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# Datasheet for the decision of 23 October 2019

**Case Number:** T 0747/15 - 3.2.02

**Application Number:** 04003911.7

**Publication Number:** 1428470

**IPC:** A61B3/10, A61B3/11, A61F9/013, A61F9/01

**Language of the proceedings:** EN

**Title of invention:**
Apparatus for determining and ablating a corneal tissue volume of a receiving cornea for corneal lamellar grafting transplantation

**Patent Proprietor:**
IVIS TECHNOLOGIES S.r.l

**Opponent:**
SCHWIND eye-tech-solutions GmbH

**Headword:**

**Relevant legal provisions:**
EPC Art. 76(1), 54, 56
EPC R. 99(2), 101(1)
RPBA Art. 13(1), 13(3)

**Keyword:**
Admissibility of appeal - (yes)
Divisional application - added subject-matter (no)
Novelty - (yes)
Inventive step - (yes)
Late-filed auxiliary request - admitted (yes)

**Decisions cited:**

**Catchword:**

Europäisches Patentamt
European Patent Office
Office européen des brevets

**Beschwerdekammern**

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**Case Number: T 0747/15 - 3.2.02**

# D E C I S I O N
# of Technical Board of Appeal 3.2.02
# of 23 October 2019

| | |
|---|---|
| **Appellant:** (Opponent) | SCHWIND eye-tech-solutions GmbH<br>Mainparkstrasse 6-10<br>63801 Kleinostheim (DE) |
| **Representative:** | Hofstetter, Schurack & Partner<br>Patent- und Rechtsanwaltskanzlei<br>PartG mbB<br>Balanstrasse 57<br>81541 München (DE) |
| **Respondent:** (Patent Proprietor) | IVIS TECHNOLOGIES S.r.l<br>Via Luigi Corsi 50<br>74100 Taranto (IT) |
| **Representative:** | Wegner, Hans<br>Bardehle Pagenberg Partnerschaft mbB<br>Patentanwälte, Rechtsanwälte<br>Prinzregentenplatz 7<br>81675 München (DE) |
| **Decision under appeal:** | **Interlocutory decision of the Opposition Division of the European Patent Office posted on 6 February 2015 concerning the maintenance of European Patent No. 1428470 in amended form.** |

**Composition of the Board:**

| | |
|---|---|
| **Chairman** | E. Dufrasne |
| **Members:** | S. Böttcher |
| | D. Ceccarelli |

## Summary of Facts and Submissions

I. The opponent filed an appeal against the interlocutory decision of the opposition division, dispatched on 6 February 2015, concerning the maintenance of European patent No. 1428470 in amended form.

II. Opposition was filed against the patent as a whole and based on grounds for opposition under Article 100(a) and (c) EPC.

III. The present patent is derived from a divisional application of European patent application No. 01936806.7, which is based on PCT application WO 02/22003.

IV. Notice of appeal was filed by the appellant (opponent) on 8 April 2015. The appeal fee was paid on the same day.

V. The statement setting out the grounds of appeal was received on 9 June 2015.

VI. The parties were summoned to oral proceedings by letter dated 31 July 2019.

VII. Oral proceedings took place on 23 October 2019.

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

The respondent (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained on the basis of one of new auxiliary request 1a, filed during the oral proceedings, auxiliary request 2, filed on 15 January 2015, and auxiliary request 3, filed with letter dated 26 October 2015. Auxiliary

request 1, filed with letter dated 14 November 2014 was withdrawn.

VIII. The following documents are referred to in this decision:

D1: WO 02/22003 A1 (published parent application of the patent in suit)
E1: Programme of ASCRS-ASOA "Symposium on Cataract, IOL and Refractive Surgery - Congress on Ophthalmic Practice Management - Clinical and Surgical Staff Program", May 20-24, 2000, Boston, Massachusetts, USA, pages 33 and 130
E2: Affidavit of Dr Cesar Carriazo of 7 February 2013
E3: American Society of Cataract and Refractive Surgery "Abstracts - Symposium on Cataract, IOL and Refractive Surgery", May 20-24, 2000, Boston, Massachusetts, USA, page 43
E13: Affidavit of Dr Jörg H. Krumeich of 7 November 2014
E14: L. F. Rich: "Expanding the Scope of Lamellar Keratoplasty", Trans. of the American Ophthalmological Society Annual Meeting, Toronto, CA, vol. XCVII, 1999, pages 771-814, ISSN 0065-9533

IX. Claim 1 of new auxiliary request 1a reads as follows:

"An apparatus for determining and ablating a corneal tissue volume of a receiving cornea for corneal lamellar grafting transplantation, comprising
a central processing unit (1, 10),
a pachymeter (2), coupled to the central processing unit (1, 10) for providing a corneal thickness tridimensional map (A), and
a photoablative laser (4);
characterised in that
the central processing unit (1, 10) comprises processing means for determining a volume (V) of corneal tissue to

be ablated on the basis of a difference between the corneal thickness tridimensional map (A) and a receiving bed (B), having a predetermined bed thickness map, and the photoablative laser (4) is controlled by the central processing unit (1, 10) for ablating said volume (V) of corneal tissue."

Claim 2 is a dependent claim.

X. The appellant's arguments in so far as relevant to the present decision can be summarised as follows:

*Admissibility of the appeal*

The contested decision dealt with the issue of inadmissible amendments concerning the feature "pupillometer" in claim 1 and concerning a feature of claim 3. The statement of grounds of appeal also addressed these issues under points 2.1.1 and 2.3.

Furthermore, the statement of grounds dealt with the issues of novelty and inventive step in view of the prior art "Carriazo" and with the issue of the admissibility of document E14; it was therefore directly and clearly responsive to the contested decision.

Thus, there was a causal link between the decision and the statement of grounds, and the appeal was admissible.

*Admissibility of new auxiliary request 1a*

New auxiliary request 1a, in which former claim 2 had been deleted, was filed during the oral proceedings. It could and should have been filed earlier, since the objection against this claim had been raised already at the beginning of the appeal proceedings. In its reply to

the statement of grounds of appeal (page 20, paragraph 5), the respondent had even offered to delete claim 2, but had not done so until the oral proceedings.

Hence, pursuant to Article 13(1) RPBA, new auxiliary request 1a was late filed and should not be admitted into the proceedings.

*Added subject-matter (Article 76(1) EPC)*

*Claim 1 - omission of the feature "pupillometer"*

Claim 1 of the parent application (D1) related to an apparatus comprising a pupillometer operatively connected to the central processing unit. In addition, several dependent claims of D1 referred to a pupillometer (claims 3, 7, 11). The omission of this feature in claim 1 of new auxiliary request 1a contravened Article 76(1) EPC since the pupillometer was an essential feature of the apparatus according to the invention.

In the description of the parent application the pupillometer was also presented as an essential component of the apparatus. In particular, it became evident from the passage on page 4, line 27 to page 5, line 2 that the pupillometer was used for establishing numerous data as key input values that were necessary to optimally perform the surgical operation.

According to Figure 1 and the corresponding passages of the description of D1 (page 4, lines 8 to 12 and page 4, line 21 to page 5, line 2), the apparatus according to the invention comprised a pupillometer, and the data measured by the pupillometer was essential to perform the operation by the apparatus.

Also, from claim 15 or the passage on page 5, lines 21 to 24, stating that the receiving bed center can be selected arbitrarily by the operator, it could not be derived that the apparatus could be designed without a pupillometer. The data of the pupillometer, in particular concerning the centroid of the cornea, was needed anyhow for defining a reference point for the pachymetric data in the process of defining the optimum contour or profile of the receiving bed. From the fact that claim 15 was dependent on claim 1, i.e. a claim which related to an apparatus with a pupillometer, it became clear that a pupillometer was also needed in the case that the receiving bed center was selected by the operator.

Moreover, Figure 5 could not be used as a basis for omitting the feature "pupillometer". This figure showed a schematic block diagram of an apparatus without a pupillometer but including several other features not mentioned in claim 1. Since Figure 5 did not show a photoablative laser either, it was in contradiction with the remaining passages of the disclosure of D1 which related to an apparatus comprising a pupillometer and a laser. Hence, Figure 5 apparently did not show an embodiment according to the invention. Moreover, if Figure 5 were considered as a basis for the subject-matter of claim 1, the omission of the further features in claim 1 would constitute an unallowable intermediate generalisation.

*Claim 1 - deletion of the statement "as optimized for each individual patient"*

Claim 1 of the parent application related to an apparatus for determining and removing a corneal tissue volume to be ablated, as optimized for each individual patient. The omission of the statement "as optimized for each

individual patient" in claim 1 of new auxiliary request 1a contravened Article 76(1) EPC since embodiments that were not optimized for the individual patient would now also fall under the scope of the claim. Such embodiments could not be derived from the parent application. On the contrary, it was mentioned in the description of D1 (page 1, line 21 to page 2, line 1) that the apparatus was specifically designed for defining, in an optimum manner, the volume to be ablated, in order to optimally perform the ablating operation.

*Claim 1 - insertion of the feature "predetermined bed thickness map"*

Claim 10 and the passage on page 4, lines 21 to 26 disclosed an "optimum pachymetric map of the lens receiving bed". Hence, the expression "predetermined bed thickness map" in claim 1 of new auxiliary request 1a introduced new information, since suboptimal maps and maps not based on pachymetric data were now also encompassed.

*Claim 1 - insertion of the feature "the central processing unit comprises processing means"*

The parent application did not disclose any processing means, not even the specific "processing means for determining a volume..." required by claim 1 of new auxiliary request 1a. Furthermore, due to the wording "the central processing unit comprises processing means", the claim included added subject-matter since the processing unit could now comprise further components.

*Claim 2*

The term "predetermined ablating strategy" used in claim

2 of new auxiliary request 1a was not disclosed in the earlier application as filed; only the term "programmed ablating strategy" (page 7, lines 5 to 9 and claim 20 of D1). The skilled person could not derive the feature "predetermined ablating strategy" directly and unambiguously from the earlier application.

*Claim 1 - novelty (Article 54(1) and (2) EPC)*

*Novelty in view of documents E1, E2, E3 and E13 relating to the prior use by means of the PachyLink system of Dr Carriazo*

The PachyLink system described in E1, E2, E3 and E13 anticipated the subject-matter of claim 1. In particular, E2 referred to the disclosure of a central processing unit (CPU) that determined the volume of the corneal tissue to be ablated and controlled the photoablative laser (page 1, last paragraph). It was further described in both E2 (page 1, last paragraph) and E3 (lines 4 to 7) that the pachymetric data had been linked to the laser. Such a link could have only been obtained by a processing unit. Hence, the feature "a pachymeter coupled to the central processing unit" was disclosed implicitly.

*Novelty in view of E14*

E14 disclosed an apparatus for determining and ablating a corneal tissue volume comprising at least an excimer laser and a pachymeter. For the skilled person it was clear that the pachymetry system and the laser would be controlled by software running on computers. Thus, the apparatus implicitly included at least one central processing unit. Furthermore, it was mentioned in E14 that the number of laser pulses had to be calculated. This could only be performed by a corresponding

processing unit. Hence, E14 implicitly disclosed a central processing unit for performing the three functions of controlling the pachymeter, calculating the volume and controlling the laser. Therefore, the subject-matter of claim 1 lacked novelty over E14.

*Claim 1 - Inventive step (Article 56 EPC)*

Starting from the prior art represented by documents E1, E2, E3 and E13, it would have been obvious for the skilled person to couple the pachymeter to the central processing unit. A physical coupling, instead of the data link mentioned in E2, would not provide any surprising technical effect. For the purpose of achieving an optimum ablation operation it was irrelevant whether the pachymeter was coupled to the CPU, or whether only the pachymetric data was linked to the CPU.

When considering E14 as the closest prior art, the problem to be solved by the use of a single CPU instead of three separate units to perform the three functions would be to provide a less complex and less costly system. It would have been obvious to the skilled person that integrating all three functions in a single CPU was more economic.

The subject-matter of claim 1 therefore lacked inventive step.

*Request to include a statement in the minutes of the oral proceedings*

The respondent's statement that claim 1 required one and the same central processing unit to control the pachymeter, calculate the volume and control the laser should be included in the minutes of the oral

proceedings.

XI. The respondent's arguments in so far as relevant to the present decision can be summarised as follows:

*Admissibility of the appeal*

The appellant did not fulfil its burden of substantiation as to why the contested decision should be set aside because no direct and clear link between the decision and the grounds for appeal was established.

The appellant did not address the reasoning in the contested decision concerning the requirements of Article 76(1) EPC. As to novelty and inventive step, only a few references to the decision were made, largely repeating the arguments brought forward in the opposition proceedings.

It followed that the appeal was inadmissible.

*Admissibility of new auxiliary request 1a*

New auxiliary request 1a was based on auxiliary request 1, wherein claim 2 was deleted. It was only during the oral proceedings that the respondent became aware of the Board's opinion that claim 2 of the first auxiliary request included added subject-matter. The deletion of claim 2 did not introduce any new matter and could not be considered as surprising for the appellant. Hence, new auxiliary request 1a had to be admitted into the proceedings.

*Added subject-matter (Article 76(1) EPC)*

*Claim 1 - omission of the feature "pupillometer"*

The feature "pupillometer" was not explained as essential in the parent application as filed (D1). Figure 5 of D1 showed a block diagram of the ablating apparatus according to the present invention (page 3, lines 24 and 25) comprising a pachymeter (23, 24, 11), a laser system (12, 13, 14, 15) and a central processing unit (10), but no pupillometer.

Furthermore, it was explained in the description (page 5, line 10 to page 6, line 9) how the receiving bed was defined by the operator. In particular, it was mentioned that the receiving bed center could be selected arbitrarily by the operator (page 5, lines 21 to 24), i.e. without the need to measure the location of the corneal centroid by means of a pupillometer. Hence, a pupillometer was not described as essential.

Even if the location of the corneal centroid was needed as a reference value, it was not disclosed in D1 that this data necessarily had to be provided by a pupillometer that was operatively connected to the central processing unit of the apparatus.

Moreover, there was no contradiction between Figure 5 and the rest of the disclosure. The skilled person would rather derive from Figure 5 that the pupillometer was an optional feature.

Since Figure 5 was not used as a basis for claim 1, the omission of further features present in this figure did not constitute an unallowable intermediate generalisation. Figure 5 was rather referred to for establishing that the pupillometer was not essential.

*Claim 1 - deletion of the statement "as optimized for*

*each individual patient"*

The deleted feature represented an indication of purpose, which was redundant since the claim was already - by virtue of its other features - limited to an apparatus suitable for removing a corneal tissue volume as optimized for each individual patient. In particular, the claimed apparatus had to provide a corneal thickness map of the individual patient's cornea, and had to accept, as input parameter, a predetermined bed thickness map in order to calculate the optimum ablation volume for this patient. Hence, the omission of this feature did not add subject-matter beyond the content of the earlier application.

*Claim 1 - insertion of the feature "predetermined bed thickness map"*

The description of the earlier application disclosed the term "optimum pachymetric map of the lens receiving bed" (D1, page 4, lines 21 to 26 and claim 10). For the skilled person, the expressions "thickness map" and "pachymetric map" were synonymous. Moreover, an apparatus suitable for accepting "the optimum" thickness map was necessarily also suitable for accepting a predetermined thickness map. Hence, the slight changes in the wording did not introduce new information.

*Claim 1 - insertion of the feature "the central processing unit comprises processing means"*

This feature merely meant that the central processing unit had to be adapted for determining a volume. Since this could be directly and unambiguously derived from the parent application, the wording "processing means for" did not add subject-matter.

*Claim 2*

The changed wording "predetermined ablating strategy" instead of "programmed ablating strategy" did not lead to an extension beyond the content of the earlier application as filed.

*Claim 1 - novelty (Article 54(1) and (2) EPC)*

*Novelty in view of documents E1, E2, E3 and E13 relating to the prior use by means of the PachyLink system of Dr Carriazo*

Claim 1 required a central processing unit to which a pachymeter was coupled, with the functions of calculating the tissue volume to be ablated and of controlling the photoablative laser.

Documents E1, E2, E3 and E13 did not refer to the disclosure of a pachymeter that was coupled to the central processing unit. E3 mentioned "linking the pachymetric data to the excimer laser" (Abstract No. 168, lines 4 to 7). E2 and E13 referred to supplying or transferring data to the laser (E2: page 1, penultimate sentence; E13: second paragraph, last sentence). However, such a link or transfer could be achieved in many ways without requiring a physical coupling.

As a result, the subject-matter of claim 1 did not lack novelty over the PachyLink system.

*Novelty in view of E14*

Although E14 mentioned a pachymeter, it did not disclose that the pachymeter is coupled to a central processing

unit, as defined in claim 1. In fact, E14 did not disclose a central processing unit at all.

Hence, the subject-matter of claim 1 was novel over E14.

*Claim 1 - inventive step (Article 56 EPC)*

The distinguishing feature over the PachyLink system, namely the pachymeter being coupled to the CPU that also calculates the ablation volume and controls the laser, provided for an easier handling of the apparatus and a consistent and safe determination of the ablation volume, while the risk of data loss was diminished.

Starting from the PachyLink system, there was nothing in the prior art hinting at a physical coupling between the pachymeter and the CPU. The data link mentioned in E3 could not be equated with such a coupling as defined in claim 1.

E14 did not disclose the use of three separate CPUs, one for the pachymeter, one for the calculation of the volume and one for controlling the laser, as alleged by the appellant. Hence, starting from E14, the problem to be solved could not be defined as to combine three CPUs to one single CPU.

Consequently, the subject-matter of claim 1 was inventive.

## Reasons for the Decision

1. Admissibility of the appeal

Rule 99(2) EPC requires that the statement of grounds of appeal "shall indicate the reasons for setting aside the decision impugned". If the statement of grounds of appeal does not comply with this provision, the appeal is to be rejected as inadmissible (Rule 101(1) EPC). According to the case law of the boards of appeal in respect of Rule 99(2) EPC, if the appellant submits that the decision under appeal is incorrect, then the statement setting out the grounds of appeal must enable the board to understand immediately why the decision is alleged to be incorrect and on what facts the appellant bases its arguments. There must be a causal relationship between the arguments in the statement of grounds of appeal and the reasons given in the decision under appeal.

In the present case, in the statement of grounds, the appellant referred at length to several reasons given in the impugned decision, e.g. that Figure 5 did not show a pupillometer and that this feature, therefore, was not essential for the invention. The appellant further expounded that all the documents belonging to the prior art "Carriazo" had to be taken into account and that the subject-matter of claim 1 was anticipated by this prior art. In that respect, the appellant explicitly referred to the decision of the Opposition Division (page 13, last paragraph to page 14, first paragraph; page 17, third paragraph).

Hence, contrary to the respondent, the Board sees a direct and clear link between the arguments in the statement of grounds of appeal and the reasons given in the impugned decision. Consequently, the appeal is

admissible.

2. Admissibility of new auxiliary request 1a

New auxiliary request 1a, filed during the oral proceedings, is an amendment to the respondent's case, the admission of which is at the Board's discretion under Article 13(1) and (3) RPBA. The discretion is to be exercised in view of, inter alia, the complexity of new subject-matter submitted, the current state of the proceedings and the need for procedural economy.

Compared with the main request, the only amendment in new auxiliary request 1a was the deletion of dependent claim 2. Independent claim 1 was left unamended. Hence, no new issues were introduced by the amendment, and the parties could be expected to deal with it expediently during the oral proceedings. Moreover, new auxiliary request 1a removes the issue of non-compliance of claim 2 of auxiliary request 1 with Article 76(1) EPC.

Although the appellant rightly argued that the objection under Article 76(1) EPC against claim 2 of auxiliary request 1 was known to the respondent long before the oral proceedings, it has to be considered that the particular relevance of this specific objection, amongst the many objections raised by the appellant, only emerged during the oral proceedings and was addressed in a straightforward way by the respondent, namely, by deleting this claim. The fact that the respondent had already announced in the reply to the grounds of appeal to conditionally delete this claim does not render new auxiliary request 1a inadmissible.

For these reasons the Board, in exercising its discretion under Article 13(1) and (3) RPBA, admits new auxiliary

request 1a.

3. The invention

The invention relates to an apparatus for determining and ablating a corneal tissue volume for corneal lamellar grafting transplantation. The apparatus comprises a central processing unit, a pachymeter and a photoablative laser. The pachymeter is coupled to the central processing unit and provides a tridimensional map of the thickness of the cornea. The central processing unit determines the volume of corneal tissue to be ablated on the basis of a difference between the corneal thickness tridimensional map and a receiving bed (for the transplanted cornea) having a predetermined bed thickness map (Figures 2 to 4). Then the laser is controlled by the central processing unit for ablating said tissue volume.

According to the description (page 2, lines 2 to 8), the apparatus provides accurate values to allow the operator to optimally perform the ablating operation.

4. Added subject-matter (Article 76(1) EPC)

4.1 Claim 1 - omission of the feature "pupillometer"

The appellant argued that claim 1 of the main request extended beyond the content of the parent application as originally filed, since the feature "a pupillometer operatively connected to the central processing unit" which was present in claim 1 of the earlier application (D1) has been omitted in present claim 1.

The Board observes that according to the description of D1 (page 4, line 27 to page 5, line 2), the pupillometer is used to detect various parameters concerning the

projection of the pupil on the cornea front surface. These parameters can then be used to determine the receiving bed center that is needed to define the profile of the receiving bed (page 5, lines 10 to 24). However, it is further stated in D1 that the receiving bed center can be selected between either the corneal centroid, the projection on the cornea of the pupillar centroid, or arbitrarily by the operator (page 5, lines 21 to 24). That means, if the receiving bed center is congruent to the corneal centroid, the data of the pupillometer is used. However, if the operator plans the receiving bed to be located off-center, the provision of a pupillometer is not necessary. In that case, the receiving bed center is selected by the operator "arbitrarily", i.e. depending on the location of the patient pathology.

In that respect, the Board does not concur with the appellant that the data of the pupillometer was needed as a reference for the pachymetric data in the process of defining the receiving bed. It cannot be derived from the earlier application that the pupillometer is used for providing reference data for the pachymetric data and that it is indispensable for defining the receiving bed. Hence, the appellant's argument appears to be based on pure speculation.

The skilled person would rather derive from the parent application that the profile and contour of the receiving bed is determined by the operator, who might or might not use the data of the pupillometer, depending on the circumstances. The apparatus according to claim 1 then calculates the volume to be ablated on the basis of the difference between the corneal thickness map and the receiving bed map. For this function, however, it is not essential that a pupillometer is operatively connected to the central processing unit of the apparatus.

This is further corroborated by the fact that Figure 5, representing a block diagram of the apparatus according to the invention (page 3, lines 24 and 25), does not disclose a pupillometer. Nevertheless, this apparatus "is adapted to allow to detect in a very accurate manner the data and/or parameters necessary for addressing and properly performing the surgical operation" (page 8, lines 21 to 26). Hence, the skilled person would also derive from this figure that the invention can be performed by means of an apparatus without a pupillometer.

Contrary to the appellant, the Board does not see a contradiction between Figure 5 and the rest of the disclosure. Although Figure 5 is a schematic representation, it undoubtedly shows an apparatus according to the invention, including a photoablative laser in the laser cavity 13. The fact that claim 1 does not comprise the further components of the apparatus shown in Figure 5 (e.g. the optic divider 20 or the video camera 19) does not amount to an unallowable intermediate generalisation, as those features were not included in claim 1 of the parent application on which present claim 1 is based.

Hence, the omission of the feature "a pupillometer operatively connected to the central processing unit" in claim 1 does not add subject-matter.

4.2 Claim 1 - deletion of the statement "as optimized for each individual patient"

The appellant further argued that the deletion of the feature "as optimized for each individual patient" from claim 1 of D1 introduced new subject-matter, since

apparatuses for an operation which was not optimized for each individual patient would now also fall under the scope of claim 1.

The Board considers the statement "as optimized for each individual patient" to mean that the apparatus allows, for each patient, to determine the individual tissue volume to be removed. It is clear from the description of D1 (e.g. page 4, lines 21 to 26; page 6, lines 5 to 16) that the corneal tissue volume to be removed is determined for each patient on the basis of the individual corneal thickness map and the individual receiving bed thickness map. Since claim 1 of new auxiliary request 1a is limited to an apparatus determining this volume on the basis of the difference between the corneal thickness map and the receiving bed map, it is inherently suitable for performing the ablation "as optimized for each individual patient". Hence, in the Board's view the omission of this statement does not add subject-matter.

4.3 Claim 1 - insertion of the feature "predetermined bed thickness map"

The appellant further considers the term "predetermined bed thickness map" in claim 1 as introducing added subject-matter.

The Board acknowledges that the term "predetermined bed thickness map" is not literally disclosed in the parent application as originally filed. Instead, D1 discloses the term "optimum pachymetric map of the bed receiving the donor lens" (page 4, lines 21 to 26 and claim 10).

In the Board's view, the skilled person would consider a "bed thickness map" as a synonym to a "pachymetric map of

the bed receiving the donor lens", since a pachymeter provides data concerning the thickness of the cornea.

Furthermore, the replacement of "optimum" with "predetermined" does not add subject-matter to the disclosure of the parent application. Although it is clear that "optimum" means something different from "predetermined", it has to be noted that both terms relate to the thickness map, which is not part of the claimed subject-matter. The claimed apparatus uses the bed thickness map to determine the tissue volume to be ablated. However, for this function of the apparatus it is irrelevant whether the bed thickness map is an optimum map or just any map. Hence, the omission of the term "optimum" does not add subject-matter. On the other hand, it can be derived from the description of D1 (page 5, lines 10 to 20; page 6, lines 5 to 13) that the bed thickness map is "predetermined", i.e. that the operator defines the receiving bed by selecting various parameters and that the thus defined receiving bed map is used to calculate the tissue volume. Thus, in the Board's view, the replacement of "optimum" with "predetermined" does not add subject-matter either.

4.4 Claim 1 - insertion of the feature "the central processing unit comprises processing means"

The appellant further objected to the insertion of the feature "processing means for determining a volume..." into claim 1, since a central processing unit comprising these specific processing means was not disclosed in D1.

In the Board's view, this feature means that it is the central processing unit of the apparatus that determines the volume of tissue to be ablated. This can be directly and unambiguously derived from the overall disclosure of

the earlier application (e.g. page 3, line 29 to page 4, line 26; claims 10 and 17).

Furthermore, any processing unit inherently has processing means. The fact that the central processing unit might comprise further features (for instance a user interface) in addition to the processing means does not amount to added subject-matter, since the central processing unit of claim 1 of the parent application could also comprise further features.

Therefore, although the feature "the central processing unit comprising processing means for determining a volume..." is not literally disclosed in D1, its insertion into claim 1 does not add subject-matter.

In conclusion, claim 1 does not extend beyond the content of the earlier application as filed (Article 76(1) EPC).

4.5 Claim 2

The appellant argued that the term "predetermined ablating strategy" in claim 2 (former claim 3) was not disclosed in the earlier application as filed; only the term "programmed ablating strategy" (page 7, lines 5 to 9 and claim 20 of D1).

In the Board's view, the replacement of "programmed" with "predetermined" does not add subject-matter. For the skilled person it is clear that "predetermined ablating strategy" in connection with a control unit can only mean "programmed ablating strategy". Moreover, it can be derived from the overall disclosure of the earlier application that the ablating strategy, based on the volume of tissue to be ablated, is determined before the operation (e.g. page 6, lines 10 to 30), hence "pre-

determined".

4.6 It follows that the ground for opposition under Article 100(c) EPC raised by the appellant does not prejudice the maintenance of the patent on the basis of new auxiliary request 1a.

5. Novelty (Article 54(1) and (2) EPC)

5.1 Novelty in view of documents E1, E2, E3 and E13 relating to the prior use by means of the PachyLink system of Dr. Carriazo

Documents E1, E2, E3 and E13 refer to a system for performing laser refractive lamellar keratoplasty, called PachyLink. As can be derived from E2 (page 1, third paragraph) and E3 (Abstract No. 168, lines 8 to 13), this technique comprises the steps of mapping the patient's cornea with a pachymeter, using this data to identify a "desirable corneal bed" and controlling the laser ablation of a layer the cornea to produce the corneal bed. However, the PachyLink system does not comprise a pachymeter that is coupled to a central processing unit which determines the volume to be ablated and controls the laser.

The appellant alleges that the link of the pachymetric data to the laser mentioned in E2 (page 1, third paragraph, first sentence) implied a physical coupling of the pachymeter to the central processing unit. The Board does not concur with that. In fact, documents E1, E2, E3 and E13 do not disclose any details of the pachymeter that performs the topographic mapping of the cornea and the central processing unit that controls the laser. Thus, it cannot be derived from any of these documents that the pachymeter is coupled to the central processing

unit. The pachymetric data could be supplied to the laser by means of a USB stick or any other data transfer means without any physical coupling.

5.2 Novelty in view of E14

E14 describes an animal experiment to explore the feasibility of performing lamellar keratoplasty. For this experiment the corneal thickness of the animals was measured by means of ultrasonic pachymetry, and the number of laser pulses required to remove half of this thickness was calculated (page 804, fourth paragraph). On a separate occasion, one eye of each animal was subjected to laser ablation to remove 50% of the corneal thickness, and a donor cornea was put in the receiving bed (page 804, fifth paragraph).

As the respondent argued, E14 does not disclose a central processing unit to which the pachymeter is coupled and which determines the volume to be ablated and controls the laser in the ablation operation.

The appellant's argument that a central processing unit for controlling the pachymeter, calculating the volume and controlling the laser was implicitly disclosed in E14 cannot be accepted, as E14 does not disclose any computer or processing unit at all. Furthermore, the ablation operation is performed some time after the pachymetry and the calculation of the number of laser pulses. Hence, it is not established and it is rather unlikely that the pachymeter and the laser are coupled via a central processing unit.

5.3 Consequently, the subject-matter of claim 1 of new auxiliary request 1a is novel (Article 54(1) and (2) EPC) over E1, E2, E3 and E13 and over E14.

It follows that the objections of lack of novelty (Article 54(1) and (2) EPC) do not prejudice the maintenance of the patent on the basis of new auxiliary request 1a.

6. Inventive step (Article 56 EPC)

6.1 The appellant argued that the subject-matter of claim 1 of new auxiliary request 1a lacked an inventive step when starting from the prior art represented by documents E1, E2, E3 and E13.

As established above, the subject-matter of claim 1 differs from this in that the pachymeter is coupled to the central processing unit, which calculates the volume to be ablated and controls the laser. By means of this an integrated system is provided in which all the elements are connected via one single CPU. This ensures, for instance, that the data of the pachymeter is available during the whole ablation operation and any loss of data is avoided.

Hence, the appellant's assertion that a physical coupling of the pachymeter to the central processing unit would not provide any surprising technical effect is not endorsed. On the contrary, as established above, the physical coupling is clearly advantageous over the data link of the PachyLink system.

The objective technical problem to be solved by this distinguishing feature is to achieve a more accurate, reliable and safe ablation operation.

Since there is no teaching in the prior art suggesting the coupling between the pachymeter and the central

processing unit for solving the objective technical problem, the skilled person would not implement such a coupling in the PachyLink system as reported in E1, E2, E3 and E13.

It follows that the subject-matter of claim 1 is inventive when starting from E1, E2, E3 and E13.

6.2 The appellant also raised an objection of lack of inventive step starting from E14 in combination with common general knowledge.

In the appellant's view, E14 implicitly disclosed three separate computers performing the functions of conducting the pachymetry, calculating the volume and controlling the laser. It would be obvious to the skilled person to integrate these three computers into a single central processing unit since this was more economic.

However, as the respondent submitted, E14 does not even disclose three single computers or processing units. The calculation of the number of laser pulses on the basis of the pachymetric data could, for instance, be conducted without a computer. Hence, the problem to be solved cannot be considered to find a more economic arrangement of the system.

Furthermore, as already mentioned above, E14 teaches that the animal experiment is conducted in two stages at different points in time. Therefore, the skilled person would not contemplate coupling the pachymeter mentioned in E14 with a central processing unit which calculates the volume to be ablated and controls the laser.

Hence, the subject-matter of claim 1 is also inventive

when starting from E14.

6.3 In conclusion, the objections of lack of inventive step (Article 56 EPC) do not prejudice the maintenance of the patent on the basis of new auxiliary request 1a.

7. Request to include a statement in the minutes of the oral proceedings

During the oral proceedings, the opponent requested that the respondent's statement that claim 1 required one and the same central processing unit to control the pachymeter, calculate the volume and control the laser should be included in the minutes of oral proceedings.

Pursuant to Rule 124(1) EPC, the minutes of oral proceedings must contain the essentials of these proceedings and the relevant statements made by the parties. As is common practice in the boards of appeal, it is not the function of the minutes to record statements which a party considers to be possibly relevant. It is, instead, left to the discretion of the Board to decide what it considered essential or relevant in this respect. In the present case, the Board does not consider it necessary to include the statement in question in the minutes, since it is incorporated in the reasoning given above (point 5.1).

The appellant's request to include the statement in the minutes is therefore refused.

**Order**

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

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance, with the order to maintain the patent on the basis of:

   - claims 1 and 2 of new auxiliary request 1a filed during the oral proceedings;

   - description and figures of the patent as granted.

The Registrar: The Chairman:

D. Hampe E. Dufrasne

Decision electronically authenticated