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Datasheet for the decision of 12 March 2013

Case Number: T 1197/12 - 3.2.06

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Title of invention:
Filter made of porous ceramic sintered body

Patent Proprietor:
NGK Insulators, Ltd.

Opponent:
Young Thought Limited

Relevant legal provisions:
EPC Art. 56

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Inventive step - (no)

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Case Number: T 1197/12 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 12 March 2013

Appellant: (Opponent)	Young Thought Limited Orchard Court Orchard Lane Bristol BS1 SWS (GB)
Representative:	Nash, David Allan Haseltine Lake LLP Redcliff Quay 120 Redcliff Street Bristol BS1 6HU (GB)
Respondent: (Patent Proprietor)	NGK Insulators, Ltd. 2-56 Suda-cho, Mizuho-ku Nagoya-City, Aichi Pref. 467-8530 (JP)
Representative:	Paget, Hugh Charles Edward Mewburn Ellis LLP 33 Gutter Lane London EC2V 8AS (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 13 March 2012 concerning maintenance of the European Patent No. 1596045 in amended form.**

Composition of the Board:

Chairman: M. Harrison
Members: G. de Crignis
W. Sekretaruk

Summary of Facts and Submissions

I. By way of its interlocutory decision, the opposition division found that European Patent No. 1 596 045 in an amended form met the requirements of the European Patent Convention (EPC).

II. The opposition division held that the main request met the requirements of Article 123(2) and (3) EPC and Article 83 EPC, that the subject-matter of claim 1 was novel over

D1 US-A-4 632 683 and
D8 SAE 920144 "Improvement of Pore Size Distribution of Wall Flow Type Diesel Particulate Filter", February 24-28, 1992

and also involved an inventive step when starting from either of these two documents as closest prior art since no cited prior art suggested a filter meeting the claimed specific relationships.

III. Claim 1 of the main request reads:
"A filter in the form of a porous ceramics sintered body having a honeycomb structure having a large number of through channels partitioned by partition walls and passing through along an axial direction, characterised in that the ratio P4 (%) of the volume of pores having a diameter of below 6 μm to the total pore volume, measured by the method of mercury penetration, the ratio P1 (%) of the volume of pores having a diameter of 30 μm or more to the total pore volume, measured by a method of mercury penetration, and the thickness T (μm) of said partition walls satisfy the relationship

$$P1 \times 15 \leq T \leq (1/P4) \times 3000.$$"

IV. The appellant (opponent) filed an appeal against this decision citing documents D1 and D8 as well as
D6 Experimental data
and
D9 SAE 932495 (September 1993)
which had already been submitted during the opposition proceedings.

V. In a communication annexed to the summons to oral proceedings, the Board indicated *inter alia* that no unexpected, surprising or synergistic effect as a result of the claimed relationship had been shown or claimed and that the function of a filter was dependent on further structural properties and other characteristics of the filter related to its use, all of which did not form part of claim 1.

VI. Oral proceedings were held before the Board on 12 March 2013.

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

The respondent (patent proprietor) requested that the appeal be dismissed or the patent be maintained on the basis of auxiliary request 1, filed on 4 January 2012, or on the basis of one of the auxiliary requests 2 - 7, filed on 11 February 2013.

VII. Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the relationship of P1 and P4 to T is defined as follows:

"$P1 \times 20 \leq T \leq (1/P4) \times 3000$."

(i.e. a combination of claims 1 and 6 of the main request).

Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that the following feature is added:
"and wherein the filter is employed as a filter to capture particulates contained in exhaust gas of a diesel engine."
(i.e. a combination of claims 1 and 10 of the main request).

Claim 1 of auxiliary request 3 is a combination of claims 1, 6 and 10 of the main request.

Claim 1 of auxiliary request 4 differs from claim 1 of the main request in that the features of claims 1, 9 and 10 of the main request are included, whereby the features of claim 9 included in claim 1 state:

"wherein the average pore diameter D (μm), measured by a method of mercury penetration, satisfies the relationship: $D \times 50 \geq T$."

Claim 1 of auxiliary request 5 includes the features of claims 1, 6, 9 and 10 of the main request.

Claim 1 of auxiliary request 6 differs from claim 1 of auxiliary request 4 in that it additionally includes the features of claim 11 of the main request which define:
"wherein adjacent through channels are alternatively sealed at the opposite end mutually so that both end surfaces of the filter are clogged checkerwise".

Claim 1 of auxiliary request 7 includes the subject-matter of claims 1, 6, 9, 10 and 11 of the main request.

VIII. The arguments of the appellant may be summarised as follows:

The subject-matter of claim 1 lacked an inventive step when starting from D8 as the closest prior art. The problem could not be to provide a generally applicable relationship since no such relationship was provided.

The results provided in Tables 1 and 2 of the patent in suit - consistent with the data provided in D6 -, demonstrated that initial pressure loss was decreased when decreasing the wall thickness and that higher soot scavenge efficiency corresponded with higher wall thickness. Such results however corresponded to the knowledge and expectations of the skilled person as set out in D9 which referred to SiC and cordierite as ceramic materials. No influence of the pore size distribution on performance of diesel particular filters (dpf) had been demonstrated since, with regard to the claimed relationship, the patent specification did not disclose any P4 parameter for the exemplified filters. Moreover, claim 1 was not limited to ceramic sintered bodies which underlay the experimental data of the patent in suit and of D6. Accordingly, no generally applicable conclusions could be drawn regarding the properties of filters and whether they were dependent on the claimed relationship.

When starting from test filter C-356E in D8 as the closest prior art, the problem to be solved specified by the proprietor, namely the provision of a new way of regarding the optimization of the product in terms of selecting an appropriate thickness for a chosen wall material, was related to a method and was not an objective problem related to a product as claimed.

In view of no data being present which would support an effectiveness of the claimed relationship independent of material and process conditions upon the performance of the filter, the objective problem to be solved starting from D8 was simply to provide an alternative filter. Filters having specific pore size distributions were known and available according to D8, even though no specific details of the material were disclosed for the test filters therein.

The skilled person knew that he could optimize the pore size distribution for SiC and cordierite from the disclosure in D9. In particular, the possibility of improving the filtration efficiency by narrowing the pore size distribution was disclosed.

In view of no evidence of the claimed relationship having been supplied to show any improved properties, an inventive step could not be present as the equation in claim 1 was based upon an arbitrarily chosen relationship. The arbitrariness of such relationship was highlighted by the sister case referring to a relationship excluding the P4 value and including a P3 value whose effectiveness was equally unproven. Moreover, the different material characteristics of different ceramics had not been investigated although such characteristics influenced the tolerance ranges for the wall thickness.

In claim 1 of the auxiliary requests, no feature was included which did not also apply for the test filter C-356E of D8 so that the inventive step attacks against the subject-matter of claim 1 of the main request starting from D8 were unaltered.

IX. The respondent essentially argued:

D8 could be considered as representing the closest prior art for consideration of inventive step. The problem to be solved was the provision of an optimized filter such as set out in paragraphs [0010] and [0011] of the patent in suit. The solution was to adjust or select the thickness appropriately for a given material for the filter by a balancing of requirements. In fact much of the inventive solution lay in the insight of the inventor concerning how to arrive at a new improved filter product. The objective problem was not to arrive at an alternative filter as argued by the appellant.

The skilled person was capable of selecting the thickness of the filter walls merely based on the pore size distribution of the material used to make the dpf. For many materials there was no thickness which satisfied the claimed relationship, so that such materials could not be used in the invention. The invention thus actually placed rather strict requirements on the pore size distribution of the material.

D6 did not concern prior art filters, but filters of the patent compared to other filters falling outside the scope of the claim; it rated the filters A to G relative to each other only. The symbol "-" in the final column of D6 was not an indicator of poor performance but merely a performance less than those marked with one or more plus signs. Filter F of D6 was at the border of the claimed relationship and the skilled person would recognize that it would be improved when altering the wall thickness such as to fall clearly into the claimed relationship.

Filter C-356E of D8 fell outside the scope of claim 1. The pore size distribution for P1 and P4 values could not be calculated since no values could be taken with precision from the graph disclosed in Figure 1a on page 185 of D8. The thickness of the filter wall was not stated to be of importance in D8. There was therefore no guidance available for the skilled person to arrive at the claimed relationship.

D9 disclosed that for SiC it was easy to have a narrow pore size distribution but difficult for cordierite. However, "difficult" did not mean impossible. Moreover, D9 indicated that the kind of porosity had to be considered. Accordingly, D9 did not motivate the skilled person to consider in any sense the relationship of pore size distribution and wall thickness. Accordingly, no such motivation could be found in the prior art and an inventive step should thus be recognised.

The auxiliary requests restricted the scope of claim 1 more clearly to diesel particle filters and included further characteristics which narrowed the scope of the claim but they did not distinguish the filter further from the test filter C-356E of D8.

Reasons for the Decision

1. *Subject-matter of claim 1*

1.1 Claim 1 defines a filter of a certain structure which is characterized solely by the relationship "P1 x 15 ≤ T ≤ (1/P4) x 3000", wherein P1 and P4 represent ratios of the volume of pores having selected

ranges of diameter with regard to the total pore volume (P1: ≥ 30µm; P4: ≤ 6µm) and T represents the thickness of the partition wall.

1.2 It is important first to note that claim 1 does not define the complete pore size distribution. In particular, there are no ratios defined for any (subdivided) ranges of the remaining (or overlapping) volumes of pores having different diameters than those which are claimed. These further ranges concern, on the one hand, the range of the pore sizes which lies between P4 and P1 (and thus between 6µm and 30µm), and on the other hand, the range for the volume of large pores having diameters of e.g. 100µm or more. Thus all these other ratios remain undefined although the amount of large pores (having diameters of ≥ 100µm) greatly influences pressure loss and scavenging efficiency (see e.g. D1, col. 2, lines 6 - 12; D8, page 184, left column, lines 3/4 and right column, lines 1-5 and page 188, left column, second paragraph; D9, page 4, right column, second paragraph).

2. *Experimental data concerning the claimed relationship in the patent in suit*

2.1 The experimental data provided in the patent in suit are summarised in Tables 1, 2 and 3 thereof. These data concern one diesel particle filter (dpf) made of cordierite and one dpf made of SiC having an average pore diameter of 16.1µm (cordierite) and 10.5µm (SiC) respectively. Table 1 discloses the distribution of pore diameters for P1 (≥ 30µm: 16.06% for cordierite and 6.84% for SiC) and for P2 (≥ 60µm: 5.78% for cordierite and 5.01% for SiC); however, no values for the distribution of the other ranges of pore diameters P3 (≤ 3µm) and P4 (≤ 6µm) are disclosed.

2.2 Tables 2 and 3 disclose additionally the thickness of the partition walls, initial pressure loss and soot scavenge efficiency for the examples of both materials. These examples illustrate that when changing the wall thickness of a material, initial pressure loss and soot scavenge efficiency of the dpf are affected.

2.3 The comparative examples provided in these Tables are not suitable for demonstrating a dependency of the results upon the pore size distribution because they do not allow a comparison of different pore size distributions of a material and rely solely on deviating wall thicknesses with respect to the examples.

2.4 Accordingly, the specification including the Tables of the patent in suit does not demonstrate that there would be any influence of the percentage of P1 (≥ 30µm) or P4 (≤ 6µm), or of the average pore diameter D in combination with the wall thickness upon the initial pressure loss or soot scavenge efficiency and the overall performance as dpf.

3. *D6 - submitted experimental data*

3.1 D6 was submitted with the intention to support the presence of the claimed relationship in the examples given in the patent in suit.

3.2 The experimental data of D6 specify one cordierite material and one SiC material having P1 and P2 values and a D value identical to the corresponding example in the patent in suit, additionally P3 and P4 values are defined for both materials. Three sample filters made of such cordierite material and four sample filters

made of such SiC material are disclosed having different wall thicknesses and their results concerning initial pressure loss and soot scavenge efficiency are given.

3.3 However, D6 does not provide evidence with respect to the significance/relevance of the claimed relationships as it does not disclose comparative data for differing ratios of P1 and P4 or for differing average pore diameters D related to a defined wall thickness for a specific material. The data only demonstrate that for each material (unaltered P-ratios and unaltered D-value) the initial pressure loss and soot scavenge efficiency depend on the wall thickness.

3.4 These data thus do not allow the deduction to be made that the claimed relationship has any purposive effect let alone any beneficial effect. Accordingly, the experimental data in D6 are not suitable to demonstrate convincingly an improved function of the filters with respect to the feature distinguishing the invention from the prior art, namely the claimed relationship, and therefore D6 is not suitable to convincingly support the existence of inventive step.

4. *Closest prior art - D8*

4.1 Both parties considered D8 as representing the closest prior art. Also the Board is of the view that no other document on file is more appropriate as a starting point for the assessment of inventive step and may thus be considered as the closest prior art for this purpose.

4.2 D8 (see e.g. page 184, right column, "Experiments; Specimens and page 185") refers to the pore size

distribution of wall flow type ceramic honeycomb diesel particulate filters. The test filters have cell channel openings which are plugged in a checkerboard fashion at one end and alternately at the other. Thus the exhaust gas is forced through the porous cell walls which serve as a filter.

4.3 Table 1 of D8 indicates the structural properties of the test filters with regard to size, volume, cell structure, wall thickness and cell pitch which structural properties apply equally to all test filters. In its Table 2, D8 discloses four diesel particulate test filters and their material properties as regards porosity, mean pore diameter and coefficient of thermal expansion. Additionally, Figure 1a shows the pore size distribution of all four test materials up to a pore size of 100µm.

4.4 Test Filter C-356E is one of these test filters and is specified as having a wall thickness of 0.43mm, a mean pore diameter of 20µm, a cumulative pore volume above 100µm of 1.9% and a pore size distribution such as shown in Figure 1a. This test filter C-356E is reported as having good trapping efficiency with low pressure drop. Trapping efficiency of the dpf is considered to be mainly determined by the volume of the large pores above 100µm (page 188, second paragraph on left column) whereas the low pressure drop characteristics of the dpf are considered to be mainly determined by mean pore diameter (page 188, first paragraph on right column).

4.5 The pore size distribution shown in Figure 1a cannot be determined exactly but it can be deduced that the P1 and P4 values are close to the claimed limits. In view of the nature of the parameters P1 and P4, it is understandable that explicit disclosure in the prior

art of these specific values is not to be found. Thus, the filter C-356E qualifies as a starting point for the assessment of inventive step.

4.6 The feature which distinguishes the claimed subject-matter from the disclosure in D8 is that claim 1 requires the filter to satisfy the specific relationship set out above (see point 1.1). This was not a matter of dispute between the parties.

4.7 Thus, although D8 does not disclose the claimed relationship directly and unambiguously, it nevertheless discloses (in particular for material C-356E used as a diesel particle filter for a defined wall thickness) a pore size distribution which is at least close to the borderline of the claimed relationship - even when acknowledging an error margin possibly higher than the one included in the calculations of the appellant. Moreover, this filter is reported as having the same advantageous properties as the claimed filter. Thus, based on this assessment of D8, it qualifies as representing the closest prior art in particular when taking into account that claim 1 of the main request does not explicitly specify the material used, beyond defining that it is in the form of a porous ceramics sintered body.

5. *Problem to be solved*

5.1 The problem to be solved according to paragraphs [0010] and [0011] of the patent in suit, and referred to by the respondent, was the provision of a product optimized in a new way. The solution was considered to rely on the adjustment of the thickness of the partition walls for any given material in order to control pressure loss and scavenging efficiency of the

filter such that in the case smaller fine pores are present in a great number, the partition wall should be set thinner, and such that the partition wall should be set thicker in case far larger fine pores coexist in a great number in the material.

5.2 This concept of adjustment of the wall thickness represents only a method of how to adjust the partition wall thickness of a filter when having a defined material. However, no method of adjustment is claimed but instead a filter having a specific relationship of wall thickness to specifically defined ranges of pore size ratios.

5.3 Moreover, for such a concept to be accepted as underlying the objective problem, this would necessarily have to be based upon the availability of data such that the concept is indeed generally applicable - irrespective on the material used (as is now the case for the filter in claim 1). However, only data for SiC and cordierite are presented and accordingly, the effect is not made credible over the whole scope claimed.

5.4 Accordingly, the above defined technical problem as described in the patent in suit has not been credibly solved by the filter of claim 1, since no method is claimed, but a defined filter. It is thus irrelevant for the purposes of considering inventive step which factors caused the inventors to arrive at the technical problem specified in the patent in suit. In accordance with the aforegoing, the objective problem has therefore to be reformulated in rather less ambitious terms, namely, to the objective problem starting from D8 which can only be regarded as being to provide a filter having different characteristics.

5.5 The claimed characteristics provide a solution, since the relationship of wall thickness and pore volume of various diameters is an alternative to the only known relationship(s) which is/are clearly and unambiguously derivable from D8.

6. *Assessment on inventive step*

6.1 Starting from the dpf C-356E which is disclosed in D8 as having a good balance of trapping efficiency and pressure drop (page 187, Figures 5 and 6), and trying to find an alternative filter having different characteristics, the person skilled in the art would of course not only consider the exemplified combinations of pore volumes in D8 but also other combinations concerning material and pore size distribution.

6.2 The material of the filter C-356E is not disclosed in D8. Accordingly, when trying to provide an alternative filter, the first issue concerns the decision, on the basis of which material such a filter should be provided.

6.3 Ceramic sintered bodies are usually based upon materials including SiC and cordierite. Accordingly, the skilled person would at least consider these materials. In doing so, he would also take into account the disclosure in D9 which compares the properties of SiC and cordierite as a substrate for dpf. D9 (page 4 last complete paragraph) even refers to D8 and cites the conclusion drawn therefrom that a very narrow distribution of pore sizes would be preferred in order to get the best possible filtration efficiency at a given pressure drop, as well as discussing the influence of pore size distribution on efficiency.

Accordingly, in addition to the disclosure of D8, also D9 refers the skilled person to the importance of the pore size distribution as being an important factor in determining trapping efficiency and flow restriction.

6.4 Hence, the skilled person was taught that different efficiency, and indeed even improved filter efficiency, was to be obtained by narrowing the pore size distribution (see D9, page 4, right column, last complete paragraph) - meaning less small pores and less large pores.

6.5 When applying such a concept to the C-356E filter, this filter is automatically brought within the scope of the claimed relationship when maintaining the thickness disclosed for it.

6.6 Additionally, the claimed relationship is not supported by any data which allow the conclusion to be made that it is generally applicable with regard to all materials falling under the claim and that the tolerance for the thickness applies for all materials. Therefore, lacking such supporting evidence, the relationship defined in claim 1 can only be considered to be arbitrarily chosen.

6.7 Consistently, the reference of the appellant to the sister case which points to a different relationship including a P3 ratio instead of the P4 ratio, is not of itself decisive. However its relevance lies in the fact that the presence of other pore sizes in various relationships is very important for the properties of the dpf.

6.8 The respondent was of the view that such references to the material or to P3 had no relevance at all to the

present case. However, the data present in the patent in suit and in D6 do not disclose that any of the ratios disclosed in the patent in suit (P1, P2, P3 and P4), singly or in combination with another single value, are necessarily determinant for the changes measured on the properties of the dpf. However, it is established case law of the Boards (see e.g. decisions T 325/97, T 355/97, T 1051/97, T 1213/03) an inventive step can only be recognised if the patent in suit makes it at least plausible that the teaching of its claim 1 indeed solves the problem it purports to solve.

6.9 In the present case, there is no evidence from the examples in the patent in suit that the technical effects relied upon by the respondent, namely optimized characteristics of the dpf concerning pressure loss and scavenging efficiency can be attributed to the claimed relationship. It is apparent from these data that some individual optimal characteristics of a dpf for a specific combination of wall thickness and pore volumes having a specific diameter may exist, but there is absolutely no convincing evidence that such optimal characteristics are due to meeting the claimed relationship.

6.10 Therefore, without evidence to support any correlation of advantageous characteristics with the claimed relationship being met by a dpf, the Board comes to the conclusion that the filter of claim 1, in which the therein claimed relationship already comes close to the relationship present in the C-356E filter in D8, is not based on an inventive step when considering the teaching of D9 and, therefore, that the main request does not comply with the requirements of Article 56 EPC 1973.

6.11 The respondent's argument that there is no motivation in the prior art to alter the prior art devices is not persuasive. D9 is replete with references to the reasons for considering the choice of pore size and wall thickness (see e.g. D9, page 4, right column, first complete paragraph). In particular, in view of the lack of any proven correspondence between optimized efficiency and the values falling under the claimed relationship, and the consequential arbitrary selection of particular pore size ratios, this cannot give rise to any doubt that a skilled person would find it obvious to adopt such teaching and arrive at the subject-matter of claim 1.

6.12 Although the respondent argued that D8 taught, in the abstract, that pore size distribution should be altered as opposed to teaching a narrowing thereof, this is also non-persuasive. D9 (see page 4, right column , last complete paragraph) cites D8 as disclosing it as "being preferable to have a very narrow distribution of pore sizes".

6.13 The further argument of the respondent that D8 itself gave no teaching to change the thickness, due to the fact that all tests were carried out at a single thickness, does not change the aforegoing conclusions. D8 is the starting point for considering inventive step of the claimed invention, and D9 for example already notes the scavenging and pressure effects to be expected by changing the thickness and porosity. Moreover, as stated in the aforegoing, no evidence of an improvement due to only the defined relationship has anyway been demonstrated by the respondent.

7. Auxiliary requests 1 to 7

7.1 Auxiliary request 1 - relationship P1

The subject-matter of claim 1 of auxiliary request 1 differs from the subject-matter of claim 1 of the main request in that the relationship is altered such that the thickness shall be greater or equal to P1 x 20 instead of P1 x 15 as in claim 1 of the main request. Such amendment also applies for claim 1 of auxiliary requests 3, 5 and 7.

It has to be taken into account that the above finding concerning the relationship is, however, not based upon a specific way of multiplying a ratio of P1 and its relationship to the thickness, but is based upon the general lack of evidence for an improvement provided by such a relationship. Therefore, the change to a different way of multiplying the ratio of P1 does not does not alter the conclusions set out for claim 1 of the main request above, so that the objection is not overcome.

7.2 Auxiliary requests 2-7 - limitation of the filter to the employment in a diesel engine

The subject-matter of claim 1 of auxiliary requests 2 to 7 differs from the subject-matter of claim 1 of the main request in that the feature concerning the employment of the filter as a filter to capture particulates contained in exhaust gas of a diesel engine has been added. Although such amendment is in the characterizing portion of claim 1, it belongs to the preamble since D8 also concerns the pore size distribution of wall flow type diesel particulate filters (see title). Hence, this amendment has no

significance for the evaluation of inventive step when starting from D8 as the closest prior art.

7.3 Auxiliary requests 4-7 - average pore diameter D

The subject-matter of claim 1 of auxiliary requests 4 to 7 additionally includes the feature concerning the relationship of the average pore diameter D (µm) with respect to the thickness.

As with the relationship concerning the ratio P1 or P4, no reliable evidence or proof for correspondence between optimized efficiency and the values falling under the claimed relationship concerning the average pore diameter has been filed. Moreover, D8 discloses for filter C-356E a mean pore diameter of 20 µm, and for the test filters a wall thickness of 430 µm, whereby these test filters meet the claimed relationship and thus also such feature belongs to the preamble of the claim and thus has no significance for the evaluation of inventive step when starting from D8.

7.4 Auxiliary requests 6 and 7 - channel design

The subject-matter of claim 1 of auxiliary requests 6 and 7 additionally includes the feature concerning the design of the through channels which are "alternatively sealed at the opposite end mutually so that both end surfaces of the filter are clogged checkerwise". Such design of the through channels is disclosed for the experimental test filters of D8 (see page 184, right column, third paragraph). Hence, also such feature should be positioned in the preamble of the claim and cannot be taken into account for the assessment of inventive step.

7.5 Combinations in auxiliary requests 3, 5 and 7

The subject-matter of claim 1 of auxiliary requests 3, 5 and 7 combines some or all of the above discussed amendments and thus does not involve any change in subject-matter which could lead the Board to assess inventive step thereof differently.

7.6 Auxiliary requests 1 to 7 - conclusions

Accordingly, all the features added to auxiliary requests 1 to 7 concern structural characteristics which are also disclosed for the dpf of D8 and thus do not add any feature which can be considered to result in the subject-matter of claim 1 involving an inventive step since these claims rely on a relationship whose effectiveness upon the performance of the filter has not been convincingly supported by evidence. No arguments to the contrary were submitted by the respondent in relation to the auxiliary requests. Therefore, the Board concludes that the above assessment on inventive step made in regard to the main request applies equally to the subject-matter of claim 1 of all auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The European patent is revoked.

The Registrar: The Chairman:

M. H. A. Patin M. Harrison

Decision electronically authenticated