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**D E C I S I O N**  
**of 8 November 2002**

**Case Number:** T 1006/00 - 3.2.7

**Application Number:** 93910192.9

**Publication Number:** 0640060

**IPC:** C03B 37/014

**Language of the proceedings:** EN

**Title of invention:**

Heat treatment facility for synthetic vitreous silica bodies

**Patentee:**

Saint-Gobain Quartz plc

**Opponent:**

Heraeus Quarzglas GmbH & Co.KG

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54, 55, 56, 123(2), 123(3)

**Keyword:**

"Document available to public (yes)"

"Novelty - main request (no)"

"Remission of auxiliary request to first instance (no)"

"Inventive step - auxiliary requests (no)"

**Decisions cited:**

T 0472/92

**Catchword:**

-



Case Number: T 1006/00 - 3.2.7

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.7**  
**of 8 November 2002**

**Appellant I:** Saint-Gobain Quartz plc  
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**Appellant II:** Heraeus Quarzglas GmbH & Co.KG  
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**Decision under appeal:** Interlocutory decision of the Opposition Division  
of the European Patent Office posted 16 October  
2000 concerning maintenance of European patent  
No. 0 640 060 in amended form.

**Composition of the Board:**

**Chairman:** J. H. P. Willems  
**Members:** P. A. O'Reilly  
H. E. Felgenhauer

## Summary of Facts and Submissions

- I. Appellant I (proprietor) and appellant II (opponent) each filed an appeal against the decision of the Opposition Division to maintain amended the European patent No. 0 640 060.
- II. Opposition was filed against the patent as a whole and based on Article 100(a) EPC (lack of inventive step). In a later submission the ground of novelty is mentioned.

The Opposition Division held that the subject-matter of each of the main request and auxiliary request 2 was novel but did not involve an inventive step. They also held that the independent claim of auxiliary request 1 was not allowable in view of Article 123(2) EPC. The Opposition Division further held that the grounds for opposition did not prejudice the maintenance of the patent in amended form in accordance with the auxiliary request 2A.

The most relevant prior art documents and pieces of evidence for the present decision are:

- D1: Product brochure No. 33-150.21 "IWQ Induction-Heated Quartz Tube Furnaces" of Leybold AG.
- D1A: Product information letter No. 33-150.21 "IWQ Induction-Heated Quartz Tube Furnaces" of Leybold Durferrit GmbH.
- D2: US-A-4 741 748
- D3: US-A-4 969 941
- D5: US-A-4 062 665

- D6: Statutory declaration of Mr Philip Wightman dated 4 March 1999
- D7: Copy of a letter of TSL to Leybold AG dated 8 November 1990
- D8: Copy of a letter of Leybold AG to TSL dated 27 November 1990
- D10: Copy of a note of telephone call of 5 November 1990
- D11: Copy of a circular of Leybold AG dated 12 November 1990
- D13: GB-A-2 203 737
- D14: Statutory declaration of Mr Franz Hugo dated 9 February 2000
- D15: Statutory declaration of Dr George Sayce, undated
- D16: GB-A-772 826 (mentioned in the patent and introduced during the appeal proceedings)

III. Appellant I requested that the decision of the Opposition Division be set aside and the patent be maintained unamended. Alternatively, the patent should be maintained in accordance with a first auxiliary request filed during oral proceedings on 8 November 2002 before the Board or a second auxiliary request which corresponds to the fifth auxiliary request filed on 8 October 2002. Appellant I further requested that the second auxiliary request be remitted to the first instance for further prosecution to give the appellant the possibility of examination by two instances.

Appellant II requested that the decision of the Opposition Division be set aside and the patent be revoked.

IV. The independent claim of the main request reads as follows:

"1. An induction-heated furnace, suitable for heat treatment and/or sintering of synthetic silica bodies, under conditions of high purity, comprising a tubular susceptor disposed with its axis vertical and a liquid-cooled induction coil for raising the temperature of the susceptor, the susceptor being made from graphite and/or silicon carbide, and being enclosed within a vacuum envelope made from vitreous silica or fused quartz, and the envelope being surrounded by the liquid-cooled induction coil, wherein the design is such that the vacuum envelope operates at temperatures below those at which either devitrification or sagging of the envelope might occur even when the tubular susceptor is heated to a temperature of 1700°C, whereby heat treatment and/or sintering of a porous synthetic silica body can be carried out under atmospheric or reduced pressure."

The independent claim of the first auxiliary request reads as follows:

"1. An induction-heated furnace, suitable for **zone** sintering of synthetic silica bodies, under conditions of high purity, comprising a tubular susceptor disposed with its axis vertical and a **stationary** liquid-cooled induction coil for raising the temperature of the susceptor, the susceptor being made from graphite and/or silicon carbide, and being enclosed within a vacuum envelope made from vitreous silica or fused quartz, and the envelope being surrounded by the liquid-cooled induction coil, **the furnace lacking an**

**internal vitreous silica or fused quartz muffle tube,** wherein the design is such that the vacuum envelope operates at temperatures below those at which either devitrification or sagging of the envelope might occur even when the tubular susceptor is heated to a temperature of 1700°C, whereby **zone** sintering of a porous synthetic silica body can be carried out under atmospheric or reduced pressure, **wherein the porous body is suspended in space with no contact with either susceptor or container materials."**

The independent claim of the second auxiliary request reads as follows:

"1. **An assembly for heat treatment and/or sintering of porous synthetic silica bodies comprising at least two furnace chambers, the upper one being adapted to permit the loading of a sinter body from below into its furnace chamber and to transfer the sinter body under controlled gas environment and temperature to a position over a second furnace chamber in which zone sintering may be undertaken again under a controlled gas environment and under controlled conditions of temperature and pressure, at least one of the furnaces being an induction-heated furnace, suitable for heat treatment and/or sintering of synthetic silica bodies, under conditions of high purity, comprising a tubular susceptor disposed with its axis vertical and a liquid-cooled induction coil for raising the temperature of the susceptor, the susceptor being made from graphite and/or silicon carbide, and being enclosed within a vacuum envelope made from vitreous silica or fused quartz, and the envelope being surrounded by the liquid-cooled induction coil, wherein the design is such that the vacuum envelope operates at temperatures below those at which either devitrification or sagging of the envelope might occur even when the tubular susceptor is heated to a temperature of 1700°C, whereby**

heat treatment and/or sintering of a porous synthetic silica body can be carried out under atmospheric or reduced pressure."

IV. Appellant I argued in written and oral submissions essentially as follows:

- (i) Document D1, which is a sales brochure, was not available to the public. Document D1 may have been distributed to sales outlets but these sales outlets were not entitled to distribute document D1 further since a confidentiality agreement existed between Leybold AG, who issued document D1, and Heraeus Quartzglas regarding the use of the furnaces described therein for sintering of porous synthetic SiO<sub>2</sub> to create silica glass. Where a party, e.g. a recipient of document D1, receives innocently confidential information, that party is not entitled to use the information, cf. Clerk & Lindsell on Torts, Eighteenth Edition, Sweet & Maxwell, pages 1530, 1531. The information in document D1, which was possibly available at the sales offices of Leybold AG, could not therefore be used by any party who might have received it. The fact that Dr Sayce received a copy of document D1 with a part of the English text deleted but German text unchanged does not mean that any other party would have received document D1 with only the English text changed. This must be considered to have been a single error by the sales representative in not deleting the relevant text in both languages of document D1. The copy of document D1 received by Dr Sayce was not available to the public as Dr Sayce was bound to confidentiality by his work and was not entitled to make it available further. The circumstances of the present case are the same as those in decision T 472/92. Following that

decision the opponent must prove his case "to the hilt". Since there are doubts the decision concerning the public availability of D1 should be against the opponent.

(ii) Claim 1 of the main request is novel over document D16. The claim sets out the features of the furnace, some of which are in functional form. In the furnace taught in document D16 the treatment is not in conditions of high purity. It is already set out in the description of the patent that contact contamination not desirable. In the furnace taught in document D16 the heat treatment of the material takes place in a crucible. This means that there will be contamination by the contact. The purity required for the susceptor of the invention is greater than that required for the crucible mentioned in document D16 so that high purity in the sense of the invention is not provided by the furnace taught in document D16.

(iii) With regards to the first auxiliary request the skilled person would not consider using document D1 for sintering synthetic silica bodies as the document only referred to sintering  $\text{SiO}_2$  which most commonly is in powdered form. Document D1 also does not disclose an operating temperature of  $1700^\circ\text{C}$  since the temperatures stated at the end of document D1 indicated a maximum of  $1500^\circ\text{C}$ . The reference in document D1 to  $2000^\circ\text{C}$  did not show how this could be achieved. Moreover, in document D1 it is indicated that the treatment can be in vacuum or in an inert gas atmosphere and there is no indication that the temperature  $2000^\circ\text{C}$  is reached in a vacuum treatment. There is no indication to use a tubular susceptor in the furnace of



document D1 since the document is clearly directed to the use of a crucible as evidenced by its reference to a crucible chamber. Document D2 would not help the skilled person as this document concerns a non-vacuum furnace which uses a muffle tube. The skilled person if he wished to use the document D2 would find himself taught to use a muffle tube without a vacuum.

The skilled person would not have combined document D16 with either document D1 or document D2. The argument of appellant II that the affidavit of Dr Sayce shows that a combination was obvious is incorrect. Since Dr Sayce is named as inventor in the patent in suit, he cannot be considered as the skilled person. The skilled person would not consider document D1 for heat treatment of soot bodies as the furnace disclosed therein uses crucibles. The skilled person would not consider combining document D2 with document D1 for heat treatment of soot bodies as the furnace disclosed in document D2 does not use a vacuum and does not sinter at high temperature, i.e. more than 1500°C.

- (iv) The second auxiliary request has not been subject to a decision by the Opposition Division. In order to give the proprietor the opportunity to have his request examined by two instances the case should be remitted to the Opposition Division to examine the request.

The amendment to claim 1 of the request does not offend against Articles 123(2) or (3) EPC. The claim adds the features of the assembly to the features of claim 1 as granted so that its scope is narrower than claim 1 as granted and does not

offend against Article 123(3) EPC. Also, the claim does not offend against Article 123(2) as it is based on page 11, lines 23 to 29 of the description.

The subject-matter of claim 1 of the request is novel and involves an inventive step. Neither document D1 nor document D2 shows an assembly with two furnaces. Document D3 shows two furnaces but as one of the furnaces of the claim is novel and inventive over D3 the subject-matter of the claim is novel and inventive.

V. Appellant II argued in written and oral submissions essentially as follows:

- (i) Document D1 was available to the public. The evidence shows that document D1 was available in the sales offices of Leybold AG from the summer of 1990. The evidence also shows that document D1 was forbidden to be distributed from 12 November 1990 onwards which means that it could be distributed beforehand. The evidence also shows that a copy was distributed to Dr Sayce with the German text unchanged, even though part of the identical English text had been deleted. Dr Sayce has admitted that he received document D1 with the German text unchanged.
  
- (ii) With respect to the main request claim 1 lacks novelty in view of document D16. This document shows all the features of claim 1. In this respect it may be noted that the first part of the claim which refers to the suitability of the furnace is no more than an indication of the intended use and as such is not limiting. The last part of the claim which specifies the design of the furnace is no more than a statement of

problem and does not define constructional features. Document D16 indicates that the crucible is made of pure graphite so that the treatment is under conditions of high purity.

(iii) With respect to the first auxiliary request the skilled person starting from document D16 would combine this with either document D1 or document D2 and so arrive at the invention. In the affidavit from Dr Sayce he indicated that there were problems with the use of the furnace known from document D16 since it did not permit heat treatment without contact with the walls. He also indicated that the furnace known from document D1 might provide a solution. Also, when Dr Sayce received document D1 the accompanying letter indicated that the furnace disclosed in D1 could operate at 1800°C. Therefore, it is clear that the skilled person would have considered combining document D16 with document D1.

(iv) Claim 1 of the second auxiliary request offends against Articles 123(2) and (3) EPC. Claim 1 of the request specifies "at least one of the furnaces" being according to claim 1 as granted, whereas in claim 5 as granted, on which claim 1 of this request is based, "the upper one being a furnace according to claim 1" was specified. This change offends against Articles 123(2) and (3) EPC.

The subject-matter of claim 1 of the request is not inventive in view of documents D1 and D5. It would be advantageous if the soot body did not cool between formation and sintering. Document D5

shows this in that the soot body is formed in one furnace and move upwards to a second sintering furnace which is above the first furnace.

## **Reasons for the Decision**

### *Public availability of Document D1*

1. Document D1 is a bilingual (German/English) brochure from Leybold AG which has a printers date of 3 August 1990. This date however has little weight. The same brochure (D1A) which was reissued some time after November 1990 (as stated in affidavit D15 of Dr Sayce) with the name of the issuing company changed and some of the wording deleted. Despite these changes the brochure still bore the same identification number and printing date as the earlier version. The correctness of the printing date can obviously be taken with a pinch of salt. Appellant II has produced an internal telephone note dated 5 November 1990 (D10) from a Dr Englisch who worked for appellant II at the time. The note indicates that he had complained to a Dr Schlebusch of Leybold AG that document D1 contained confidential information and that it should not have been distributed. An internal letter dated 12 November 1990 (D11) from Mr F. Hugo, who worked for Leybold AG, was entitled to "Field Sales Bulletin UM" and requested that existing copies of document D1 should be destroyed. Mr Hugo in an affidavit dated 9 February 2000 (D14) confirmed that document D1 was distributed in large numbers in Summer 1990 and that sales offices were requested in the letter of 12 November 1990 not to distribute document D1. The affidavit further states that Mr Hugo knew that not all copies of document D1 were retrieved.

According to an affidavit from a Philip Wightman (D6) from the British sales office of Leybold AG he received a request for information from a Dr Sayce in a letter dated 8 November 1990 (D7). Dr Sayce was, and still is, an employee of appellant I. In response to this request Mr Wightman states that he sent a copy of document D1 to Dr Sayce as evidenced by a copy of the letter which accompanied the copy of document D1 (D8). However, he deleted a reference in the English text to the sintering of porous synthetic SiO<sub>2</sub> to create silica glass, but did not change the German text. The above sequence of events is confirmed in an affidavit from Dr Sayce (D15) in which he confirms making the request and that the reference to sintering of porous synthetic SiO<sub>2</sub> to create silica glass had remained in the German text. In addition, Dr Sayce stated that in a meeting with Leybold AG on 8 May 1991 he was lead to believe that the copy of document D1 that had been sent to him was a draft document that had been sent in error. Dr Sayce returned the document to Leybold AG during the meeting.

The above evidence leads the Board to the conclusion that document D1 was present in the sales offices of Leybold AG from some time in late summer 1990 until 12 November 1990. The document was distributed to the offices with the intention that it should be made available to possible customers. This means that if a customer had asked for information during this period he would have received the document D1. The events surrounding the sending of document D1 to Dr Sayce are consistent with this view since Mr Wightman clearly considered that document D1 was intended for distribution as evidenced by its actual distribution to Dr Sayce. Appellant I has referred to decision T 472/92. In that decision however all the evidence regarding a prior use lay in the power of the opponent. That is not the case here since some of the evidence

regarding the situation has been supplied by the proprietor and that evidence is consistent with the evidence supplied by the opponent.

Appellant I has argued that the copy given to Dr Sayce was a single copy and it was not available for further distribution as Dr Sayce would have considered his possession of it to be confidential in view of the ongoing project in this area in TSL Group plc - the employer of Dr Sayce. However, it is not necessary to consider the status of this copy as the Board is satisfied that the evidence leads to the conclusion that document D1 was available in an unchanged form from late summer 1990 until at least 12 November 1990. It is sufficient that document D1 was available to the public and immaterial whether it has actually been sent out.

Appellant I has argued that under English law on torts document D1 was made available in breach of a confidentiality agreement and even when such information was received innocently the recipient is bound to confidentiality. However, it is the constant jurisprudence of the Boards of Appeal that a document is made available to the public if the public could have had access to the document, unless the only access was by a party subject to a confidentiality agreement with the party making the document available. The fact that the document possibly should not have been made available to the public because of some confidentiality agreement is not relevant to the fact of its actual availability. The European Patent Convention makes only one exception to the unauthorised disclosure of confidential information, which is in Article 55 EPC. In that article it is stated that the disclosure must be an abuse in relation with the applicant or his legal

predecessor and must take place no earlier than six months before the filing of the European patent application. In the present case neither of these conditions are fulfilled so that this exception does not apply.

### **Main request**

#### *Novelty*

2. It is common ground between the parties that document D16 discloses most of the features of claim 1, in the alternative of a furnace suitable for heat treatment. The parties disagree as to whether the device disclosed in document D16 can carry out a heat treatment under conditions of high purity. Document D16 discloses a heat treatment in a graphite crucible so that the material being treated will be in contact with the carbon of the crucible. Appellant I has argued that this contact with a material will contaminate the material. The patent does not define any level of purity to be understood by "high purity". The only numerical figure relates to the level of purity of the graphite susceptor. It may also be understood that the conditions of high purity are also in part achieved by the treatment being in a vacuum. The treatment in the device of document D16 also takes place in a vacuum. There is also in document D16 an indication of the purity of the graphite of the crucible which is two orders of magnitude less than that of the susceptor described in the patent in suit. However, the graphite of the crucible is nevertheless described in document D16 as "pure graphite (less than 0.02% of ash)". In the opinion of the Board the requirement of claim 1 that the furnace is suitable for heat treatment under conditions of high purity is also fulfilled by the furnace disclosed in document D16 by the fact that the treatment takes place under vacuum and the graphite

crucible is described as pure graphite. In the absence of any clear definition in the patent of "high purity" the furnace disclosed in document D16 must be considered to fulfill this requirement.

Therefore, the subject-matter of claim 1 of the main request is not novel in the sense of Article 54 EPC.

### **First auxiliary request**

#### *Inventive step*

##### 3.1 *Closest prior art*

In the opinion of the Board the closest prior art is represented by document D1 which discloses an induction-heated furnace, suitable for sintering of synthetic silica bodies, under conditions of high purity, comprising a susceptor and a stationary induction coil for raising the temperature of the susceptor, the susceptor being made from conducting material, and being enclosed within a vacuum envelope made from quartz, and the envelope being surrounded by the induction coil, the furnace lacking an internal vitreous silica or fused quartz muffle tube, wherein the design is such that the vacuum envelope operates at temperatures below those at which either devitrification or sagging of the envelope might occur even when the susceptor is heated to a temperature of 1700°C, whereby sintering of a porous synthetic silica body can be carried out under atmospheric or reduced pressure.

In this respect the Board considers that the furnace disclosed in document D1 is suitable for sintering of synthetic silica bodies since it is disclosed as being suitable for the sintering of silica. Claim 1 does not specify the form of the body for which the furnace



should be suitable. Also, the furnace disclosed in document D1 must be considered to be suitable for sintering under conditions of high purity since, firstly the expression is not defined and, secondly the fact that it is stated to be suitable for treating highly reactive material in a vacuum or inert gas atmosphere (see under the heading "Applications of IWQ Quartz-Tube Furnaces") must imply that it produces conditions of high purity.

Document D1 refers to crucibles and the heating is by induction coils. This means that the crucibles must be made of conducting material. There is no definitive distinction in form between a crucible and a susceptor so that a crucible forms a susceptor.

The Board considers that document D1 discloses an operating temperature over 1700°C. It is explicitly stated in the document that the temperature may be up to 2000°C with appropriate choice of induction coil and power supply. The fact that the section entitled "Standard Equipment Items - Options" indicates an operating maximum temperature of 1500°C must be understood to mean that the standard furnaces operate at this temperature. However, nonstandard furnaces could be supplied to operate at up to 2000°C. Although the document refers to treatment in vacuum or in an inert-gas atmosphere this reference follows a listing of the uses of the vacuum furnaces and indicates for what the furnaces are "also suitable". It is thus clear that the reference to treatment in vacuum or in an inert-gas atmosphere is an indication that these are alternative uses of a furnace which is suitable for both uses. In the case of operating at up to 2000°C it is implicit that the vacuum envelope does not sag or devitrify, since otherwise the furnace will not operate satisfactorily.

The Board is thus satisfied that all the features indicated above are disclosed in document D1.

3.2 Problem to be solved

The problem to be solved by the features distinguishing claim 1 over document D1 is to effect the sintering of a soot body. Although document D1 only mentions the sintering of porous synthetic SiO<sub>2</sub> the skilled person would consider the sintering of a silica body since that is a well-known form of SiO<sub>2</sub>. For the sintering of silica bodies a high temperature is desirable. The skilled person would therefore consider employing the furnace disclosed in document D1 for the sintering of silica bodies requiring high temperatures, such as soot bodies, and wish to solve the problem of adapting the furnace to this use.

3.3 Solution to the problem

Claim 1 of the main request is distinguished from the disclosure of document D1 by the following features some of which solve the above stated problem:

The furnace is suitable for zone sintering, the conductive material of the susceptor is graphite and/or silicon carbide, a tubular susceptor is provided which is disposed with its axis vertical, the induction coil is liquid-cooled, and the porous body is suspended in space with no contact with either susceptor or container materials.

3.4 This solution to the problem is obvious for the following reasons:

The skilled person would consider the use of the furnace known from document D1 with zone sintering as this is a known form of sintering, see for instance

document D2. By the use of a stationary induction coil the type zone sintering specified in the claim is the opposite to that used in document D2 which uses a moving coil. However, document D2 in its introduction (see column 1, lines 27 to 29) makes it clear that a stationary coil is the standard arrangement from which the teaching of document D2 starts. The skilled person would therefore also consider zone sintering using the stationary coil.

Document D1 indicates that there is a cooling water supply, without expressly stating what is to be cooled. The induction coils shown therein appear to be hollow. It is not unambiguously clear that the induction coils are water cooled since the cooling water could be intended to cool the furnace as such. The use of water for cooling induction coils is however well-known, see for instance documents D13 (page 4, line 2) or D16 (page 4, lines 10 to 13), and the skilled person would automatically provide this form of cooling when the power to be supplied to the coils requires it.

Soot bodies are cylindrical elongate bodies which require a tubular susceptor to provide symmetrical heating as is, for instance, shown in document D2. It is also clear to the skilled person that there would be better to avoid contact with the walls or furnace material. There is a danger of increased contamination between the susceptor and the soot body. In the case of a non-vacuum furnace such as taught in document D2 the contamination is reduced by a muffle tube. In a vacuum furnace the muffle tube can be dispensed with, but the soot body would be kept from contact with the susceptor. Appellant I referred to document D13 as proof that it was not obvious to avoid contact. Indeed, document D13 does disclose a horizontally arranged tubular susceptor which rotates, with the soot body rolling on the internal surface of the susceptor.

However, the purpose of this arrangement was to try to give the soot body a perfect cylindrical shape avoiding elliptic forms. The problem of surface contamination was simply accepted in that furnace as a trade off with the better cross-sectional shape that was obtained for the soot body. The skilled person would be aware that no contact with other materials is desirable if contamination is to be kept at a minimum. Indeed, one of the effects of the vacuum is to reduce contamination without the need for expensive inert gases.

It may be concluded therefore that the skilled person would desire to use the furnace disclosed in document D1 for sintering a soot body. Further, in adapting the furnace to this task he would arrive at the furnace set out in claim 1 of the first auxiliary request.

Appellant II also argued that the subject-matter of the claim was rendered obvious on the basis of other combinations of documents. These combinations need not be considered here since the subject-matter of claim 1 is already rendered obvious for the above reasons.

- 3.5 Therefore, the subject-matter of claim 1 of the first auxiliary request does not involve an inventive step in the sense of Article 56 EPC.

### **Second auxiliary request**

#### *Remission to the Opposition Division*

4. It is correct, as stated by appellant I, that this request was not the subject of a decision by the Opposition Division since in the opposition proceedings it was a lower ordered request than the request maintained by the Opposition Division. However, a similar request has been in the proceedings since

before the oral proceeding before the Opposition Division. Also, the request is based on a claim which was opposed in the grounds for opposition. In these circumstances the request cannot reasonably be considered as changing the legal and factual framework, but merely contributes to the defence of appellant I against the existing situation. A remission to the first instance is therefore not warranted.

*Articles 123(2) and (3)*

5. Although the grounds under Articles 123(2) and (3) EPC were raised by appellant II, it is not necessary for the Board to decide upon the grounds since the subject-matter of claim 1 of the request in any case does not involve an inventive step as set out in the following.

*Inventive step*

6. Claim 1 of the request is directed to an assembly comprising at least two furnace chambers. At least one (i.e. the upper one, the lower one, or both) of the chambers is in accordance with claim 1 as granted (the claim includes the exact wording of claim 1 as granted). The claim further specifies that a lower chamber is one in which zone sintering may take place under controlled conditions of temperature and pressure. However, such a lower furnace chamber corresponds to the furnace chamber set out in claim 1 of the first auxiliary request which has already been considered to be obvious as explained above. Therefore in the alternative that the "at least one of the furnaces..." is the lower furnace the remaining feature of the claim is that there is an upper furnace which is adapted to permit loading of a sinter body from below into its furnace chamber and to transfer the body under controlled gas environment and temperature to a position over the lower chamber. Document D2 shows a

furnace for zone sintering into which a soot body is lowered, so that the general principle of bringing soot bodies to furnaces and lowering them therein is known to the skilled person. In the situation shown in document D2 the soot body is apparently moved without protection or heating to the lower furnace for sintering. For the skilled person it is clear that the cooling of the soot body after production followed by a subsequent reheating is inefficient. It would clearly be better to conserve the heat already in the soot body. This is already done in the case of the apparatus disclosed in document D5 wherein the soot body is formed in one furnace chamber and then moved immediately upwards to an upper furnace chamber in which the sintering takes place. Reheating of the soot body is thus avoided in the furnace assembly disclosed in document D5. As in the case of the assembly disclosed in document D5 it would be evident to the skilled person that not only the temperature but also the gas environment should be controlled, since allowing an uncontrolled gas access to the soot body risks contamination of the soot body in its hot phase, which would be undesirable. The Board therefore considers the extra features of claim 1 of this request over claim 1 of the first auxiliary request to be no more than those that the skilled would provide in order to transfer a soot body in the most efficient manner.

Therefore, the subject-matter of claim 1 of the second auxiliary request does not involve an inventive step in the sense of Article 56 EPC.

**Order**

**For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

D. Spigarelli

J. Willems