolithic substrate followed by drying. A coating obtained in such a way would not allow for distinguishing the layer containing the cerium-zirconium composite oxide and the cerium-free oxide from the layer or layers containing the noble metal and the NO_x storing material.

The board agrees with appellant 2 in this respect in that the contentious feature requires a concentration gradient of the noble metal and the NO_x storing material with the highest concentration on the side of the surface of the "single layer" opposite to the monolithic substrate.

1.2 Appellant 1 argued that the impregnation of an existing coating layer with two suspensions successively applied to the coating, as it was performed according to the patent in suit, resulted in the same product compared to a process wherein all compounds were mixed together and then applied to the monolithic substrate.

The board does not agree. Impregnating an existing coating with one or more suspensions according to the examples of the patent in suit results in a catalyst having a concentration of noble metal and NO_x storing material which is higher at the surface of the coating than at the interface between the coating and the substrate.

1.3 According to the patent in suit, barium acts as an NO_x storage material (see for example claim 10 as granted). In D2 (see the examples), the first or the sole coating is prepared by applying a slurry containing the

zirconium-cerium-lanthanum composite oxide and barium hydroxide. In the examples having a second coating, no NO_x storage material is present. For the reasons set out at 1.1 *supra*, the NO_x storage material of D2, i.e. barium, cannot be said to be "supported on" the coat layer.

1.4 For these reasons alone, the subject-matter of claim 1 is novel over D2.

1.5 A similar reasoning applies with respect to D1. The noble metal (Pd) and the NO_x storage material (Ba) are substantially equally distributed throughout the coat layer since they are applied as a mixture together with the cerium-zirconium composite oxide and the cerium-free metal oxide (Al_2O_3) (see page 7, line 25 to page 8, line 7). Hence, the NO_x storage material and the noble metal cannot be said to be "supported on" the coat layer.

1.6 Consequently, the subject-matter of the sole independent claim 1 is novel (Article 54(1),(2) EPC).

2. Main request - inventive step

2.1 The invention concerns an NO_x storage catalyst.

2.2 Such a NO_x storage catalyst is also disclosed in D3. D3 can be considered to be the closest prior art document because it deals with the problem of sulfur poisoning (see paragraph [0007] of D3) in storage-reduction type NO_x purifying catalysts (paragraph [0002]) as does the patent in suit (see paragraphs [0001] and [0017] to [0019]). Moreover, D3 discloses in its example 1 (see paragraphs [0229] to [0234]) a storage-reduction type

NO_x purifying catalyst according to the preamble of claim 1 of the main request.

Both appellants took a different starting point for assessing inventive step. According to appellant 1, the subject-matter of claim 1 lacked an inventive step in view of D2 and/or D1. According to appellant 2, D1 was a more promising starting point for assessing inventive step than D2.

However, D2 does not address the problem of sulfur poisoning and neither D1 nor D2 disclose catalysts wherein the NO_x storing material is supported on the coat layer containing the cerium-zirconium composite oxide and the cerium-free oxide (see discussion on novelty at 1. *supra*).

For these reasons, D3 qualifies as the most suitable starting point for assessing inventive step.

As to the term "single coat layer" contained in the preamble of claim 1, the question is what this term may include when evaluating prior art documents. In fact, as conceded by appellant 2 at the oral proceedings, claim 1 of the main request does not exclude the presence of further layers such as the "outer coating layer" in example 1 of D3. Therefore, the "inner coating layer" of example 1 which is, along with the "outer coating layer", impregnated with the platinum nitrate and barium acetate solution (see paragraphs [0233] and [0234]) qualifies as a "single coat layer" in the sense of claim 1 of the main request. The mass composition ratio CeO_2:ZrO_2:Sm_2O_3 of 23:73:4 of the "inner coating layer" disclosed in example 1 corresponds to a cerium content of about 18 mol%.

2.3 According to the patent in suit, the problem to be solved was to increase resistance to sulfur poisoning of the storage-reduction type NO_x purifying catalyst (see paragraph [0020]).

2.4 As a solution to this problem, the patent in suit proposes a storage-reduction type NO_x purifying catalyst characterised in that the cerium content of the cerium-zirconium composite oxide is from 0.5 to 10 mol% based on the total molar number of metal atoms contained.

2.5 As to the success of the solution, appellant 2 argued in this context that the catalysts according to the invention had a heat resistance comparable with that of the catalysts known from D3 since the experiments in the patent in suit were conducted at elevated temperatures and resulted in significant NO_x purification.

The board does not agree. The data provided in the patent do not show a heat resistance comparable to that of the catalysts of D3. Resistance to heat is tested in D3 by exposure for 24 hours at 900°C (see paragraph [0260]) whereas in the patent in suit temperatures of at most 650°C and much shorter exposure durations are employed (see for instance paragraph [0063] of the patent in suit). It is therefore not possible to draw any conclusions from the data provided in the patent in suit with respect to heat resistance.

Table 1 of the patent in suit shows that at Ce mol% between 15 and 20, the NO_x purification percentage is between 67 and 65. The Ce mol% in D3 being about 18, the NO_x purification percentage corresponding to the closest prior art D3 is about 66. The claimed range, however, encompasses mol% values of as low as 0.5 and

Table 1 of the patent in suit suggests that at 3.5 mol% and below 3.5 mol% the NO_x purification percentage is about as good as that of D3, or even worse.

Thus, it is not credible that the problem is successfully solved over the whole range claimed.

2.6 The problem is therefore reformulated as to the provision of an alternative storage-reduction type NO_x purifying catalyst.

2.7 The board is satisfied that the problem of the provision of an alternative storage-reduction type NO_x purifying catalyst is indeed solved.

2.8 It needs to be determined whether the proposed solution was obvious in view of the prior art.

2.8.1 D3 teaches that at higher cerium values heat resistance is improved (paragraph [0019]), i.e. the lower the cerium content the lower the heat resistance. It is also said that even at lower cerium content values of 18 mol% (example 4) heat resistance can be improved by using small amounts of samarium oxide (see paragraph [0245]). The skilled person derives from this teaching that in order to arrive at catalysts having properties comparable to those of examples 1 to 3 of D3, i.e. including a comparable heat resistance, the cerium content could be lowered while adding small amounts of samarium oxide. The skilled person would already for this reason at least try to use cerium contents of as low as 10 mol%.

2.8.2 Moreover, D1 teaches that a cerium-zirconium composite oxide having a cerium content of as low as 10 wt.% corresponding to 7.4 mol% can be used as an oxygen

storage compound (see page 6, lines 15 to 18).

On the one hand, it is true, as submitted by appellant 2, that D1 discloses cerium contents of at least 50% (see page 4, line 33 to page 5, line 2; claims 12 and 13). But these values relate to the "support" and not to the oxygen storage constituents" and a clear distinction is made in D1 between the "support" and the "oxygen storage constituents" (see page 6, lines 1 to 27).

On the other hand, in D3 the cerium-zirconium composite oxide is also used as an oxygen storage compound (see for instance paragraphs [0003] and [0011]). Thus, the skilled person, when aiming at finding an alternative catalyst having a comparable oxygen storage capacity, would seriously contemplate cerium contents of as low as 7.4 mol% as suggested in D1.

2.8.3 Appellant 2 argued that the focus in D1 was not on the cerium content and, therefore, the skilled person would not derive any motivation therefrom to modify the cerium content in the catalyst known from D3.

The board does not agree. D3 is concerned with catalysts for the treatment of exhaust gas of internal combustion engines (see paragraphs [0001] and [0002]) and, for this reason alone, the skilled person would consult D1 which also addresses such catalysts (see page 1, lines 1 and 2). Moreover, D1 addresses, as set out above, the oxygen storage capacity of cerium-zirconium composite oxides, which also is a central aspect of D3.

2.8.4 It follows that the subject-matter of claim 1 does not involve an inventive step.

2.9 The requirements of Article 56 EPC are therefore not met for the main request.

3. Auxiliary request 1 - amendments

3.1 The range of "0.5 to 10 mol%" (main request) has been changed to "5 to 10 mol% (auxiliary request 1). It is true that the lower limit of 5 mol% included in claim 1 is only disclosed in Table 1 of the application as filed, which is based on the example, page 12, lines 10 *et seqq.* of the application as filed. This does not however necessarily mean that the value of 5 mol% is so closely linked to the other features, such as the presence of specific earth alkali metals, used in the example that it cannot be incorporated in claim 1 without specifying the other features.

Firstly, the central feature of the catalysts disclosed in the application as filed is the cerium content (see page 5, lines 10 to 17; page 9, line 37 to page 10, line 4; claim 1).

Secondly, as can be seen from Table 2, the NO_x Purification Percentage is high independently of the presence of rare earth metals.
Thirdly, as can be clearly and unambiguously derived from Table 1, the maximum NO_x Purification Percentage is between 10 and 5 mol% whereby the values at 10 and 5 mol% are equal.

It follows from the above that the subject-matter of claim 1 is clearly and unambiguously derivable from the application as filed. The same holds true for the

subject-matter of the dependent claims which find their basis in their respective originally filed counterparts.

The requirements of Article 123(2) EPC are therefore met.

3.2 Since the claimed cerium content range is restricted with respect to the granted claim, the amendments do not lead to an extension of protection (Article 123(3) EPC).

4. *Auxiliary request 1 - sufficiency of disclosure*

Appellant 1 raised an objection relating to the absence of a method to measure the oxygen storage capacity.

The claims do not refer to any oxygen storage capacity. The board therefore does not see why an alleged lack of disclosure of a method to measure the oxygen storage capacity could possibly lead to a lack of sufficiency of disclosure. Also, it may well be that other parameters such as the zirconium content influenced the performance of the catalyst, but this can by no means put into doubt reworking of the catalysts by a skilled person. The board does not see any other reason why the skilled person could not carry out the invention.

The requirements of sufficiency of disclosure (Articles 83 and 100(b) EPC) are therefore met.

5. *Auxiliary request 1 - novelty*

The subject-matter of claim 1 of auxiliary request 1 being restricted with respect to the subject-matter of claim 1 of the main request, auxiliary request 1

complies with the requirements of novelty for the same reasons as set out at 1. *supra* for the main request (Article 54(1),(2) EPC).

6. *Auxiliary request 1 - inventive step*

6.1 Reasons 2.1 (invention), 2.2 (closest prior art) and 2.3 (problem according to the patent in suit) apply *mutatis mutandis* to the subject-matter of claim 1 of auxiliary request 1.

6.2 As a solution to the problem defined under 3.3, the patent in suit proposes a storage-reduction type NO_x purifying catalyst characterised in that the cerium content of the cerium-zirconium composite oxide is from 5 to 10 mol% based on the total molar number of metal atoms contained.

6.3 As to the success of the solution, examples 1 to 3 of D3 having a cerium content of about 18 mol%, their NO_x Purification Percentage in Table 1 of the patent in suit corresponds to a value of about 66. As can be seen from Table 1 the NO_x Purification Percentage after SO_x treatment is significantly higher when the Ce content is in the claimed range of 5 to 10 mol%. This is also consistent with the results given in Table 2 of the patent in suit showing that at 7 mol% cerium content the NO_x Purification Percentage is significantly higher than 66 independently of the rare earth metal content.

So, it is credible that the problem stated in the patent in suit (para [0020]), i.e. to increase resistance to sulfur poisoning of the storage-reduction type NO_x purifying catalyst, has been successfully solved.

6.4 As to obviousness, the board is satisfied that there is no prior art document that would teach that resistance against sulfur poisoning can be improved by lowering the cerium content in the claimed range of 5 to 10 mol %.

6.4.1 D1 deals with sulfur poisoning (see page 2, lines 25 to 33) and proposes a support comprising a cerium-zirconium composite oxide and manganese as well as potassium (page 3, lines 1 to 4). The cerium content of the support is at least 50 mol% (page 4, line 33 to page 5, line 2). It is true that D1 discloses a cerium content of 7.4 mol% (see page 6, lines 15 to 18), but this value refers to the oxygen storage constituents, whereas D1 clearly teaches to use a support which can be a cerium-zirconium composite oxide, but in this case the cerium content should be 50 mol%. Moreover, in the examples of D1, the cerium content is, considering the presence of cerium in the "catalyst function" as well as in the "NO_x storage function", clearly above 10 mol% of the total molar number of metal atoms contained. Therefore, D1 does not prompt the skilled person to use cerium contents in the claimed range when faced with the problem to be solved.

6.4.2 D2 deals with the improvement of heat resistance (see paragraph [0004]) and does not address the problem of sulfur poisoning.

6.4.3 D4 concerns catalysts having a high cerium content in the order of 20 wt.% and above (see for instance Figures 7 and 8) and addresses oxygen storage capacity as well as thermal stability (see for instance page 8, section "Conclusions", 2nd paragraph). D4 is silent with respect to resistance to sulfur poisoning.

6.4.4 D5 discloses cerium-zirconium composite oxides for catalysts to be used in internal combustion engines (see page 1, lines 9 to 11) and deals with the problem of providing solid solutions thereof at relatively low temperatures (see page 1, lines 20 to 22). D5 discloses cerium contents of at least 1% (see page 3, lines 21 and 22), but in the examples a cerium oxide content of at least 19 wt.% is used. D5 teaches that the obtained compositions can be used as catalysts in hydrosulfurisation, desulfurisation and hydrodesulfurisation (page 6, lines 35 to 38). This, however, does not amount to an indication to work in the claimed range of 5 to 10 mol% in order to improve resistance to sulfur poisoning when the composition is used as a storage-reduction type NO_x purifying catalyst.

6.4.5 Finally, it appears, as submitted by appellant 1, that D3 teaches (see paragraph [0019]) to increase the zirconium content in order to avoid sulfur poisoning (cf. "...is advantageous for sulfur poisoning resistance when the content of Zr (sic) becomes large..."). But this needs to be seen in the context of the overall disclosure of D3. The overall disclosure of D3 teaches to add strontium to the cerium-zirconium composite oxide in order to avoid sulfur poisoning (see for example paragraphs [0018], [0262] and [0263]) and that the preferred SrO mass percentage is from 0.5 to 2.0 (paragraph [0266]). Moreover, the examples used for investigating the effect of sulfur poisoning (examples 5 to 7) all use high cerium contents of at least 71 wt.%. As a consequence, D3 fails to teach to work in the claimed cerium content range in order to increase resistance to sulfur poisoning.

6.5 Hence, the subject-matter of claim 1 of auxiliary request 1 involves an inventive step.

The requirements of Article 56 EPC are met.

7. Since auxiliary request 1 corresponds to the request that was found by the opposition division to be in compliance with the requirements of the EPC, both appeals are to be dismissed and appellant 2's further auxiliary requests do not need to be considered.

8. Appellant 1's request for reimbursement of the appeal fee and to remit the case to the opposition division

8.1 According to Rule 103(1)(a) EPC, "the appeal fee shall be reimbursed... where the Board of Appeal deems an appeal to be allowable, if such reimbursement is equitable by reason of a substantial procedural violation...".

8.2 The board is of the opinion that no substantial procedural violation occurred in the proceedings leading to the impugned decision. The reasons therefor are as follows.

8.2.1 In G4/95 the Enlarged Board of Appeal held that "an accompanying person is not excluded from making oral submissions in relation to either legal or technical issues on behalf of a party to the proceedings, under the control of the professional representative, and in addition to the complete presentation of the party's case by the professional representative" (reasons 8(a), last paragraph). If "a request for an accompanying person to present oral submissions is made either shortly before the date appointed for oral proceedings, or at the oral proceedings, such a request should in the absence of exceptional circumstances be refused by the EPO unless each opposing party agrees to the making of the oral submissions requested" (reasons 10, last

paragraph).

8.2.2 In the case at hand, it is undisputed that the person (Mr Huber) accompanying the professional representative (Mr Chivarov) had not been announced prior to the oral proceedings before the opposition division.

According to the minutes of the oral proceedings before the opposition division, at the beginning of the oral proceedings, Mr Chivarov requested that Mr Huber be allowed to speak "on selected issues during the oral proceedings under his (Mr Chivarov's) supervision and responsibility". This request, therefore, amounted to a request for oral submissions by the accompanying person in addition to the complete presentation of appellant 2's case by the professional representative.

8.2.3 Further according to the minutes, appellant 1 "objected against Mr Huber being the only speaker but agreed on Mr Huber contributing submissions under Mr Chivarov's responsibility and with the provisio (sic) that he would not make the complete case".

Appellant 1 thus agreed to the accompanying person making oral submissions under the control of the professional representative, and in addition to the complete presentation of appellant 1's case by the professional representative as foreseen in G4/95. Whether appellant 1 had the subjective impression that it had no choice but to agree is in this context of no relevance. In fact, appellant 1 could have refused its agreement and, if the opposition division had decided to allow the accompanying person to make oral submissions despite the missing consent of appellant 1, could still have challenged this decision during the appeal proceedings.

Therefore, the opposition division's decision that "Mr Huber was allowed to speak on selected issues under Mr Chivarov's responsibility" was in line with G4/95 and, therefore, cannot be said to amount to a procedural violation.

8.2.4 According to G4/95 (reasons 11), "the EPO should always be satisfied that oral submissions by an accompanying person are made under the continuing responsibility and control of the professional representative". Thus, when conducting oral proceedings, the opposition division has the duty to ensure that the oral submissions made by an accompanying person satisfy the above conditions, i.e. that they are made in addition to the complete presentation of the party's case by its professional representative and under the continuing responsibility and control of the professional representative.

8.2.5 In the case at hand, the minutes of the oral proceedings, up to the pronouncement of the decision, do not state who made the submissions on behalf of appellant 2. It is only after the pronouncement of the decision that the minutes state that "the opponent mentioned that according to his observation, Mr Huber had spoken for more than 50% of the time and that this was not what was agreed on at the beginning of the proceedings".

Also, appellant 1 submitted in its statement of grounds of appeal that the professional representative, Mr Chivarov, did not speak more than two sentences during the oral proceedings in the period up until the lunch break. After the break, the professional representative intervened a few times but did not present the entire case. This was in fact done by Mr Huber, his assistant. As a result, Mr Huber spoke in the vast majority of the

submissions by appellant 2. Hence, according to appellant 1, the submissions made by Mr Huber did not comply with the conditions set forth in G4/95, i.e. were not *in addition* to the complete presentation of appellant 2's case by the professional representative, Mr Chivarov.

8.2.6 Conversely, appellant 2 in its statement of grounds of appeal contested the submissions by appellant 1. It was apparent from the minutes of the oral proceedings that the opposition division had been satisfied that the submissions by the accompanying person were made under the continuing responsibility of appellant 2's professional representative.

8.2.7 The board considered the submissions of the parties and the content of the minutes of the oral proceedings before the opposition division. It is not possible to establish, on an objective basis, whether the submissions made by the accompanying person were *in addition* to the complete presentation of the professional representative or whether they went beyond that or even amounted to a presentation of substantially the complete case of the party.

8.2.8 The board is, however, of the opinion that it was incumbent on appellant 1 to inform the opposition division of any alleged negligence of the opposition division's duty to ensure that the oral submissions by Mr Huber be made under the aforementioned conditions as soon as it became aware of it. This immediate reaction is required since a party to the proceedings must take an active part and must on its own initiative submit in due time whatever will support its position (cf. R 2/08, reasons 8.5).

In the case at hand, appellant 1 should and could have informed the opposition division accordingly at the latest before the lunch break since, according to its submissions, at that point in time the professional representative had only made a few submissions, i.e. the accompanying person's oral submissions were apparently not only *in addition* to the complete presentation of appellant 2's case by the professional representative. Appellant 1 failed to inform the opposition division accordingly.

8.2.9 Furthermore, the conditions elaborated in G 4/95 are intended to ensure that during oral proceedings, one party does not present oral submissions which take an opposing party by surprise and for which such opposing party is not prepared (G 4/95, reasons 10, second paragraph).

In the case at hand, there is nothing that would indicate that appellant 1 was taken by surprise or that it was not prepared, or at least could not have been prepared, for the oral submissions made by the accompanying person. The board notes that the accompanying person had been presented as a trainee (see item 1, first paragraph of the minutes) and that appellant 1 did not argue that it had been taken by surprise by the presentation of the accompanying person.

8.3 In summary, the board fails to see that a procedural violation, let alone a substantial one, occurred during the proceedings before the opposition division.

8.4 The request to reimburse the appeal fee and to remit the case to the opposition division is therefore not

allowed.

Order

For these reasons it is decided that:

The appeals are dismissed.
The request to reimburse the appeal fee is rejected.

The Registrar: The Chairman:

C. Vodz G. Raths

Decision electronically authenticated