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**Datasheet for the decision  
of 14 June 2013**

**Case Number:** T 0847/12 - 3.4.01

**Application Number:** 05021071.5

**Publication Number:** 1642617

**IPC:** A61N 5/10

**Language of the proceedings:** EN

**Title of invention:**

Charged particle beam irradiation apparatus

**Patent Proprietor:**

HITACHI, LTD.

**Opponent:**

ION BEAM APPLICATIONS S.A.

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 123(2)

**Keyword:**

"Added subject-matter (no) "

**Decisions cited:**

-

**Catchword:**

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Case Number: T 0847/12 - 3.4.01

**DECISION**  
of the Technical Board of Appeal 3.4.01  
of 14 June 2013

**Appellant:** HITACHI, LTD.  
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**Respondent:** ION BEAM APPLICATIONS S.A.  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 5 January 2012  
revoking European patent No. 1642617 pursuant  
to Article 101(3) (b) EPC.

**Composition of the Board:**

**Chairman:** H. Wolfrum  
**Members:** F. Neumann  
A. Pignatelli

## **Summary of Facts and Submissions**

- I. The present appeal concerns the decision of the opposition division, dispatched on 5 January 2012, to revoke European patent number EP 1 642 617. An opposition had been filed against the patent as a whole based on Articles 100(a), (b) and (c) EPC. The contested decision only dealt with the question of Articles 100(c) and 123(2) EPC, holding the claims of all of the requests on file contained added subject-matter. Some comments were made concerning the sufficiency of disclosure, the opposition division apparently concluding that the arguments of the opponent concerning an alleged insufficiency of disclosure could not be followed.
  
- II. The appellant (proprietor) lodged an appeal, received on 12 March 2012, against the aforementioned decision. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 15 May 2012.
  
- III. With the statement setting out the grounds of appeal, the appellant submitted arguments concerning the issue of added subject-matter and filed three new sets of claims to take into account some of the objections presented in the contested decision.
  
- IV. With letter of 20 September 2012 the respondent (opponent) challenged the admissibility of the appeal and provided detailed arguments as to why, in his opinion, the claims of all requests did not meet the requirements of Article 123(2) EPC.

- V. In a communication issued in preparation of oral proceedings, the Board indicated that the questions of the admissibility of the appeal and, if the appeal were to be held admissible, added subject-matter would have to be discussed. The Board explained that since the contested decision was based only on the question of added subject-matter, this would be the only substantive issue to be addressed in the oral proceedings.
- VI. In response to the communication of the Board, the appellant filed, with letter of 7 May 2013, two new sets of claims forming the basis of a main request and a first auxiliary request. Second and third auxiliary requests, based on the claims of the previous auxiliary requests, were maintained.
- VII. During the oral proceedings before the Board on 14 June 2013, the appellant filed a new set of claims to form the basis of a new main request and consecutively re-numbered the previous requests as auxiliary requests 1 to 4.
- VIII. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of claims 1-6 of the **main request** filed during the oral proceedings of 14 June 2013 or, alternatively, on the basis of claims 1-9 of **auxiliary request 1** (filed as the "main request" with letter of 7 May 2013), claims 1-9 of **auxiliary request 2** (filed as "auxiliary request 1" with letter of 7 May 2013), claims 1-7 of **auxiliary request 3** (filed as "auxiliary request 1" with the statement setting out the grounds of appeal of 15 May 2012) or claims 1 to 6 of **auxiliary request 4**

(filed as "auxiliary request 2" with the statement setting out the grounds of appeal of 15 May 2012).

IX. The respondent requested that the appeal be dismissed.

X. Independent claim 1 of the main request reads as follows:

*" A charged particle beam irradiation apparatus for irradiating an irradiation target with a charged particle beam, said apparatus comprising:  
a charged particle beam generator (1) for generating the charged particle beam;  
a plurality of irradiation devices (3s, 3p) each for irradiating the irradiation target with the charged particle beam, said plurality of irradiation devices include an irradiation device (3s) that employs a scanning irradiation method and an irradiation device (3p) that employs a passive scattering irradiation method;  
a beam transport system (2) for transporting the charged particle beam extracted from said charged particle beam generator (1), to a selected one of said irradiation devices (3s, 3p);  
a detector (20, 21) for detecting a beam state of the charged particle beam extracted from said charged particle beam generator (1) and transported to the selected irradiation device (3s, 3p);  
a judging device (25) for judging whether the beam state that has been detected is normal; and  
a controller (24) for modifying operating parameters of said charged particle beam generator (1), characterised in that*

*said controller (24) is adapted to modify judgement parameters of said judging device (25) according to the irradiation method adopted for said selected irradiation device (3s, 3p),  
said detector (20, 21) is adapted to detect a beam energy level and beam position of the charged particle beam,  
said judging device (25) is adapted to judge whether detection results detected by said detector (20, 21) stay within allowable ranges,  
said controller (24) is adapted to modify the allowable ranges used as judgement criteria by said judging device (25), according to the irradiation method adopted for said selected irradiation device (3s, 3p),  
and  
said controller (24) is adapted to modify operating parameters of said charged particle beam generator (1) so that the beam intensity of the charged particle beam that exists when an irradiation device (3s) employing the scanning irradiation method is selected will be smaller than the beam intensity existing when an irradiation device (3p) employing the passive scattering irradiation method is selected."*

Claims 2-6 are dependent claims.

The wording of the claims of the auxiliary requests does not play a role in the present decision and so will not be reproduced here.

## Reasons for the Decision

### 1. Admissibility of the appeal

- 1.1 The respondent submitted that in the statement setting out the grounds of appeal, the appellant did not indicate the reasons for setting aside the contested decision, as required by Rule 99(2) EPC, but, instead, filed three new sets of claims.

Claim 1 of the second auxiliary request, on which the contested decision was based, defined that "*said controller (24) is adapted to modify operating parameters of said charged particle beam generator (1) so that the beam intensity **and the beam size** of the extracted charged particle beam that exist when an irradiation device (3s) employing the scanning irradiation method is selected will be smaller than the beam intensity **and the beam size, respectively,** existing when an irradiation device (3p) employing the passive scattering irradiation method is selected*" (emphasis added by the Board). The respondent indicated that claim 1 of the new main request was the same as claim 1 of the second auxiliary request on which the decision was based with the exception that the reference to the beam size had been omitted. Since the "smaller beam size" feature did not play a role in the decision of the opposition division, it was in no way clear how this amendment could be considered to deprive the contested decision of its basis. Since it was not clear from the statement setting out the grounds of appeal why the appellant considered the reasoning in the contested decision to be wrong in view of the new claims filed, the appeal could not be considered to be

sufficiently substantiated. Consequently, the appeal should be held inadmissible.

1.2 The appellant submitted that the case law concerning Rule 99 EPC explains that, when filing the statement setting out the grounds of appeal, amendments may be filed which deprive the decision of its basis or arguments may be submitted indicating why the decision is considered to be incorrect. In the present case, the appellant did both: for those parts of the decision which were not contested, amendments were filed to overcome the objections and for those parts of the decision with which the appellant did not agree, arguments were filed.

1.3 Indeed, the Board notes that on pages 2 to 6 of the statement setting out the grounds of appeal, the appellant did in fact present substantial reasoning explaining why he considered certain parts (in particular sections 3.1 to 3.7) of the contested decision to be incorrect. The claims of the requests filed with the statement setting out the grounds of appeal represent a reaction to those parts of the decision (notably section 3.8) which the appellant does not contest. Specifically, the Board notes that claim 1 of the main request then on file was equivalent to claim 1 of the main request on which the decision was based (which, in contrast to claim 1 of the second auxiliary request, did not refer to the "beam size"), with the addition of the features of original claims 2-5. The contested decision identified the omission of these features as infringing Article 100(c) EPC. In filing the amended claims, the appellant therefore responded to the objection that original claims 1 and



21 could not be combined without also incorporating the features of claims 2, 3, 4 and 5, thus depriving the contested decision - at least in this respect - of its basis. With regard to the other objections specified in the contested decision, the appellant substantiated why he disagrees with the findings of the opposition division.

1.4 The appellant has therefore provided reasons for setting aside the decision impugned. Since all other requirements of Articles 106 to 108 EPC and Rule 99 EPC are also satisfied, the appeal is admissible.

2. Admissibility of the requests

2.1 The respondent did not object to the admissibility of the two new sets of claims (currently forming auxiliary requests 1 and 2) filed in response to the communication of the Board and in preparation of the oral proceedings. Similarly, no objection was raised by the respondent with regard to the admissibility of the claims of the new main request filed during the oral proceedings.

2.2 During the oral proceedings, the Board noted that the amendments to the claims of the main request involve the introduction of a new dependent claim (claim 3) which, at first sight, does not appear to be occasioned by one of the grounds for opposition (Rule 80 EPC). Similarly, in auxiliary requests 1 and 2, a new dependent claim 8 had been introduced.

2.3 However, as argued by the appellant, the Board had indicated in its communication that the basis for the

subject matter of the dependent claims - in particular, the specific combination of features resulting from the claim dependencies - would be analysed during the oral proceedings. In response to this, the appellant filed a new set of claims which corresponded more closely to the originally filed claims. This necessarily resulted in the introduction of new dependent claims in order to ensure that the chain of dependencies of the claim sets did in fact have a basis in the application as originally filed. Since the new dependent claims were introduced in order to pre-empt a potential objection under Article 100(c) EPC, the amendments were indeed occasioned by a ground for opposition and cannot be seen to infringe Rule 80 EPC.

3. The appellant's main request

3.1 Article 123(2) EPC

3.1.1 The Board observes that a formal basis for the current wording of claim 1 happens to be provided by the combination of original claims 1, 2, 3, 4, 5 and 21 together with the additional limitation that the "*irradiation method other than the scanning irradiation method*" is a passive scattering irradiation method, which is derivable from originally-filed Figures 1 and 6 and the corresponding portions of the original description. The fact that the functional wording of the original claims (e.g. "*said detector detects...*", "*said judging device judges...*") has been modified to make clear that the apparatus features are "*adapted to ...*" does not alter the substance of the subject-matter of those claims. The wording of current claims 2 to 6 corresponds to the wording of claims 6 to 10 of

the originally filed application, whereby, in adaptation to claim 1, the "*irradiation method other than the scanning irradiation method*" is defined as a passive scattering irradiation method.

- 3.1.2 The respondent considered that no basis could be found for the replacement of "*wherein at least a part of said irradiation device group applies a different irradiation method*" by specific reference to a scanning irradiation method and an irradiation device employing a passive scattering irradiation method. The restriction in claim 1 to only the scanning and passive scattering irradiation methods, and in particular, to the relationship between the beam intensity for scanning and for passive scattering methods, was held to be without basis in the original application.

The respondent considered it significant that the introductory portion of the originally filed application only ever referred to the scanning and passive scattering devices as **exemplary** prior art devices. Indeed, in the introduction it was left open whether devices using other irradiation methods (e.g. wobbling devices) could be employed. This level of generality meant that there was no basis - at least not in the introductory portion of the description - to the specific restriction to scanning and passive scattering methods.

The respondent also argued that original claim 21 only indicated that the beam intensity (i.e. the beam current) for the scanning method was smaller than the beam intensity for "*an irradiation method other than the scanning irradiation method*". Original claim 21

therefore provided no basis for the relationship, currently set out in claim 1, between the beam intensities for specifically scanning and scattering. Moreover, it was noted that page 3, lines 6-18 of the original application discussed only the scanning method and the problems associated therewith. The reference in this passage to the reduction of the beam intensity for scanning should therefore be interpreted to mean that in order to guarantee safety and irradiation accuracy in the scanning method, the beam intensity may be decreased compared to the usual intensity used for scanning. Similarly, page 3, line 21 to page 4, line 1 should be read to mean that in order to shorten the treatment time for the scattering method, the beam intensity may be increased as compared to the beam intensity normally used for scattering. It was held that these passages referred to each of the irradiation methods in isolation from each other and that the proposed solutions were presented having regard to the normal operating conditions for each of these methods. The respondent emphasised that these passages provided no link whatsoever between the beam intensities used for scanning and scattering.

The respondent considered that the only basis for the currently claimed relationship between the beam intensities for scanning and scattering may be found in the detailed description of the preferred embodiments. Since claim 1 did not include all details of either of these embodiments, the respondent considered the claimed subject matter to represent an unallowable intermediate generalisation of the originally disclosed embodiments. It was argued that there was no basis for extracting the claimed relationship from the other

features of the specific embodiments and incorporating it in a more generalised claim. With reference to decisions T 284/94 (OJ EPO 1999, 464) and T 17/86 (OJ EPO 1989, 297), it was argued that the details isolated from a specific embodiment had to provide a complete solution to the technical problem. The respondent considered that this was not so in the present case since the omitted details of the specific embodiments were in fact required to completely solve the problem of safety and accuracy. The respondent argued that, for example, a means for monitoring the beam intensity was essential to the performance of the invention: only by monitoring the beam intensity and by terminating beam extraction if the beam intensity were to exceed predetermined, safe values, could patient safety be guaranteed. The omission of this and numerous other constructional details of the specific embodiments meant that claim 1 lacked essential features and had consequently been generalised to a degree for which no basis could be found in the original disclosure, contrary to the requirements of Article 123(2) EPC.

- 3.1.3 The Board cannot agree with the respondent's opinion that Article 123(2) EPC is infringed due to an unallowable generalisation of the specific embodiments described in the original application. As pointed out by the appellant, the passage starting from page 4, line 14 of the originally filed application explains that in conventional charged particle beam irradiation apparatuses using a plurality of irradiation devices, *"equivalent parameters such as beam intensity and beam size have always been used for the charged particle beam generator to emit beams to whichever irradiation device. For this reason, even when the conventional*

*charged particle beam irradiation apparatus was provided with irradiation devices of different irradiation schemes such as scanning and passive scattering, it has been impossible to supply to the selected irradiation device the beams matching its irradiation scheme.*". In other words, conventionally, in systems employing different irradiation devices, a beam of fixed beam parameters (e.g. beam size and beam intensity) would be sent to the selected device, irrespective of which type of irradiation device had been selected for use. Consequently, the beam arriving at the irradiation device would not be optimised for the specific device, meaning that safety and treatment duration would be compromised. From this passage, the Board is convinced that the skilled person would understand the invention to lie in the recognition that different irradiation methods require different beam parameters and that beams which are tailored to the specific irradiation device being used are to be provided to the respective device.

With regard to the specific reference in claim 1 to both scanning and passive scattering irradiation methods, the Board observes that original claim 21 indicates that the operating parameters of the charged particle beam generator are modified so that the beam intensity for scanning is smaller than the beam intensity for "*an irradiation method other than the scanning irradiation method*". The appellant submitted that it was clear to the skilled reader that the "*scanning irradiation method other than the scanning irradiation method*" must be the passive scattering method which the description so extensively refers to. The Board agrees. In fact, the only "*other*" irradiation

method discussed throughout the original application is the passive scattering method so that it is fair to assume that the skilled person would unambiguously understand this "other" irradiation method to be a passive scattering method.

3.1.4 The Board therefore concludes that the amendments do not infringe the requirements of Article 123(2) EPC.

3.2 Clarity and support by the description

3.2.1 The reasoning of the respondent with regard to the objection under Article 123(2) EPC relied, in part, on the argument that, as a result of the alleged intermediate generalisation, the independent claim lacked essential features. The respondent insisted that in order to solve the problem of irradiation accuracy and safety, all of the details of each embodiment would have to be included in the independent claim(s).

In particular, it was essential to monitor the beam parameters at every section of the apparatus and to control the beam characteristics or terminate extraction of the beam from the beam generator to ensure certain safety thresholds were not exceeded. It was apparent from the description that each section of the irradiation apparatus had a detector, judgement means and controller associated with it and that these multiple monitoring and control units were essential to the definition of the invention. The respondent considered that the detector, judgement and controller means presently appearing in claim 1 did not serve to provide a complete solution to the given problem and,

consequently, that the irradiation apparatus of claim 1 was not supported by the description.

- 3.2.2 In the view of the Board, these comments of the respondent have more to do with a potential lack of clarity of the claims and a potential lack of their support by the description than with the question of added subject-matter and, as such, concern Article 84 EPC 1973 and not Article 123(2) EPC.

In this regard, the Board notes that just because a formal basis can be found in the originally-filed application for the subject-matter of amended claim 1, does not automatically lead to the conclusion that claim 1 must be supported by the description, particularly in the present case, in which the basis of disclosure was located primarily in the originally-filed claims.

- 3.2.3 In addition, due to an apparent inconsistency in nomenclature between the wording of the claims and the wording of the description, doubts emerged during the oral proceedings as to whether the claims are fully supported by the description. In particular, it would appear that the claimed definitions of the detector, the judging device and the controller of claim 1 are inconsistent with the definitions of the various detection, judgement and controlling units of the description.

To give an example of the inconsistent nature of the terminology, it is observed that claim 1 refers to an unspecified "*controller (24)*". The description, on the other hand, refers - in both embodiments - to an



"accelerator controller 24", a "beam transport system controller 25", a "scanning irradiation controller", a "scattering irradiation controller" and a "central controller 23". The functionality of the claimed controller does not appear to correspond directly to the functionality of any single one of the controllers of the description.

3.2.4 The Board notes that since the detection devices required for each of the two embodiments are very different, it may not be possible to draft a single independent claim which covers both embodiments and which includes all essential features of each embodiment. The Board draws particular attention to the respondent's observation that the beam energy level of the beam "extracted from said charged particle beam generator" (for which a detector is provided in claim 1) does not appear to be detected in the cyclotron embodiment. In contrast to the beam extracted from the synchrotron, whose energy can be altered within the beam generator, the beam extracted from the cyclotron is of fixed energy. The energy of the extracted cyclotron beam is subsequently altered by means of the degrader 48 and emittance aperture 49, and energy analysing magnet 50 steers a beam of the required energy to the beam transport system. It would therefore appear that dependent claim 7 (which defines that the charged particle beam generator is a cyclotron) is not reconcilable with claim 1 which recites a detector for detecting a beam energy level of the charged particle beam extracted from the charged particle beam generator.

3.2.5 Any amendments made to the patent must fulfil all requirements - including Article 84 - of the EPC. The

Board is aware that, normally, the amended claims would be examined by the Board to ensure compliance with the requirements of clarity and support. Indeed it is rather unusual that the Board does not take a position on this issue in the present decision. However, the Board stresses that the question of Article 84 EPC 1973 only materialised during the oral proceedings before the Board and had not been addressed in this form in the written proceedings. In view of the fact that the respondent's reply to the statement setting out the grounds of appeal concentrated on Article 123(2) EPC and did not mention Article 84 EPC 1973 and that the Board, in its communication, indicated that Article 123(2) EPC would be the only substantive issue to be discussed at the oral proceedings, the appellant was faced at the oral proceedings with new objections for which he was not prepared and which, he submitted, would require a considerable amount of time to prepare a response to. A fresh clarity objection raised against an amended claim would not normally prevent the Board from proceeding with a discussion on clarity and support. However, the specific circumstances of the present case led the Board to defer this discussion.

3.2.6 In the present case, the Board has found the amended claims to deprive the contested decision of its basis.

Although the opposition was filed citing the grounds of Articles 100(a), (b) and (c) EPC, the contested decision did not address the questions of novelty and inventive step.

In view of the fact that the reason for revoking the patent given in the contested decision is no longer

valid, the case will have to be remitted to the opposition division for further prosecution. Given these circumstances, the Board considers it reasonable that, in order to give the appellant sufficient opportunity to respond to any objections under Article 84 EPC 1973, this issue should be brought before the opposition division, together with the questions of novelty and inventive step, in the framework of the aforementioned remittal.

4. The appellant's auxiliary requests

In view of the findings concerning the appellant's main request, it is not necessary to deal with the appellant's auxiliary requests.

**Order**

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

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division for further prosecution.

The Registrar:

The Chairman:

M. Cañueto Carbajo

H. Wolfrum