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**D E C I S I O N**  
**of 16 January 2002**

**Case Number:** T 0808/99 - 3.2.7

**Application Number:** 93200093.8

**Publication Number:** 0542729

**IPC:** B05C 19/00

**Language of the proceedings:** EN

**Title of invention:**

Method and apparatus for producing parts by selective sintering

**Patentee:**

BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM

**Opponent:**

EOS GmbH Electro Optical systems

**Headword:**

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**Relevant legal provisions:**

EPC Art. 76(1), 123(2)

**Keyword:**

"Extension beyond the content of the application as filed (yes)"

**Decisions cited:**

-

**Catchword:**

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Case Number: T 0808/99 - 3.2.7

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.7**  
**of 16 January 2002**

**Appellant I:** EOS GmbH Electro Optical Systems  
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**Decision under appeal:** Interlocutory decision of the Opposition Division  
of the European Patent Office posted 2 July 1999  
concerning maintenance of European patent  
No. 0 542 729 in amended form.

**Composition of the Board:**

**Chairman:** A. Burkhart  
**Members:** H. P. Felgenhauer  
J. H. P. Willems

## Summary of Facts and Submissions

I. Appellant I (opponent) and appellant II (patent proprietor) lodged an appeal against the interlocutory decision of the Opposition Division maintaining European patent No. 0 542 729 in amended form according to the first auxiliary request filed on 16 June 1999.

Opposition had been filed against the patent as a whole based on Article 100(a) EPC (lack of novelty and inventive step) and on Article 100(c) EPC (extension beyond the content of the earlier application as filed).

The Opposition Division held that the grounds for opposition according to Article 100(c) EPC prejudiced the maintenance of the patent according to the main request of Appellant II filed on 16 June 1999. However, the Opposition Division held that the grounds of appeal based on Articles 100(a) and 100(c) EPC did not prejudice the maintenance of the patent in amended form according to the first auxiliary request of Appellant II filed on 16 June 1999.

II. Oral proceedings before the Board of Appeal were held on 16 January 2002.

(i) Appellant I requested that the decision under appeal be set aside and that the patent be revoked.

(ii) Appellant II requested that the decision under appeal be set aside and the patent be maintained in amended form with claims 1 to 8 according to the main request filed 16 June 1999.

III. Claim 1 according to the main request reads as follows:

"1. A method of producing a part from a powder,  
comprising the steps of:

spreading a first layer (54) of the powder at a  
target surface;

directing the aim of an energy beam at selected  
locations of said first layer of powder  
corresponding to a first cross-section of the part  
to fuse the powder thereat;

spreading a second layer (55) of powder over said  
first layer of powder after said directing step;  
and

directing the aim of an energy beam at selected  
locations of said second layer of powder  
corresponding to a second-cross section of the  
part to fuse the powder thereat, and so that the  
fused powder at one of said selected locations of  
said second layer of powder fuses to fused powder  
in said first layer and

repeating said steps for a plurality of further  
layers to produce said part;

characterised by heating said powder in the top  
layer to be sintered to a temperature below the  
sintering temperature of the powder;

wherein said heating step controls the temperature  
of sintered and unsintered powder to moderate  
temperature differences between unsintered powder

in the top layer to be sintered and the previously sintered layer".

Claim 1 according to the first auxiliary request differs from claim 1 according to the main request in that the first characterising feature "by heating said powder in the top layer to be sintered to a temperature below the sintering temperature of the powder" is replaced by the feature "heating said powder in the top layer to be sintered to a temperature below the sintering temperature of the powder by directing controlled temperature air to the top layer".

IV. With respect to the ground of opposition according to Article 100(c) EPC appellant I argued essentially as follows:

(i) The feature of claim 1 according to the main request "heating said powder in the top layer to be sintered to a temperature below the sintering temperature" cannot be derived from the earlier application as filed, which has been published as WO-A-8 802 677.

Firstly, concerning the treatment of powder by heating, in the earlier application no heating step at all is disclosed. Instead, the portions of the earlier application being directed to treatment of the article being produced with means other than directing the aim of an energy beam at selected locations, namely page 1, lines 21 to 25; page 7, lines 19 to 29; page 12, line 22 to page 13, line 24 and claims 7, 32, 33 and 36, concern solely moderation of undesirable temperature differences between the temperature of the particles not yet scanned by the energy beam and the

temperature of the previously scanned layer, this treatment including heat transfer between controlled temperature air provided by a controlled temperature air downdraft system and the top layer of powder particles to be sintered. Since from the earlier application it cannot be directly and unambiguously derived that the disclosed heat transfer results in fact in a heating of the powder and since beyond the disclosure concerning heat transfer no reference to heating is made, the method step of claim 1, according to which treatment of the powder by heating is provided extends beyond the content of the earlier application as filed.

Secondly, concerning the portion of a part subjected to the treatment according to this feature, in the earlier application the only treatment disclosed with respect to moderate undesirable temperature differences between the particles not yet scanned by the directed energy beam and the previously scanned layer concerns application of a downward flow of controlled temperature air through the target area. The treatment disclosed thus concerns a portion of the part being produced extending beyond the powder in the top layer to be sintered.

Correspondingly for both of these reasons also the feature of claim 1 according to the first auxiliary request "heating said powder in the top layer to be sintered to a temperature below the sintering temperature of the powder by directing controlled temperature air to the top layer" extends beyond the content of the earlier application as filed, since neither a treatment of the powder by heating is disclosed nor a heat treatment being applied only to

the top layer to be sintered.

(ii) The feature of claim 1 of the main request and of claim 1 of the first auxiliary request, according to which the powder in the top layer to be sintered is heated to a temperature below the sintering temperature of the powder, extends beyond the content of the earlier application as filed since as regards the temperature at which the treatment of the part referred to above is performed, the earlier application only discloses that the temperature of the incoming air is adjusted to be above the softening point of the powder, but below the temperature at which significant sintering will occur (page 13, lines 4 to 6). Consequently the feature concerned extends beyond the content of the earlier application as filed, in that the temperature relates to the powder in the top layer to be sintered and not to the incoming air as disclosed, and in that the lower limit of the disclosed temperature range is, contrary to the original disclosure, missing.

(iii) Replacement by the expression "fuse" of the expression "sinter", used consistently throughout the earlier application as filed to describe treatment of the powder by the aim of an energy beam, within features of claim 1 according to the main request and according to the first auxiliary request, extends the subject-matter of these claims beyond the content of the earlier application as filed, since each of those expressions defines a different method of treatment.

V. With respect to the ground of opposition according to Article 100(c) EPC appellant II argued essentially as follows:

- (i) The feature of claim 1 according to the main request "heating said powder in the top layer to be sintered to a temperature below the sintering temperature" does not extend beyond the content of the earlier application as filed, the disclosure to be considered being the statement of the sentence given on page 12, lines 24 to 28 stating at the same time a problem to be solved, namely avoidance of undesirable shrinkage of the article being produced, which has been observed to occur due to temperature differences between the temperature of the particles not yet scanned by the directed energy beam and the temperature of the previously scanned layer, and the solution to this problem, namely to avoid such temperature differences by heating the powder in the top layer to be sintered as defined by the feature concerned.

For the skilled person, which in this case has to be considered as being a manufacturing engineer having knowledge of methods of heat transfer, after having become aware of the disclosed problem, such treatment of the part according to this feature is directly and unambiguously derivable from this disclosure of the earlier application as filed.

It is true that this statement is made in a portion of the description (page 12, line 22 to page 13, line 24) referring to the embodiment shown in Figure 11, which portion of the description and Figure 11 give the only



disclosure concerning the manner in which the treatment concerned is performed, that immediately following the statement of the problem a solution to this problem is defined according to which, using the downdraft system disclosed with respect to Figure 11, it has been found that a downward flow of controlled-temperature air through the target area is able to moderate such undesirable temperature differences, and that other portions of the description (page 1, lines 21 to 25; page 7, lines 19 to 29) as well as claims 7, 32, 33 and 36, which constitute the only other disclosures with respect to this treatment, are directed either to the method referred to as the solution, or consistent with this solution, to the moderation of the temperature of the part.

However, for the skilled person it is also evident that possible further alternatives are able to moderate such undesirable temperature differences, namely cooling the previously scanned layer e.g. by allowing enough time for cooling before the powder of a top layer to be sintered is spread upon it and a combination of heating of the powder in the top layer to be sintered and of cooling the previously scanned layer. Therefore the skilled person immediately derives from the statement concerned, that the solution to the problem lies in heating the powder in the top layer to be sintered as defined in claim 1 according to the main request.

In addition stating in the description "still another embodiment is shown in Figure 11" needs, as far as the solution explicitly disclosed (page 12, line 28 to page 13, line 18) is concerned, to be considered as indicating that not the general solution as defined in claim 1 according to the main request, but a particular

embodiment is concerned. In this context it also needs to be recognised that removal of bulk heat, which occurs in performing the solution disclosed with reference to Figure 11, leads to an additional advantage, namely preventing the article from growing into the unsintered material (page 13, lines 1 to 4), which is neither related to the problem to be solved nor to its general solution.

Consequently, concerning the portion of the part subjected to this treatment, the person skilled in the art derives from the statement simultaneously disclosing the problem and the solution, due to the obviousness of the solution once the problem is known, directly and unambiguously that undesirable shrinkage, due to the differences between the temperature of the particles not yet scanned and the temperature of the previously scanned layer, can be avoided by heating the powder in the top layer, it not being necessary to also affect the temperature of the remainder of the part being produced.

Concerning the manner, namely heating of the powder, in which this treatment is performed it is apparent in view of the problem to be solved that reference to heat transfer provided by a controlled temperature air downdraft system to moderate the undesirable temperature differences needs to be understood as directly and unambiguously disclosing that, in order to solve the stated problem, all that is required is heating the powder as defined in claim 1 according to the main request.

The corresponding feature of claim 1 according to the first auxiliary request "heating said powder in the top

layer to be sintered to a temperature below the sintering temperature of the powder by directing controlled temperature air to the top layer" does not extend beyond the content of the earlier application as filed for the reasons given with respect to claim 1 according to the main request and beyond that due to the fact that within this feature elements of the solution as disclosed in the earlier application are comprised.

(ii) The feature of claim 1 according to the main request and of claim 1 according to the first auxiliary request defining the temperature to which the powder in the upper layer to be sintered is heated, by an upper limit as a temperature below the sintering temperature of the powder, does not extend beyond the content of the earlier application as filed, since in order to solve the stated problem it is evident that the temperature to which the powder in the top layer to be sintered is heated should be as defined. If necessary with respect to the ground of opposition according to Article 100(c) EPC the lower limit for the heating temperature as disclosed (page 13, lines 4 to 6) could be introduced in claim 1 according to the main request and according to the auxiliary request.

(iii) The expressions "sinter" and "fuse" are, as can be derived from the context of the patent, used synonymously, both having, with respect to the part being produced, the meaning of the powder being solidified. Replacement of the expression sinter in features of claim 1 according to the main request and according to the first

auxiliary request by the expression fuse thus does not extend beyond the content of the earlier application as filed.

## **Reasons for the Decision**

*Ground of opposition according to Article 100 (c) EPC*

*Main Request*

1. Claim 1 according to the main request defines that within the method of producing a part from a powder treatment is performed according to two different aspects.
  - 1.1 The treatment according to the first aspect (in the following: first treatment) concerns, as defined by a feature of the first part of claim 1, "directing the aim of an energy beam at selected locations of said first layer of powder corresponding to a first cross-section of the part to fuse the powder thereat".

This first treatment also includes according to further features of the first part of claim 1 that a second layer of powder is spread over this first layer of powder after said directing step, followed by "directing the aim of an energy beam at selected locations of said second layer of powder corresponding to a second cross-section of the part to fuse the powder thereat, and so that the fused powder at one of said selected locations of said second layer of powder fuses to fused powder in said first layer".

According to claim 1 these steps, and thus the first

treatment, are repeated for a plurality of further layers to produce a part.

- 1.2 The treatment according to the second aspect (in the following: second treatment), as defined by the first characterising feature, concerns "heating said powder in the top layer to be sintered to a temperature below the sintering temperature of the powder", the effect of this heating being defined by the remaining characterising feature "wherein said heating step controls the temperature of sintered and unsintered powder to moderate temperature differences between unsintered powder in the top layer to be sintered and the previously sintered layer".

According to claim 1 the second treatment is likewise repeated for a plurality of further layers to produce a part.

2. One criterion for the determination of whether or not the ground for opposition according to Article 100(c) EPC prejudices the maintenance of the European patent with claim 1 according to the main request is whether due to the feature defining the second treatment (cf. paragraph 1.2 above) the contested patent, being based on a divisional application, comprises subject-matter which extends beyond the content of the earlier application as filed (Articles 100(c), 76(1) EPC), which has been published as WO-A-88 02677.

Consequently the content of the earlier application as filed needs to be assessed with respect to the disclosure concerning the second treatment.

3. The earlier application as filed comprises the

following disclosure with respect to the second treatment:

- 3.1 In the introductory portion of the earlier application as filed it is indicated that the invention relates to a method and apparatus which uses a directed energy beam to selectively sinter a powder to produce a part (page 1, lines 16 to 21) and so far it is referred to the first treatment.

With respect to the second treatment in the introductory portion it is indicated (page 1, lines 21 to 25) that one aspect of the present invention is directed towards a mechanism for directing air flow to the target area to moderate powder temperature. A further aspect of the invention, directed to a mechanism for dispensing a layer of powder, needs, since no reference is made to the second treatment, not to be considered beyond the point, that according to the description the invention relates to a method and apparatus which uses a directed energy beam to selectively sinter a powder to produce a part (first treatment) and that one aspect of the invention concerns a mechanism for dispensing a powder and another one the mechanism for directing air flow to the target area as indicated above (second treatment).

- 3.2 Referring to "still another embodiment" (page 7, lines 19 to 29) it is indicated that "a downdraft mechanism for controlling temperature of the powder is provided which includes a support defining the target area, a mechanism for directing air to the target area, and a mechanism for controlling the temperature of the air prior to reaching the target area". Concerning the effect to be obtained by this downdraft mechanism it is

stated "thus, the controlled temperature air is directed to the powder in the target area and helps control the temperature of the sintered and unsintered powder in the target area".

- 3.3 Referring to "still another embodiment ... shown in Figure 11 for controlling the temperature of the article being produced" a more detailed description of the downdraft system or mechanism is given on page 12, line 22 to page 13, line 24 with reference to Figure 11, which is the only figure relating to the aspect of controlling the temperature of the article being produced according to the second treatment. This figure shows an apparatus for manufacturing a part, thereby performing the first treatment as well as the second treatment.

Within this description of page 12, lines 24 to 28, a disadvantage, apparently for a method being performed with only the first treatment, according to which a directed energy beam is used to selectively sinter a powder to produce a part, is stated as follows "undesirable shrinkage of the article being produced has been observed to occur due to differences between the temperature of the particles not yet scanned by the directed energy beam and the temperature of the previously scanned layer". This statement referred to by appellant II as describing a problem and at the same time the solution to this problem and as the only disclosure for the features relating to the second treatment of claim 1 according to the main request and of claim 1 according to the first auxiliary request (cf. paragraph 4.2 below) is immediately followed by a description of an explicitly disclosed solution with respect to the second treatment stating "It has been

found that a downward flow of controlled-temperature air through the target area is able to moderate such undesirable temperature differences". Following this statement concerning the manner in which the second treatment is performed, with reference to Figure 11 the structure of a controlled-temperature air downdraft system 132, being the only means for performing the second treatment disclosed in the earlier application as filed, and the effects resulting from application of this system are described.

- 3.4 Within the claims of the earlier application as filed according to the additional feature of claim 7, which is dependent on claim 1 defining an apparatus for producing a part comprising laser means for selectively emitting a laser beam (first treatment), means for directing controlled temperature air to the part to moderate the temperature of the part (second treatment) are included.

Claim 32 is directed to an apparatus for moderating temperature of a powder being sintered in a target area, comprising a support defining the target area and including a medium porous to air and a plenum for directing air passing through the medium away from the target area, means for dispensing powder into the target area, means for selectively sintering powder in the target area, means for directing air to the target area and means for controlling the temperature of the air prior to reaching the target area. Thus, the features of claim 32 define the structure of the controlled temperature air downdraft system as disclosed in the description (cf. paragraphs 3.2 and 3.3 above). Claims 33 and 36 further define the air directing means and the temperature controlling means,



respectively. Concerning the manner in which the second treatment is performed and the portion of the part subjected to this treatment these claims thus define, consistent with the description and the drawing, that air is directed to the target area, into which powder is dispensed and in which powder is selectively sintered, the air passing through a support defining the target area and away from the target area.

- 4.1 The content of the earlier application as filed with respect to the second treatment needs to be evaluated based on the entire disclosure given concerning this treatment, duly considering the disadvantage stated in the sentence of page 12, lines 24 to 28 (cf. paragraphs 3.3, 4.2) but not isolated from the context in which this disadvantage is stated and not isolated from the remaining disclosure comprised within the earlier application as filed (cf. paragraphs 3.1 to 3.4) with respect to the second treatment, as suggested by appellant II.

Consideration of the portions of the disclosure in which "still another embodiment" is referred to (cf. paragraphs 3.2 and 3.3 above) in context with the remaining disclosure concerning the second treatment and even more consideration of all of these portions in context with the remainder of the earlier application as filed leads to the result that, despite being partially referred to as "still another embodiment", these disclosures are not directed to a particular embodiment further restricting an invention disclosed otherwise in more general terms. They disclose, together with the remaining portions of the description and the claims concerning the second treatment, one aspect of the invention, namely the mechanism or

downdraft system for directing air flow to the target area to moderate powder temperature and the application of this mechanism in order to perform the second treatment.

Corresponding to common practice the mechanism for performing the second treatment is described in a degree of lesser detail in the introductory portion of the application (page 1, lines 21 to 25; page 7, lines 19 to 29) and with reference to the drawing, here exclusively with reference to Figure 11 as the only figure concerning this aspect of the invention, in more detail (page 12, line 22 to page 13, line 24) but always consistently, referring to a mechanism or downdraft system for directing air flow to the target area, according to page 12, lines 28 to 30 through the target area, to moderate powder temperature as has been done already at the beginning of the description (page 1, lines 21 to 25). From a comparison of the structural features disclosed for the downdraft system or mechanism and the disclosed effects on a part being manufactured it is evident that the downdraft system described with reference to Figure 11 and the one described in the introductory portion (cf. paragraphs 3.2 and 3.3 above) differ only with respect to the detail of description but concern consistently the same downdraft system.

As far as the second treatment as such is disclosed, namely the method performed and its effects on the part being produced, reference is made to the application of the disclosed downdraft system (page 12, line 22 to page 13, line 6).

The disclosure which can be derived from the drawing, namely the downdraft system shown in Figure 11, corresponds to the one given in the description.

The claims concerning the second treatment (claims 7, 32, 33 and 36) define subject-matter consistent with the disclosure referred to above. Claim 7 defines the subject-matter with respect to the second treatment in the most general form. This claim being dependent on claim 1 defines that the apparatus according to claim 1 includes means for directing controlled temperature air to the part to moderate the temperature of the part. Thus as the means for treatment of the part according to the second treatment controlled temperature air is referred to, and with respect to the portion of the part subjected to this treatment no particular portion but the part itself is referred to.

Claim 32 defines an apparatus for performing the first and the second treatment. The structural features relating to the second treatment, which are further defined by the additional features of claims 33 and 36, define the structure as disclosed in the description and by Figure 11. Application of the structural features as defined in claim 32 to perform the second treatment leads, consistent with the description and the drawing, to air being directed to the target area, into which powder is dispensed and in which powder is selectively sintered, the air passing through a support defining the target area and away from the target area.

Consequently the earlier application as filed discloses consistently that if a part produced is subjected to the second treatment, this will be performed by directing controlled temperature air to the part. As

far as this treatment is further described in more detail with respect to the manner in which controlled temperature air is directed to the part, the downdraft system, described with reference to Figure 11 and its application, is referred to.

- 4.2 The Board cannot agree with the argument of appellant II according to which the feature of claim 1 according to the main request concerning the second treatment (cf. paragraph 1.2 above) is not based on a generalisation of the second treatment as explicitly disclosed in the earlier application as filed, but is instead directly and unambiguously disclosed by the sentence of page 12, lines 24 to 28 (cf. paragraph 3.3 above).

One reason being that on the one hand in assessing the content of the sentence referred to by appellant II this sentence cannot be considered isolated from the context in which it is embedded, namely the description of the only embodiment disclosed with respect to performing the second treatment, and from the remainder of the description concerning the second treatment. Due consideration of this sentence, referred to by appellant II as the only basis for the subject-matter of claim 1 according to the main request, within the framework indicated above provides the person skilled in the art with information concerning the disadvantage (undesirable shrinkage of the article being produced) to be avoided and the cause of this disadvantage (differences between the temperature of the particles not yet scanned by the directed energy beam and the temperature of the previously scanned layer). Beyond that this sentence gives no indication concerning a solution solving the problem derivable from the stated

disadvantage. Correspondingly, as indicated above (paragraph 4.1), the solution with respect to the second treatment disclosed immediately following the sentence concerned is directed, considered by itself or with the remainder of the disclosure relating to the second treatment, solely to the provision of the downdraft system described with reference to Figure 11 and the application of this system during the production of a part.

On the other hand, as indicated in paragraph 4.1 above, the embodiment referred to in the description does not concern a particular embodiment of an otherwise more generally disclosed solution, but a downdraft system being the only apparatus disclosed for performing the second treatment.

A further reason being that this line of argument, as far as it concerns the disclosure given by the sentence of page 12, lines 24 to 28, does not concern the question to be dealt with in examining whether claim 1 according to the main request satisfies the requirement of Article 100(c) or correspondingly Article 76(1) EPC, namely the question what the person skilled in the art can derive directly and unambiguously from the earlier application as filed. Instead this argument concerns a second, different question, namely what the person skilled in the art would do on the basis of his common general knowledge when seeking to put the teaching of the earlier application as filed into practical effect. The question to be posed in determining whether the requirement of Articles 76(1), 100(c) EPC is satisfied is essentially different from this second question and must be strictly separated from it. The answer to the question relating to the requirement of Articles 76(1),

100(c) EPC with respect to the second treatment is, as indicated above (paragraph 4.1), that the person skilled in the art derives from the earlier application as filed with respect to the second treatment that controlled temperature air is directed to the part and, as far as provision of the controlled temperature air to the part is concerned, that a downdraft system as described with reference to Figure 11 is applied.

4.3 A further argument of appellant II, relating to the disclosure of the solution concerning the second treatment within the earlier application, can likewise not be followed. According to this argument it is apparent for the person skilled in the art that, in order to minimise the disadvantage referred to on page 12, lines 24 to 28 with which the invention is concerned, it is not necessary to remove bulk heat from the article being produced, thereby reducing its bulk temperature and preventing the article from growing into the unsintered material (page 13, lines 1 to 4). Removal of the bulk heat resulting from applying the downdraft system disclosed in connection with Figure 11 leads to it also being apparent for the person skilled in the art that, in case no removal of bulk heat being desired, it is also no longer necessary to apply the downdraft system in order to avoid undesirable shrinkage of the article and not additionally growth of the article into the unsintered material. The conclusion drawn by appellant II cannot be followed that, since removal of bulk heat is not essential it can be clearly and directly derived from the earlier application as filed that the problem concerning undesirable shrinkage of the article due to temperature differences is solved by heating of the powder in the top layer to be sintered to a temperature below the

sintering temperature of the powder as defined in claim 1 according to the main request. This aspect relates to the question of what the person skilled in the art would do on the basis of his common general knowledge when seeking to put the teaching of the earlier application as filed into practical effect and not to what the earlier application directly and unambiguously discloses to him (cf. paragraph 4.2).

Moreover from the disclosure referred to by appellant II it cannot be directly and unambiguously derived that removal of bulk heat is an effect completely separate from the treatment of the part to avoid undesirable shrinkage, since - like the heating defined in claim 1 according to the main request - by reducing the bulk temperature removal of bulk heat also contributes to moderate undesirable temperature differences between the temperature of the particles not yet scanned and the temperature of the previously scanned layer. As indicated by appellant I it is, in particular after the part being produced comprises already a number of sintered layers, not evident that removal of the resulting bulk heat from the article does not have an effect with respect to moderation of the temperature differences between the temperature of the particles not yet scanned and the temperature of the previously scanned layer since this bulk heat can at least effect the temperature of the previously scanned layer.

- 4.4 Consequently the more general solution as referred to by the feature of claim 1 according to the main request defining "heating said powder in the top layer to be sintered to a temperature below the sintering temperature of the powder" cannot be derived directly and unambiguously from the disclosure of the earlier

application as filed, which as regards the second treatment is directed to the provision and application of the controlled temperature air downdraft system. Furthermore this feature, requiring that a particular portion of the part being produced, namely the powder in the top layer to be sintered, is subjected to heating as the second treatment, extends beyond the content of the earlier application as filed, since application of the disclosed downdraft system leads to the second treatment being performed on the part being produced and not merely on a portion of it.

If on the other hand the feature of claim 1 according to the main request being directed to the second treatment were be considered as being directly and unambiguously derivable from the earlier application as filed, then, following the same argument as given for the second treatment as defined in claim 1 according to the main request, obviously any other treatment imaginable for the person skilled in the art leading to a moderation of the undesirable temperature differences, including possibly one which does not subject the powder in the top layer to be sintered to the second treatment at all, could have been subject to patent protection, which consequently would have been obtained for something which has not been properly disclosed and maybe not even invented on the date of filing of the earlier application.

5. For these reasons the subject-matter of claim 1 according to the main request contravenes Article 76(1) EPC in conjunction with Article 123(2) EPC irrespective of whether partial replacement of the term "sinter" of the earlier application as filed into "fuse", of whether the feature of claim 1 according to the main



request referring to the second treatment as heating and not as heat transfer and whether the feature defining the temperature to which the heating is to be performed satisfy the requirement of Article 123(2) EPC.

*First auxiliary request*

6. The reasons given above with respect to claim 1 according to the main request apply correspondingly with respect to claim 1 according to the first auxiliary request, as far as the first part of the feature concerning the second treatment, namely "heating said powder in the top layer to be sintered to a temperature below the sintering temperature of the powder", is concerned, which is common to both claims.

The second part of this feature "by directing controlled temperature air to the top layer", by which claim 1 according to the first auxiliary request differs from the corresponding feature of claim 1 according to the main request, limits the manner in which heating is performed to one performed by directing controlled temperature air to the top layer.

As indicated above (paragraph 4.1) concerning the manner in which the second treatment is performed according to the content of the earlier application as filed a downdraft system is provided and applied, the downdraft system comprising air directing means resulting in a downward flow of controlled temperature air through the target area (page 12, line 28 to page 13, line 24) or to the target area according to the lesser detailed description (page 7, lines 19 to 29). In either case the downdraft system is

defined as including a support defining the target area, and means for directing air to the target area (page 7, lines 19 to 22; page 13, lines 8 to 12).

Concerning the first treatment the target area is further defined with respect to the part being produced (page 4, lines 8 to 11; claim 1) indicating that powder is dispensed into a target area where the laser selectively sinters the powder to produce a sintered layer.

Thus the first definition concerning the target area relates to the target area being a structural element of the downdraft system, whilst the second definition relates to the target area being an area defined by the previously scanned layer into which powder to be sintered is dispensed, this area being shifted one layer upward in the part to be produced each time a layer has been sintered.

Irrespective of whether with respect to the application of the downdraft system to perform the second treatment the target area defined with respect to the downdraft system is considered or the target area as defined with respect to the part being produced, by indicating that controlled temperature air flows through the target area (page 12, lines 28 to 30) or that controlled temperature air is directed to the target area to moderate powder temperature (page 1, lines 23 to 25) or that air is directed to the target area or the powder in the target area to help control the temperature of the sintered and unsintered powder in the target area (page 7, lines 19 to 29) application of the disclosed downdraft system to perform the second treatment results (cf. paragraph 4.3 above) in subjecting the

powder beyond the top layer to be sintered to controlled temperature air.

Consequently the feature of claim 1 of the first auxiliary request, according to which the powder in the top layer to be sintered is heated by directing controlled temperature air to the top layer, defines the way in which the second treatment is performed and the portion of the part to which this second treatment is applied to in a manner, which the person skilled in the art cannot derive directly and unambiguously from the earlier application as filed. Consequently the subject-matter of claim 1 according to the first auxiliary request extends beyond the content of the earlier application as filed, and thus contravenes Article 76 EPC in conjunction with Article 123(2) 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:

L. Martinuzzi

A. Burkhart