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**Datasheet for the decision
of 31 May 2022**

Case Number: T 2673/18 - 3.2.03

Application Number: 13194599.0

Publication Number: 2878409

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B23K26/14, B28B1/00, B23K26/34,
B23K26/30, B29C67/00

Language of the proceedings: EN

Title of invention:
Method of and device for controlling an irradiation system

Patent Proprietor:
SLM Solutions Group AG

Opponents:
Renishaw plc
Siemens Aktiengesellschaft

Headword:

Relevant legal provisions:
EPC Art. 123(2)
RPBA 2020 Art. 13(2)

Keyword:

Amendments - allowable (no) - extension beyond the content of
the application as filed (yes)

Amendment after summons - cogent reasons (no) - taken into
account (no)

Decisions cited:

G 0002/10

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 2673/18 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 31 May 2022

Appellant:
(Patent Proprietor)

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted on
28 August 2018 concerning maintenance of the
European Patent No. 2878409 in amended form.**

Composition of the Board:

Chairman G. Patton
Members: B. Miller
 N. Obrovski

Summary of Facts and Submissions

- I. European patent EP 2 878 409 B1 ("the patent") relates to a method of and a device for controlling an irradiation system for use in an apparatus for producing a three-dimensional work piece.
- II. Two oppositions were filed against the patent, based on the grounds of Article 100(b) EPC and Article 100(a) EPC together with Articles 54 and 56 EPC. Opponent 1 withdrew its opposition during the opposition proceedings.

In the interlocutory decision the opposition division found that the amendments in the main request and auxiliary requests 1 to 7 did not meet the requirements of Article 123(2) EPC, but that the patent in amended form met the requirements of the EPC on the basis of the claims of auxiliary request 8 submitted during the oral proceedings on 13 June 2018.

The interlocutory decision was appealed by the patent proprietor ("the appellant").

- III. The appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the main request as submitted in the opposition proceedings with a letter dated 26 April 2017, or on the basis of the claims of one of auxiliary requests 1 to 4 as submitted with the statement of grounds of appeal.

Opponent 2 ("the respondent") requested that the appeal be dismissed.

IV. Wording of the claims under consideration

(a) Claim 1 according to the main request

"Method of controlling an irradiation system (20) for use in an apparatus (10) for producing a three-dimensional work piece and comprising a first and a second irradiation unit (22a, 22b), wherein the first irradiation unit (22a) emits an electron beam and/or a plurality of focused radiation beams, the method comprising the steps of:

- defining a first irradiation area (18a) on a surface of a carrier (16) adapted to receive a layer of raw material powder,

- irradiating a layer of raw material powder applied onto the carrier (16) in the first irradiation area (18a) by the first irradiation unit (22a) of the irradiation system (20),

wherein the operation of the first irradiation unit (22a) is controlled in such a manner that the raw material powder is pre-heated, and

- thereafter irradiating the layer of raw material powder applied onto the carrier (16) in the first irradiation area (18a) by means of the second irradiation unit (22b) of the irradiation system (20), wherein the operation of the second irradiation unit (22b) is controlled in such a manner that the raw material powder is heated to a temperature which allows sintering and/or melting of the raw material powder in order to generate a layer of the three-dimensional work piece,

characterized by the steps of:

- defining a second irradiation area (18b) on the surface of the carrier (16), wherein the second irradiation area (18b) is adjacent to the first irradiation area (18a), and
- irradiating a layer of raw material powder applied onto the carrier (16) in the second irradiation area (18b) by the second irradiation unit (22b) of the irradiation system (20), while the first irradiation unit (22a) irradiates a layer of raw material powder applied onto the carrier (16) in the first irradiation area (18a)."

(b) Claim 1 according to auxiliary request 1

Claim 1 of auxiliary request 1 corresponds to claim 1 of the main request except that, in the preamble of the claim, the term "focused" has been deleted from the phrase "wherein the first irradiation unit (22a) emits an electron beam and/or a plurality of ~~focused~~ radiation beams".

Moreover, in the characterising portion of claim 1 the expression

"wherein the second irradiation area (18b) is adjacent to the first irradiation area (18a)"

has been replaced by

"wherein the second irradiation area (18b) and the first irradiation area (18a) do not overlap".

(c) Claim 1 according to auxiliary request 2

Claim 1 of auxiliary request 2 corresponds to claim 1 of auxiliary request 1 except that, in the characterising portion of the claim, the expression "wherein the second irradiation area (18b) and the first irradiation area (18a) do not overlap"

has been replaced by

"wherein the first irradiation area (18a) and the second irradiation area (18b) are defined on the surface of the carrier (16) in a side-by-side arrangement".

(d) Claim 1 according to auxiliary request 3

Claim 1 of auxiliary request 3 corresponds to claim 1 of auxiliary request 2 but with the following limitation in the preamble of the claim (deleted features in strikethrough):

"the first irradiation unit (22a) emits an electron beam ~~and/or a plurality of focused radiation beams~~".

(e) Claim 1 according to auxiliary request 4

Claim 1 of auxiliary request 4 corresponds to claim 1 of auxiliary request 3 but with the following limitation in the last feature of the claim (deleted features in strikethrough; added feature in bold):

"the first irradiation unit (22a) irradiates a layer of raw material powder ~~applied onto the carrier (16)~~ **only** in the first irradiation area (18a)".

V. With the summons to oral proceedings, the board sent a communication under Article 15(1) RPBA 2020 indicating to the parties its preliminary, non-binding opinion. The board considered it likely that the appeal would be dismissed, since none of the requests on file appeared to be allowable.

VI. Oral proceedings were held on 31 May 2022 by videoconference.

VII. The appellant's arguments, as far as they are relevant for the present decision, can be summarised as follows.

(a) Main request - Article 123(2) EPC

The amendments to claim 1 could be derived directly and unambiguously from the overall teaching of the application as filed ("the application") by taking into account the common general knowledge of the skilled person with a mind willing to understand.

More specifically, the addition of the term "focused" in the phrase "wherein the first irradiation unit emits an electron beam and/or a plurality of focused radiation beams" in claim 1 was based on the disclosure on page 4, line 20 ("controlling ... a beam size"), page 5, lines 34 to 35 ("in a defocused manner"), page 11, lines 9 to 13 ("selectively irradiating ... powder applied onto the carrier", "in a site-selective manner") and lines 21 to 35 ("a focusing optic"), and Figure 1 ("beam 24a").

(b) Auxiliary request 1 - Article 123(2) EPC

The addition of the feature "wherein the second irradiation area (18b) and the first irradiation area (18a) do not overlap" in claim 1 corresponded to the disclosure on page 8, lines 21 to 24, of the application. Moreover, the amended feature represented a logical consequence of the embodiment described in the paragraph bridging pages 6 and 7 of the application.

(c) Auxiliary requests 2 to 4 - Article 123(2) EPC

Literal support for the feature "wherein the first irradiation area (18a) and the second irradiation area (18b) are defined on the surface of the carrier (16) in a side-by-side arrangement" in claim 1 was provided in the passage on page 11, lines 4 to 5, of the application. This feature was presented in the cited passage of the description in a general manner and was not linked to the specific embodiment of Figure 1, this being clear from the structure of the sentence. At any rate, no ratio (half/half) could be derived from Figure 1 as the latter was a schematic drawing. Furthermore, it was directly apparent from the overall teaching of the application as a whole, and in particular from the teaching of the dependent claims, that Figure 1 presented a consolidated summary of the various independent embodiments encompassed by the application.

VIII. The respondent's associated arguments can be summarised as follows.

(a) Main request - Article 123(2) EPC

The application as originally filed neither explicitly nor implicitly disclosed that the first irradiation unit emitted a plurality of "focused" radiation beams, as required by claim 1.

(b) Auxiliary request 1 - Article 123(2) EPC

The argument based on the teaching of the paragraph bridging pages 6 and 7 of the application had been submitted for the first time during the oral proceedings before the board and should not be admitted

under Article 13(2) RPBA 2020. It was not directly and unambiguously derivable from the teaching on pages 6 and 7 or from the remainder of the description that "the second irradiation area (18b) and the first irradiation area (18a) do not overlap".

(c) Auxiliary requests 2 to 4 - Article 123(2) EPC

On page 11, lines 4 to 5, the application disclosed in the context of Figure 1 that the first irradiation area and the second irradiation area could be in a side-by-side arrangement. In the embodiment of Figure 1 each of the first and the second irradiation area represented half of the area of the carrier. This limitation was not reflected by claim 1, which therefore represented an unallowable intermediate generalisation.

Reasons for the Decision

1. Applicable Rules of Procedure of the Boards of Appeal

The appeal was filed before the revised version of the Rules of Procedure of the Boards of Appeal (RPBA 2020) entered into force on 1 January 2020.

In accordance with the transitional provisions laid down in Article 25 thereof, the RPBA 2020 are applicable to appeals already pending on the date of entry into force of the RPBA 2020 as well as to appeals filed after that date (Article 25(1) RPBA 2020).

2. Main request - Article 123(2) EPC

2.1 Claim 1 is based on claim 1 as filed, which has been amended, *inter alia*, by specifying that the first irradiation unit can emit a plurality of "focused" radiation beams.

Claims 3 and 10 as filed disclose that the first irradiation unit emits an electron beam and/or a plurality of radiation beams. However, these claims as filed do not disclose that the first irradiation unit can emit a plurality of **focused** radiation beams, as required by claim 1 of the main request.

Furthermore, it is uncontested that the remainder of the description of the application does not provide a literal basis for the amendment.

2.2 The appellant argues that the disclosures, alone or in combination, on page 4, line 20, page 5, lines 34 to 35, page 11, lines 9 to 13, and Figure 1 of the application implicitly provided a teaching to the skilled person that the first irradiation unit can emit a plurality of focused radiation beams. This argument is not convincing for the following reasons.

2.2.1 According to page 4, line 20, of the application, the operation of the first and/or the second irradiation unit is controlled by controlling, *inter alia*, the radiation beam size. However, controlling a radiation beam size is not the same as focusing the beam, since the beam size could also be controlled by collimation or by use of apertures through which the beam passes.

2.2.2 On page 5, lines 34 to 35, the application discloses a preferred embodiment wherein the electron beam can be

defocused. However, this does not imply that the alternatively used plurality of radiation beams must be focused. A preferred option for one embodiment does not constitute a direct and unambiguous disclosure of another, different embodiment.

2.2.3 Figure 1 is a schematic drawing which does not disclose that the radiation beam is focused, since no means for focusing are disclosed therein such as a lens.

Furthermore, a particular shape of the radiation beam cannot be inferred from the dotted line symbolising the electron beam and the plurality of radiation beams in Figure 1. In particular, Figure 1 does not symbolise a focused radiation beam in a conventional manner by a tapered beam path.

Other documents such as US 2012 237 745 A1 (D3), Figure 1, referred to by the appellant, cannot supplement the disclosure of the application.

This unspecific disclosure in Figure 1 therefore cannot provide a basis for the amendment when applying the "gold standard" developed by the Case Law - see G 2/10, OJ 2012, 376. Any amendment to the parts of a European patent application is subject to the mandatory prohibition on extension laid down in Article 123(2) EPC. Therefore, irrespective of context, the amendment can only be made within the limits of what a skilled person would derive directly and unambiguously from the application as a whole using their common general knowledge. After the amendment the skilled person may not be presented with new technical information - see also Case Law of the Boards of Appeal, 9th edition, 2019, Chapter II.E.1.1.

Hence, applying a criterion relating to whether the person skilled in the art "with a mind willing to

understand" would interpret or supplement features in a particular manner, as argued by the appellant, is not in accordance with the gold standard as established by the Enlarged Board in G 2/10. Instead, the skilled person using their common general knowledge must be able to deduce that the feature at issue is inevitably present in the disclosure of the application, which is not the case currently.

- 2.2.4 According to page 11, lines 9 to 10, of the application the irradiation system is suitable for selectively irradiating the raw material applied onto the carrier.

However, this teaching provided by the application does not directly and unambiguously imply that a plurality of focused radiation beams can be used. Instead, it refers to the standard purpose of an irradiation system in additive manufacturing, namely to heat/melt or sinter the last layer of raw material during the manufacturing process.

- 2.2.5 In the case of the further disclosure relating to a site-selective laser irradiation of the raw material on page 11, lines 11 to 13, of the application, it can only be guessed or speculated on the basis of that disclosure that a plurality of focused radiation beams could also be used. However, a direct and unambiguous disclosure thereof cannot be found on page 11.

- 2.2.6 A focusing optical device is mentioned for the second irradiation unit on page 11, lines 21 to 35, of the application. However, this disclosure in relation to the second irradiation unit does not provide any information concerning the first irradiation unit and therefore does not teach that the latter can emit a plurality of focused radiation beams.

2.3 It follows from the above that the amendments to claim 1 do not fulfil the requirements of Article 123(2) EPC in line with the finding in point 13.1.3 of the contested decision.

3. Auxiliary request 1 - Article 123(2) EPC

3.1 Claim 1 of auxiliary request 1 corresponds to claim 1 of the former auxiliary request 6, on which the contested decision was based.

Claim 1 has been amended by the addition of the phrase "wherein the second irradiation area (18b) and the first irradiation area (18a) do not overlap".

It is uncontested that the application does not contain a literal basis for this amendment.

3.2 Moreover, this amendment also extends beyond the implicit teaching of the application.

The application discloses on page 8, lines 21 to 24:

"In case overlap areas are defined on the surface of the carrier, more than one irradiation unit, for example two or four irradiation units, may be operated so as to simultaneously irradiate raw material powder applied onto an overlap area defined on the surface of the carrier."

This sentence on page 8 therefore specifies exactly the opposite to what is claimed, namely that the irradiation areas overlap and that in this case the overlap area can be simultaneously irradiated.

The disclosure of a preferred embodiment does not constitute a direct and unambiguous teaching for exactly the opposite.

The same also applies to the passage of the application on page 8, lines 5 to 18, cited by the appellant during the oral proceedings. As a matter of fact, said passage does not explicitly mention that the irradiation areas do not overlap and, contrary to the appellant's view, does not comprise any implicit disclosure to that effect either. On the contrary it is disclosed therein that the irradiation areas overlap. The fact that in an embodiment the first and second irradiation units may be adapted to irradiate only the first or only the second irradiation area still does not provide any implicit teaching that said irradiation areas do not overlap.

- 3.3 During the oral proceedings before the board the appellant also submitted for the first time that the feature added to claim 1 represented the direct logical consequence of the teaching provided in the paragraph bridging pages 6 and 7, including the first paragraph of page 7.
- 3.3.1 This late-filed submission constitutes an amendment to the appellant's case within the meaning of Article 13(2) RPBA 2020. Its admittance into the appeal proceedings falls within the discretion of the board.
- 3.3.2 The amendment to the appellant's case is not based on exceptional circumstances which have been justified with cogent reasons. The argument relating to the allowability of the amendments contained in auxiliary request 1 (= auxiliary request 6, on which the contested decision is based) should have been submitted

at the latest in the statement setting out the grounds of appeal, if not already during the opposition proceedings (see point 13.3.3 of the decision under appeal), in order to present the whole case challenging the decision of the opposition division.

- 3.3.3 When exercising its discretion under Article 13(2) RPBA 2020 the board may further take into account, for example, whether the amendment is suitable to resolve the issues concerned. However, the late-filed submission does not *prima facie* resolve the objection under Article 123(2) EPC.

The application discloses, in the paragraph bridging pages 6 and 7, that the first and second irradiation units can both be used to irradiate a first and a second irradiation area and that "the first and the second irradiation area can simultaneously be irradiated, thus accelerating the generation of the three-dimensional work piece."

Although it might be possible to conclude from the teaching on pages 6 and 7 that the first and the second irradiation areas do not overlap during simultaneous irradiation, this possible arrangement is not the only and inevitable result of the teaching on pages 6 and 7. In actual fact, the appellant's interpretation is based on speculation. Furthermore, it is even contradictory to the teaching on page 8, lines 21 to 24, which had been cited in the line of argument presented in the statement of grounds of appeal - see point 3.2 above.

The application confirms on page 8, lines 21 to 24, that more than one irradiation unit can be operated so as to simultaneously irradiate raw-material powder applied onto an overlap area defined on the surface of

the carrier. Hence, the application confirms that there is no logical link between simultaneous irradiation by two irradiation units and irradiation areas which do not overlap.

Therefore, the feature that the second irradiation area and the first irradiation area do not overlap does not represent a clear and unambiguous consequence of what is explicitly mentioned in the paragraph bridging pages 6 and 7 of the application.

Hence, the board decided to disregard the late-filed new submission based on the disclosure in the paragraph bridging pages 6 and 7 of the application under Article 13(2) RPBA 2020.

3.4 It follows that, in line with the finding in point 13.3.3 of the contested decision, the amendments contained in claim 1 of auxiliary request 1 go beyond the content of the application as filed, contrary to Article 123(2) EPC.

4. Auxiliary request 2 - Article 123(2) EPC

4.1 Claim 1 of auxiliary request 2 is based on claim 1 of auxiliary request 1 except that the phrase "wherein the second irradiation area (18b) and the first irradiation area (18a) do not overlap" has been replaced by "wherein the first irradiation area (18a) and the second irradiation area (18b) are defined on the surface of the carrier (16) in a side-by-side arrangement".

4.2 The appellant argues that a literal basis for this amendment can be found in the sentence on page 11, lines 3 to 7, of the application, which reads:

"A first and a second irradiation area 18a, 18b are defined on a surface of the carrier 16 in a side-by-side arrangement, i.e. in the apparatus 10 depicted in Figure 1, a left half of the carrier surface defines the first irradiation area 18a, while a right half of the carrier surface defines the second irradiation area 18b."

- 4.3 The cited sentence on page 11 is the last sentence of a paragraph starting on page 10, line 33, which relates to the embodiment of Figure 1. This is immediately apparent from the fact that the paragraph
- is directly below the introductory part describing the content of the figures of the application,
 - starts with the words "Figure 1 shows an apparatus 10 for ..." and
 - refers to Figure 1 three times.

Hence, the teaching provided on page 11, lines 3 to 7, of the application is not provided on a general basis but, instead, clearly in the context of the specific embodiment of Figure 1.

- 4.4 The above assessment of the teaching of the paragraph bridging pages 10 and 11 of the application is not called into question by a purely semantic analysis of the sentence on page 11, lines 3 to 7 either. First of all, reading a single sentence out of context is contrary to the underlying principle of determining the standpoint of the skilled person on a technical and reasonable basis avoiding artificial and semantic constructions - see Case Law of the Boards of Appeal, 9th edition, 2019, Chapter II.E.1.3.2.

Moreover, the sentence on page 11 does not reflect the appellant's interpretation, since it refers explicitly to Figure 1.

This reference is contained between commas ("... , i.e. in the apparatus 10 depicted in Figure 1, ..."). However, the use of commas does not change the technical context in this sentence, but merely improves readability. Moreover, it is immediately apparent through the use of the reference signs for the carrier and the irradiation areas that the sentence relates to the embodiment of Figure 1, irrespective of the question of whether the use of commas in an abstract manner can be found to allow a different interpretation of the sentence.

4.5 In the context of the embodiment of Figure 1, the first and second irradiation areas are arranged side by side in a specific manner. In other words they correspond to the right half and the left half of the carrier, as explicitly disclosed in the sentence at issue (see paragraph 4.2 above), reflecting the specific arrangement of Figure 1 necessary for its functioning.

However, this further limitation - half/half - is not reflected by the amendment to claim 1. The amendment contained in claim 1 therefore extends beyond the teaching of the application as filed, since it is not limited to the case in which the first and the second irradiation area correspond to the right half and the left half of the carrier.

4.6 In this regard the appellant argued that the schematic drawing of Figure 1 represented a consolidated summary of all possible independent embodiments which were

encompassed by the application and were partly defined in the dependent claims of the application.

This argument is not convincing.

The content of an application including its figures must not be considered to be a reservoir from which features pertaining to specific embodiments of the application can be isolated in order to artificially create a particular embodiment - see Case Law of the Boards of Appeal, 9th edition, 2019, Chapter II.E.1.6.1.

Instead, it is necessary to demonstrate that the resulting amendment provides the same technical teaching as the corresponding passage of the application from which the individual and specific feature has been taken and that the combination of features created by each amended claim is directly and unambiguously derivable from the application.

In particular, an intermediate generalisation arising from features originally disclosed in a specific context, such as in the present case in relation to the embodiment of Figure 1, is justified only in the absence of any clearly recognisable functional or structural relationship among the features of the specific combination or if the extracted feature is not inextricably linked with those features (cf. *supra*, Chapter II.E.1.9).

The application does not disclose that the features depicted in Figure 1 can be independently isolated and combined in an arbitrary manner. In fact, the disclosure regarding Figure 1 in the paragraph bridging pages 10 and 11 actually describes in a consistent

manner a specific embodiment with a combination of features which are linked together, as indicated in point 4.5 above.

Moreover, the defining of certain features which are described in the context of Figure 1 as well as being defined in the dependent claims does not provide an unambiguous teaching that further features disclosed in relation to the embodiment according to Figure 1 can be isolated from the context of Figure 1, or that they can be generalised.

4.7 It follows from the above that the amendments to claim 1 do not fulfil the requirements of Article 123(2) EPC.

5. Auxiliary requests 3 and 4 - Article 123(2) EPC

Claim 1 of auxiliary requests 3 and 4 has been amended in the same manner as claim 1 of auxiliary request 2 (see point IV. above).

Therefore, these requests are not allowable under Article 123(2) EPC for the same reasons as for auxiliary request 2.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



C. Spira

G. Patton

Decision electronically authenticated