Unified Patent Court
Einheitliches Patentgericht
Juridiction unifiée du brevet

UPC – Court of Appeal
UPC_CoA_762/2024
APL_64022/2024
UPC_CoA_773/2024
APL_64706/2024

DECISION

of the Appeal Court of the Unified Patent Court
issued on 5 November 2025

HEADNOTES

- When examining an allegation of improper extension, the court may, on its own initiative, find that the skilled person cannot derive a corresponding disclosure from the earlier application. This finding must be determined on the basis of the skilled person's understanding when reading the earlier application in its entirety.
- If the international application is not written in one of the official languages of the European Patent Office (EPO), the content of an application derived from the international application is primarily determined with the aid of a translation. The requirement to submit a translation in the application procedure before the European Patent Office is not a purely formal or procedural requirement. With this translation, the applicant submits the application documents to the EPO in the language of the proceedings, on the basis of which the EPO examines the application and, in the event of changes to the application documents, assesses the compliance of these changes with Art. 123 (2) EPC.
- Since it is in the applicant's own interest that the examination be based on the true content of the application, it can be assumed prima facie that such a translation submitted by the patent applicant himself accurately reflects the content of the international application in the language of the proceedings.
- Third parties and the court may, when assessing the inadmissible extension, rely prima facie on the translation of the application submitted by the patent proprietor to the EPO and published by it. If the patent proprietor claims that this translation is incorrect, he must prove the inaccuracy.

KEYWORDS

unacceptable extension; translation of the content of the international application

APPELLANT (AND CLAIMANT BEFORE THE COURT OF FIRST INSTANCE)

Seoul Viosys Co., Ltd., Danwon-gu, Ansan-si, Gyeonggi-do, 15429, Republic of

Korea hereinafter also referred to as 'Viosys'

represented by Dr Bolko Ehlgen, lawyer, and other lawyers from the law firm Linklaters LLP, Frankfurt am Main, Germany, supported by Dr Dipl.-Phys. Olaf Isfort, European Patent Attorney at Schneiders & Behrendt, Frankfurt am Main, Germany

INTERVENER IN SUPPORT OF THE APPELLANT (AND CLAIMANT BEFORE THE COURT OF FIRST INSTANCE)

Seoul Semiconductor Co., Ltd., Danwon-gu, Ansan-si, Gyeonggi-do, 15429, Republic of Korea

represented by Dr Bolko Ehlgen and other lawyers from the law firm Linklaters LLP, Frankfurt am Main, Germany

RESPONDENT (AND DEFENDANT BEFORE THE CFI)

1. **expert e-Commerce GmbH**, Langenhagen, Germany
2. **expert klein GmbH**, Burbach, Germany

hereinafter referred to collectively as 'expert' and individually as 'expert e-Commerce' and 'expert klein'

represented by Dr Dirk Jestaedt, lawyer, KRIEGER MES Partnerschaft mbB, Düsseldorf, Germany, supported by European Patent Attorney Bernhard Ganahl, HGF Europe LLP, Munich, Germany

LANGUAGE OF THE PROCEEDINGS

German. With the agreement of the parties, the oral proceedings were conducted in a hybrid form, with both German and English being permitted.

patent at issue

EP 3 223 320

BOARD OF APPEAL AND DECIDING JUDGES

This decision was taken by Panel 2:
Rian Kalden, presiding judge and rapporteur Patricia
Rombach, legally qualified judge Ingeborg Simonsson,
legally qualified judge Torsten Duhme, technically
qualified judge
Max Tilmann, technically qualified judge

CONTESTED DECISION OF THE COURT OF FIRST INSTANCE

Local division Düsseldorf, decision of 10 October 2024 Action number
of the Court of First Instance:
ORD_598459/2023 in the main proceedings concerning the infringement action, in ACT_594849/2023 UPC_CFI_483/2023,
ORD_50679/2024 in main proceedings concerning the counterclaim for annulment, in CC_3555/2024 UPC_CFI_483/2023

ORAL HEARING

The oral hearing took place on 10 July 2025.
Cases APL_64022/2024 UPC_CoA_762/2024 and APL_64706/2024 UPC_CoA_773/2024 were heard together (R. 302.3 RoP).

PRESENTATION OF THE FACTS

The parties

1. expert klein is part of the expert retail group, which operates in 22 countries in the fields of consumer electronics, information technology, telecommunications, entertainment and household appliances. expert klein is responsible in particular for the online presence and e-commerce activities of the expert group in Germany.
2. Expert e-Commerce operates 25 specialist stores on its own behalf as part of the "Expert Specialist Trade Cooperation".
3. Online sales (among other things) of the contested embodiment are carried out jointly by both defendants.
4. Viosys is a global full-service provider of LEDs and vertical cavity surface emitting lasers.

The patent at issue

5. Viosys is the owner of the patent at issue (hereinafter also referred to as "the patent"). The patent is a divisional application of European patent application No. 12832213.8, which was published under EP 2 757 598 A2 pursuant to Art. 153 (4) EPC (hereinafter referred to as the earlier application, also referred to by the parties as the parent application). The earlier application is the European regional phase of the PCT application in Korean with application number PCT KR2012/007358, published under number WO 2013/039344 A2.
6. In the first instance, expert klein submitted the earlier application as Annex B4. This is the English translation of the original Korean PCT application, which was submitted to the European Patent Office at the start of the regional phase for the earlier application. In the appeal, Viosys submitted the Korean PCT publication of the earlier application as Exhibit BK1 and an allegedly corrected English translation as Exhibit BK3.
7. Patent claims the priority of the Korean applications KR20110093396 dated 16 September 2011, KR20120015758 dated 16 February 2012 and KR20120052722 dated 17 May 2012.
8. The notice of patent grant was published on 21 July 2021.
9. The patent is in force in the UPC Agreement member states Germany, France, Italy and the Netherlands (hereinafter referred to as "territories").
10. The patent has one independent claim and ten dependent claims. Claim 1 of the patent at issue reads as follows:

    1. A light emitting diode, comprising:

    a first conductivity type semiconductor layer (110) formed on a substrate (100);

    a mesa disposed on the first conductivity type semiconductor layer (110), the mesa comprising an active layer (120) and a second conductivity type semiconductor layer (130);

    a reflective electrode (140) disposed on the mesa and configured to be in ohmic contact with the second conductivity type semiconductor layer (130);

a current spreading layer (210) disposed on the mesa and the reflective electrode (140), the current spreading layer (210) comprising a first portion configured to be in ohmic contact with an upper surface of an end portion of the first conductivity type semiconductor layer (110);

a lower insulating layer (200) disposed between the mesa and the current spreading layer (210) as well as the reflective electrode (140) and the current spreading layer (210), the lower insulating layer (200) configured to insulate the current spreading layer (210) from the mesa and the reflective electrode (140); and

an upper insulating layer (220) covering the current spreading layer (210), the upper insulating layer (220) comprising a first hole exposing a second portion of the current spreading layer (210) that is disposed on an upper portion of the mesa;

characterised in that the first conductivity type semiconductor layer is exposed in mesa-etched areas. (150) through the lower insulation layer (200) including at an edge of the substrate (100).

11. The invention relates to a light-emitting diode, and in particular a flip-chip type light-emitting diode with improved light output (para. [0001]).
12. Under the heading "State of the Art", the description explains that LEDs are formed on a substrate and comprise an N-type semiconductor layer, a P-type semiconductor layer and an active layer between them. An N-electrode pad is formed on the N-semiconductor layer and a P-electrode pad is formed on the P-semiconductor layer. For operation, the light-emitting diode is electrically connected to an external power source via the electrode pads. At this point, current flows from the P-electrode pad to the N-electrode pad through the semiconductor layers (para. [0003]).
13. In order to improve heat dissipation and at the same time prevent light loss through the P-electrode pad, an LED with a flip-chip structure is used in the prior art, and various electrode structures have been proposed to support current distribution in a large-area flip-chip type LED. For example, a reflective electrode is formed on the P-type semiconductor layer, and extensions for current propagation are formed on an area of the N-type semiconductor layer exposed by etching the P-type semiconductor layer and the active layer (para. [0004]).
14. Conventional techniques use linear extensions, which restrict current distribution due to their high resistance. Furthermore, since a reflective electrode is only ordered on the P-type semiconductor layer, significant light loss occurs through the pads and extensions instead of being reflected by the reflective electrode (para. [0006]).
15. Under the heading "Technical Problem", the patent specification describes that the invention aims to provide an LED with improved current distribution performance and light extraction efficiency by improving reflectivity (paras. [0017] and [0018]).
16. Under the heading "Technical Solution", the patent specification further states that, according to one aspect of the present invention, an LED comprises a semiconductor layer of a first conductivity type (hereinafter also referred to as the first semiconductor layer); a plurality of mesas separated from each other on the first semiconductor layer, each having an active layer and a semiconductor layer of a second conductivity type (hereinafter also referred to as the second semiconductor layer); reflective electrodes, each of which is ordered on the corresponding mesa area and is in ohmic contact with the second semiconductor layer; and a current spreading layer covering the plurality

mesas and the first semiconductor layer, which is to be electrically insulated from the mesas, wherein the current propagation layer contains first openings formed in the upper areas of the mesas in order to expose the reflective electrodes through them, wherein the current propagation layer is also in ohmic contact with the first semiconductor layer (para. [0021]).

17. The patent specification explains that the LED has improved current spreading performance due to the current spreading layer, since the current spreading layer covers the plurality of mesas and the first semiconductor layer (para. [0022]).
18. Under the heading "Advantageous Effects," the patent specification states that embodiments of the invention can provide an LED, in particular a flip-chip type LED, that has improved current spreading performance. In addition, the light-emitting diode has improved reflectivity, thereby providing improved light extraction performance. Furthermore, the light-emitting diode has a simple structure with a plurality of mesas, thereby simplifying the process of manufacturing the LED (para. [0045]).
19. The description then explains the drawings. The patent specification contains 36 figures, of which Figures 6, 10, 12, 18, 19 and 24 are shown below.

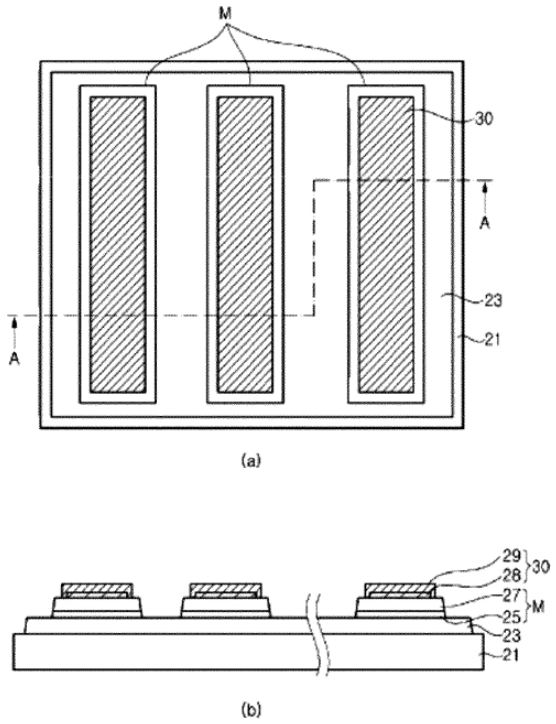


Fig. 6

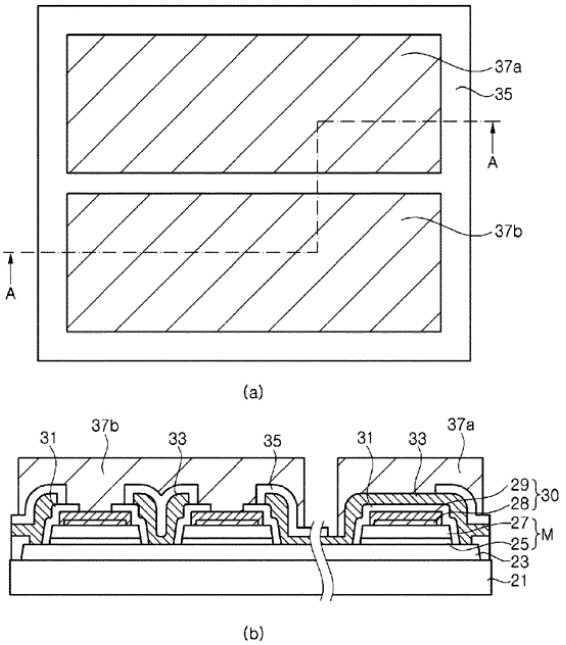


Fig. 10

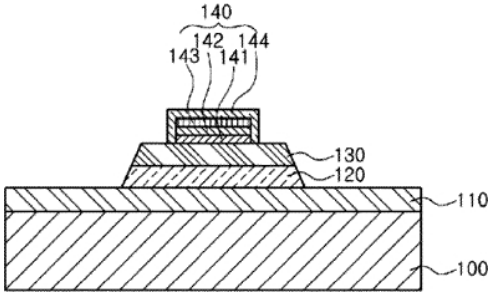


Fig. 12

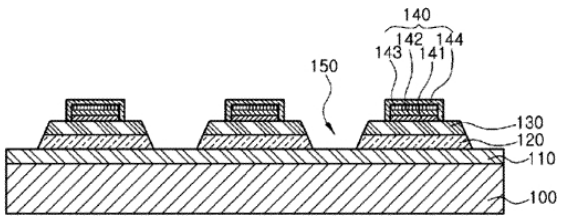


Fig. 18

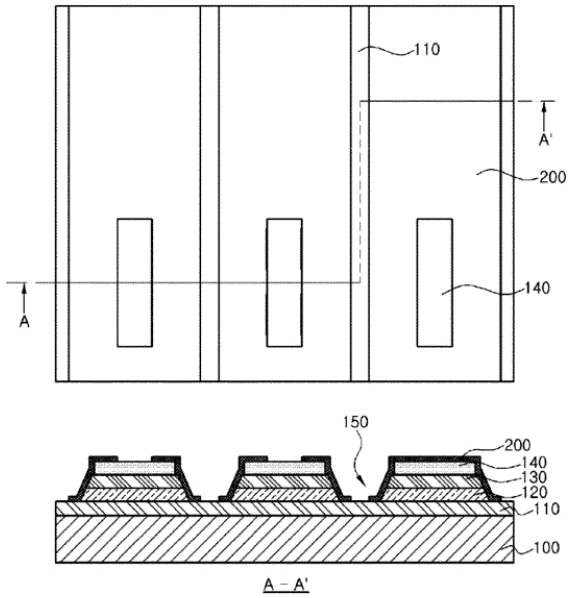


Fig. 19

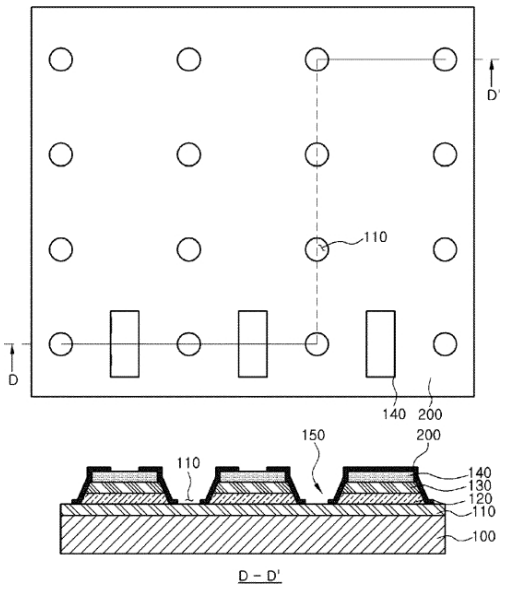


Fig 24

20. The invention is explained in the description using examples of embodiments. One example is described in paragraphs [0070] to [0086], which summarise the following with reference to Figure 10.
21. A first semiconductor layer (23) is formed on a substrate (21). A plurality of separate mesas M are formed on the first semiconductor layer by etching. Each of the mesas M contains an active layer (25) and a second semiconductor layer (27). The active layer (25) is ordered between the first (23) and the second (27) semiconductor layers. In addition, reflective electrodes (30) are located on each of the plurality of mesas M. The reflective electrode (30) covers most of the top surface of the corresponding mesa M and has essentially the same shape as the mesa M in plan view.

    A lower insulating layer (31) covers the plurality of mesas M and the first semiconductor layer (23). It has openings (31a) through which the first semiconductor layer (23) is exposed, and openings (31b) through which the reflective electrodes are exposed.

    A current spreading layer (33) is formed on the lower insulating layer (31), covering the plurality of mesas M and the first semiconductor layer (23). The current spreading layer (33) has openings (33a) through which the reflective electrodes are exposed. Through the openings (31a) of the lower insulating layer (31), the current spreading layer (33) can be in ohmic contact with the first semiconductor layer (23).

    An upper insulating layer (35) with openings (35a) and (35b) is formed on the current spreading layer (33). Pads (37a) and (37b) are formed on the upper insulating layer, wherein the first pad (37a) is connected to the current propagation layer (33) via the openings (35a) and the second pad (37b) is connected to the reflective electrodes via the openings (35b).

The contested embodiment

22. Viosys claims that the SMART.5 32 GB smartphone manufactured by emporia telecom GmbH + Co KG (Austria) and distributed by expert contains a single LED chip (which is installed in connection with the camera module of this smartphone) that infringes the patent.

Background to the proceedings and contested decision

23. Viosys filed an infringement action with the Düsseldorf local division of the UPC (hereinafter: LKD).
24. expert klein filed a counterclaim for revocation together with its statement of defence. Viosys then requested an amendment to the patent based on several auxiliary requests.
25. In the contested decision, the LKD found that claim 1 contained an inadmissible extension because it covered (only) LEDs with a mesa, whereas the earlier application disclosed only LEDs with multiple mesas. In its decision, the Court of First Instance (A) declared the patent invalid for the territories, (B) rejected the applications for amendment of the patent, (C) dismissed the infringement action and (D) ordered Viosys to pay the costs of the proceedings. Furthermore, the value in dispute for each of the claims was set at EUR 500,000 (E) and the upper limit of the reimbursable representation costs for each of the claims was set at EUR 56,000 (F).
26. Viosys lodged an appeal within the time limit.

SUMMARY OF THE PARTIES' APPLICATIONS:

27. In its notice of appeal, Viosys requests that parts (A) to (D) of the contested decision be set aside. In the proceedings concerning the action for annulment (counterclaim by expert), Viosys requests that the requested declaration of invalidity be dismissed in its entirety or, in the alternative, that the patent be maintained in accordance with one of the auxiliary requests 1 to 10. In the proceedings concerning the infringement action, Viosys requests that its applications before the LKD be upheld in full or, in the alternative, on the basis of an auxiliary application deemed admissible by the Court of Appeal. Viosys requests that each expert company bear half of the costs of the infringement action and that expert klein bear the costs of the counterclaim for revocation, in each case for the proceedings in both instances.
28. expert requests that the appeal be dismissed.

SUMMARY OF THE PARTIES' SUBMISSIONS

29. Viosys argues that the Court of First Instance wrongly found that claim 1 contained an inadmissible extension. It argues that the patent is valid and that independent claim 1 and the dependent claims of the patent are infringed by expert. Furthermore, the patent is not lacking in novelty or inventive step, as expert further claims. Viosys relies on its auxiliary requests in case the Court of Appeal should consider the patent invalid on any of these grounds.
30. In expert's view, the decision of the GEI is correct. Should the Court of Appeal come to a different conclusion, it relies on its further attacks against the validity of the patent, which are based on inadmissible extension, lack of novelty and lack of inventive step. expert also disputes Viosys' claim that the patent is infringed.

REASONS FOR THE DECISION

Skilled person

31. It is undisputed that the relevant skilled person is a graduate engineer or a person with a master's degree in electrical engineering or semiconductor physics from a university of applied sciences who has several years of professional experience in the development of light-emitting diodes (LEDs) and methods for their manufacture.

Interpretation of the claims

32. For the sake of simplicity, the features of claim 1 can be broken down as follows:

1. A **light-emitting diode** comprising:	1. **Light-emitting diode** comprising
1.1 a first conductivity type semiconductor layer (110)	1.1 a semiconductor layer (110) of a first conductivity type;
1.2 a mesa;	1.2. a mesa;
1.3 a reflective electrode (140);	1.3. a reflective electrode (140);
1.4 a current spreading layer (210);	1.4. a current spreading layer (210);
1.5 a lower insulation layer (200);	1.5. a lower insulation layer (200);
1.6 an upper insulation layer (220);	1.6. an upper insulation layer (220);
2. the **first conductivity type semiconductor layer** (110)	2. **The semiconductor layer (110) of a first conductivity type**
2.1 is formed on a substrate (100);	2.1. is formed on a substrate (100);
2.2 is exposed in mesa-etched areas (150) through the lower insulation layer (200) including at an edge of the substrate (100).	2.2. extends through the etched areas (150) through the lower insulating layer (200), including at an edge of the substrate (100).
3. the **Mesa**	3. The **mesa**
3.1 is disposed on the first conductivity type semiconductor layer (110);	3.1. is ordered on the first conductivity type semiconductor layer (110);
3.2 comprises an active layer (120) and a second conductivity type semiconductor layer (130).	3.2 comprises an active layer (120) and a second conductivity type semiconductor layer (130). conductivity type.
4. **the reflective electrode** (140)	4. the **reflective electrode** (140)
4.1 is disposed on the mesa and	4.1. is ordered on the mesa and
4.2 is configured to be in ohmic contact with the second conductivity type semiconductor layer (130).	4.2. arranged so that they are in ohmic contact with the semiconductor layer (130) of the second conductivity type.
5. the current spreading layer (210)	5. the **current spreading layer** (210)
5.1 is disposed on the mesa and the reflective electrode (140);	5.1 is disposed in the order on the mesa and the reflective electrode (140);
5.2 comprises a first portion configured to be in ohmic contact with an upper surface of an end portion of the first conductivity type semiconductor layer (110).	5.2 comprises a first portion configured to be in ohmic contact with an upper surface of an end portion of the first conductivity type semiconductor layer (110). conductivity type.
6. **the lower insulation layer** (200)	6. the **lower insulation layer** (200)
6.1 disposed between the mesa and the current spreading layer (210) as well as the reflective electrode (140) and the current spreading layer (210), and	6.1. is arranged between the mesa and the current spreading layer (210) as well as the reflective electrode (140) and the current spreading layer (210) and
6.2 is configured to insulate the current spreading layer (210) from the mesa and the reflective electrode (140).	6.2 is configured to insulate the current spreading layer (210) from the mesa and the reflective electrode (140). .
7. the **upper insulation layer** (220)	7. the **upper insulation layer** (220)
7.1 covering the current spreading layer (210),	7.1 covering the current spreading layer (210);
7.2 comprising a first hole exposing a second portion of the current spreading layer (210) that is disposed on an upper portion of the mesa.	7.2 comprising a first hole exposing a second portion of the current spreading layer (210) that is disposed on an upper portion of the mesa. mesa.

33. The principles applicable to the interpretation of claims were set out in this Court's order in Case UPC_CoA_335/2023 (*NanoString v 10x Genomics*, Headnote 2, corrected). The patent claim is not only the starting point, but also the decisive basis for determining the scope of protection of a European patent under Article 69 EPC in conjunction with the Protocol on the Interpretation of Article 69 EPC. The interpretation of a patent claim does not depend solely on its exact wording in the linguistic sense. Rather, the description and drawings must always be consulted as aids to interpreting the patent claim and not only to resolve any ambiguities in the patent claim.

The subject matter of the invention

34. In flip-chip type LEDs, the contact electrodes of the first and second semiconductor layers are each arranged on the rear side of the chip, while light is emitted from the LED on the opposite side of the chip. The first electrical contact point is located in the mesa-etched areas (i.e. outside the mesa), where the current propagation layer is electrically connected to the exposed first semiconductor layer. The second contact point is the reflective electrode located on the mesa. The current supplied to the first pad connected to the current spreading layer causes a lateral current flow in the first semiconductor layer from the exposed areas of the first semiconductor layer in the mesa-etched areas through the active layer in the respective mesa where light generation takes place and through the second semiconductor layer to the reflective electrode connected to the second pad. This lateral current flow causes problems with the uniform distribution of electrical current across the entire surface of the active layer, i.e. the lateral extension of the mesa. This is because light emission is proportional to the current flow in the active layer, which in turn can vary depending on the path taken by the current due to the ohmic resistance of the various conductive components of the LED. Uneven current distribution leads to uneven light emission, reduced efficiency, local overheating and a shortened LED lifetime.
35. The aim of the invention is to improve the current propagation and light output of (in particular flip-chip) LEDs.

Features 1.2 and 3 – a mesa

36. The parties disagree on the interpretation of several features, including the meaning of the term "a mesa" (feature 1.2 and feature 3) – in particular, whether this also includes multiple mesas.
37. The LKD correctly noted that the term "mesa" is not defined in the patent specification. The LKD uses the definition proposed by Viosys, according to which the term "mesa" in the field of LED technology describes a structure or topography on the surface of the semiconductor material in the form of a raised area formed by etching. The Court of Appeal also applies this definition, but points out that it cannot be inferred from this that if the etched areas are hole-like and thus form a contiguous area with etched holes, this automatically means that only one "mesa" is present.
38. This follows from the fact that, as the parties unanimously emphasised in the oral proceedings, it is common knowledge among those skilled in the art that in LED technology, the number of mesas and the number of electrodes must match, i.e. there must always be one electrode per mesa. Common sense dictates that if and to the extent that

several electrodes are ordered on a contiguous surface, it can be assumed that this embodiment has a number of mesas corresponding to the number of electrodes.

39. The LKD took the view that claim 1 was limited to one mesa, basing its opinion on the use of the singular in feature 4.1, according to which the reflective electrode is to be ordered on the mesa. However, the Court of Appeal agrees with Viosys that "the mesa" in feature 4.1 merely means that the (at least one) reflective electrode is ordered on the (at least one) mesa.
40. Viosys also rightly points out that the word "comprehensive" at the beginning of claim 1 suggests that the LED may have other elements, such as additional mesas with additional electrodes. The skilled person will certainly infer this possibility from the patent specification, which refers throughout to "mesas" and "a plurality of mesas".
41. The Court of Appeal therefore considers that "one" mesa is to be regarded as indefinite within the meaning of "at least one" and that the term "one mesa" in the patent claim refers to the presence of *at least* one mesa and thus also encompasses embodiments with multiple mesas.

Other features

42. The parties also disagree on the interpretation of other features, such as feature 2.2 in conjunction with feature 5.2, in particular on the meaning of "at one edge", as well as on the properties of the current propagation layer of feature 5. However, the interpretation of further features of claim 1 is not decisive for the outcome of the present proceedings, so that the Board of Appeal disregards this.

Inadmissible extension

43. First, the Court of Appeal examines the main ground for Viosys' appeal, i.e. whether the EPO was correct in finding that the patent is invalid due to an inadmissible extension, since the earlier application does not disclose an LED with only one mesa.

Principles

44. An impermissible extension of the subject matter exists if the subject matter of the granted claim extends beyond the content of the application as originally filed. In order to determine this, the court must first ascertain what information a person skilled in the art, based on an objective assessment and referring to the filing date, would immediately and unambiguously derive from the entirety of the application as filed, using their general technical knowledge. In doing so, implicitly disclosed subject matter must also be considered part of its content, i.e. subject matter that clearly and unambiguously follows from what is expressly stated.
45. If, as in this case, the patent has been derived from a divisional application, this requirement applies to each earlier application. The subject matter of the granted claim 1 must therefore not go beyond
(1) the disclosure of the originally filed application for the patent at issue and (2) the disclosure of the original PCT application which entered the regional phase and constitutes the earlier application of the divisional application.

Disclosure of a single mesa – procedural objections

46. The LKD concluded that the earlier application did not disclose an embodiment with a mesa. The LKD found that, with regard to the embodiments of Figures 6 to 11, 13 to 18 and 19 to 23 in the earlier application, there was consistent reference to "a plurality of mesas" and

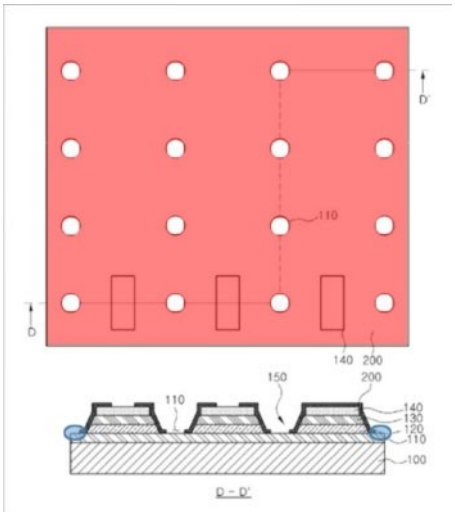
(reflective) electrodes in the plural. With regard to the embodiment shown in Figures 24 to 26, the term "mesa" is not mentioned in the earlier application, but here too, reference is made throughout to **electrodes** in the plural (e.g. **"each of the** reflective electrodes" or "**two** reflective electrodes"). Based on Viosys' own undisputed submission that it is common knowledge among those skilled in the art that each mesa is equipped with an electrode, the GEI concluded that those skilled in the art would understand Figures 24 to 26 as showing more than one mesa.

47. The Court of Appeal rejects Viosys' procedural objection that the LKD raised this view independently and without notice for the first time at the oral hearing and that Viosys should have been given the opportunity to respond to it in writing prior to the oral hearing.
48. The strict correlation between the number of mesas and the number of electrodes was expressly addressed by Viosys. It is a matter of common sense to conclude from the presence of multiple electrodes that there must therefore be multiple mesas. Although Viosys emphasised (grounds for appeal, paras. 53, 58) that a person skilled in the art would recognise that a mesa is always covered by a reflective electrode, it argued that the LKD had wrongly found on this basis that several mesas were disclosed in Figure 24. The Court of Appeal does not see, and Viosys has not explained, let alone substantiated – for example, by submitting an expert opinion – why the above-mentioned interpretation of the earlier application by the LKD should be "technically absurd", as Viosys claims. The resulting configuration may be suboptimal, as Viosys claims, but that does not make it "technically absurd".
49. Regardless of the general technical knowledge of the skilled person, they would have understood from the earlier application that there would be a mesa for each electrode. This is evident from page 3 (Annex B4; page 4, Annex BK3'), where it is stated under the heading 'Technical solution' that, according to one aspect of the invention, an LED comprises reflective electrodes, each of which is arranged on the corresponding mesa area (underlining added). In examining expert klein's claim of inadmissible extension based on the assertion that the skilled person cannot infer from the earlier application that an LED has only one mesa, the court may, on its own initiative, conclude that the skilled person cannot infer from the earlier application that an LED has only one mesa. This is to be determined on the basis of the skilled person's understanding when reading the earlier application (as presented by expert klein) in its entirety. The court finds that the translations (B4 and BK3) of the earlier application (BK1) appealed by the parties do not differ with regard to the above-quoted statement under the heading "Technical Solution" and can therefore consider the above-quoted statement to be a correct reproduction of the corresponding part of the Korean earlier application (BK1). Contrary to Viosys's assertion, there is no violation of Article 76 of the UPC Agreement.
50. Viosys was given the opportunity at the oral proceedings to address the logical consequence of its own argument. Contrary to Viosys's assertion, a party does not have the right to respond to a question or argument *in writing*. For the same reasons, the decision of the LKD, which is based on this argument and was expressly discussed at the oral proceedings, cannot come as a surprise to Viosys.

Disclosure of a single mesa in the embodiment shown in Figures 24 to 26?

51. Viosys disputes the LKD's finding that the earlier application does not disclose a single mesa. Viosys concedes that the embodiments in Figures 2 to 11 and Figures 13 to 23 disclose LEDs with multiple mesas. However, it argues that a single mesa is part of the

disclosure of the earlier application, since the further embodiment of Figures 24 to 26 contains only a single mesa. In Viosys' view, the LED chip shown in Figures 24 to 26 has only a single plateau, a uniformly raised area. Several hole-like mesa-etched areas have been etched into this area in a rectangular pattern, as described on page 22, paragraph 6 of the earlier application. In Viosys' view, the red area in Figure 24, commented on below, therefore shows the single mesa:



52. The interpretation proposed by Viosys is in direct contradiction to its claimed general expertise and the understanding of the skilled person when looking at these figures and reading the earlier application in its entirety. As mentioned above (para. 49), the skilled person understands from page 3 of the earlier application that each electrode corresponds to a mesa, i.e. there is a corresponding mesa for each electrode.
53. On page 22 of B4, it is stated that Figures 24 to 26 are top views and sectional views of a light-emitting diode module with the structure of Figure 12 according to a fourth embodiment of the invention. The application mentions that in Figure 24, a lower figure is a sectional view along line D-D' of the top view of Figure 24, wherein line D-D' is interrupted along a dashed line and shows only a continuous line section. It is then explained that in some areas the reflective electrodes 140 are exposed, in the message-etched areas 150 the first semiconductor layer 110 is exposed, and furthermore, that in an area where the reflective electrodes 140 are not exposed, the lower insulating layer 200 completely shields the reflective electrodes 140. In the paragraph spanning pages 22 and 23, it is mentioned that in the sectional view along line D-D', two reflective electrodes 140 are exposed in an area that intersects the two exposed reflective electrodes 140 (underlining added).
54. When viewing Figures 24 to 26 against the background of this description, the skilled person will recognise that the embodiment of Figures 24 to 26 has several electrodes. Based on the application, which describes both exposed and covered reflective electrodes, the skilled person will understand, in combination with the cross-sectional view in Figure 24, that this cross-sectional view shows two exposed electrodes and a third electrode that is completely covered by the lower insulating layer 200. Since the number of electrodes indicates the number of mesas, the skilled person will recognise that the embodiment of Figures 24 to 26 has multiple – three – mesas.
55. This understanding is confirmed by the similarity of the sectional view in Fig. 24 compared to the sectional views in Figs. 9, 10, 19, 20, 21 and 23 (Figs. 9, 20, 21 and 23 are not shown here, but are similar in this respect to the sectional views in Figs. 10 and 19). It is undisputed that these figures show three mesas. Since there is no indication in the patent specification

that the sectional view in Fig. 24 shows only one mesa despite the similarity, a person skilled in the art would understand this figure to also show the presence of three mesas.

56. The fact that it would be technically possible to manufacture an LED with mesa-etched holes and only one electrode and a corresponding mesa, as Viosys has explained, does not alter the fact that such an LED (regardless of whether it would disclose the other features of claim 1 of the patent) has not been disclosed in the earlier application.
57. For the reasons stated above, the skilled person understands the embodiment of Figures 24 to 26 to have three reflective electrodes. Since Viosys expressly states that the skilled person always assumes one electrode per mesa (paragraphs 53, 58 of the appeal statement), it follows that the skilled person assumes three mesas. Even if it may be inaccurate that the small rectangular areas in Figure 24 with reference number 140 do not represent the actual size of the reflective electrodes, but rather the size of the opening in the lower insulating layer that exposes the reflective electrodes, as Viosys has argued, this does not alter the fact that the skilled person understands that each of these openings exposes a separate reflective electrode.
58. Viosys has argued that such a configuration would be suboptimal in terms of performance and efficiency. However, the Court of Appeal cannot accept that the skilled person would assume that there is only one Mesa for this reason, as Viosys contends. There is insufficient evidence in the earlier application and insufficient substantiation by Viosys to assume that the skilled person, based solely on his general knowledge and the general purpose of the invention (improvement of current spread and light yield), would nevertheless understand that the embodiment of Figures 24 to 26 has a single mesa, contrary to the explicit reference to two exposed electrodes (and, as the skilled person will understand, the presence of a further electrode (hidden in the sectional view)), the embodiment of Figures 24 to 26 has a single mesa. Contrary to Viosys's assertion, the mere fact that the embodiment of Figures 24 to 26 is based on the same manufacturing steps as those described for Figures 13 to 18 is not an indication of a single-mesa embodiment. This is because it is undisputed that the embodiments of these figures contain three reflective electrodes.
59. It follows that Figures 24 to 26 of the earlier application do not contain a clear and unambiguous disclosure of a single mesa embodiment.

Relevance of the earlier Korean-language application

60. Pursuant to Art. 138(1)(c) EPC, a European patent shall be declared invalid if the subject-matter of the European patent extends beyond the content of the application as originally filed or, if (as in the present case) the patent is based on a divisional application, beyond the content of the earlier application as originally filed. Since the earlier application in the present case (BK1) is the regional phase of an international application which, under Art. 153(2) EPC, corresponds to a regular European application (Euro-PCT application), the (Korean-language) international application is "the earlier application" within the meaning of Art. 138(1) (c) EPC.
61. If, as in the present case, the international application is not written in one of the official languages of the European Patent Office (EPO), the content of the earlier application is determined primarily on the basis of a translation. Annex B4 is such a translation. It is undisputed that Annex B4 is the translation of the earlier application submitted by the patent applicant in accordance with Art. 153(4) and R. 159(1)(a) EPC.
62. Contrary to Viosys's view, this is not a purely formal or procedural requirement and does not serve only procedural purposes (grounds of appeal, page 20, para. 66). With this translation, the applicant submits to the EPO

the application documents in the language of the proceedings. On this basis, the EPO examines the (basic) application and, in the event of changes to the application documents, assesses whether these changes comply with Art. 123(2) EPC. Since it is in the applicant's own interest that the examination be based on the true content of the (basic) application, it can be assumed prima facie that a translation submitted by the patent applicant himself

– such as the one in Annex B4 – truthfully reflects the content of the international application in the language of the proceedings of the earlier application. The LKD could therefore rely prima facie on Annex B4 when examining expert klein's claim of inadmissible extension, especially since Viosys' Korean PCT application was only submitted at the appeal stage (BK1) and was therefore not part of the proceedings before the LKD. With regard to the use of Annex B4 in the proceedings, the Court of Appeal notes that Viosys also only used Annex B4 (which Viosys referred to as "B5" in its rejoinder of 27 June 2024 due to an obvious clerical error) in the written procedure at first instance when it argued against expert klein's claim of inadmissible extension.

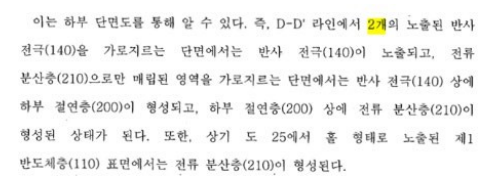
63. It follows that third parties (such as expert klein) and the court may rely on the translation of the application submitted by the patent proprietor to the EPO and published by it when assessing the inadmissible extension. If the patent proprietor claims that this translation (B4) is incorrect, it must prove the inaccuracy. Since expert klein has demonstrated and substantiated that the subject matter of the patent extends beyond the content of the earlier application based on B4, the court considers that the burden of proof now lies with Viosys. Viosys must prove that the translation is incorrect and that, based on the correct translation, the subject matter of the patent does not extend beyond the content of the earlier application. In the court's opinion, this burden of proof is not satisfied by merely submitting BK3 and claiming that it is a correct translation. In order to refute the patent applicant's earlier translation from the earlier application (Exhibit B4), Viosys could have been expected to submit an expert opinion on the peculiarities of the Korean language, particularly with regard to expert klein, who disputes that BK3 is a correct translation.
64. Furthermore, Viosys' arguments are not convincing. They do not show why BK3 better reflects the content of the earlier application BK1 than B4.
65. On page 31, line 19 of the Korean application, the number "2" is combined with the noun "reflective electrode" in the singular. As Viosys concedes, this inconsistency cannot be translated grammatically correctly. Viosys argues that the "closest" translation is "two parts of the reflective electrode 140". On the basis of this translation (submitted as BK3) and the general technical knowledge that there can only be one mesa for each electrode, Viosys argues that Figure 24 discloses an embodiment with only one mesa and that the earlier application should also be read in this way.
66. The Court of Appeal agrees with expert klein that, for the reasons stated above in connection with the assessment based on B4 and the sectional view in Figure 24, a person skilled in the art reading BK1 as a whole would not assume that the (Arabic) numeral 2 is incorrect, as suggested by Viosys, but would rather understand that the word

"electrode" in Korean is to be understood as an indication of the plural. This is reinforced by the fact that the earlier application refers not only to two exposed electrodes in Figure 24, but also to electrodes completely covered by the lower insulating layer. In view of this, the skilled person understands that the sectional view in Figure 24 shows such a covered reflective electrode in addition to the two exposed reflective electrodes explicitly mentioned.
67. There is nothing in BK1 that would lead an expert reading "2 reflective electrodes" to assume that the singular is meant. Although the two paragraphs on page 31, lines

3 to 9 of BK1 use the term "reflective electrode" in the singular, whereas in Annex B4 the plural is used (page 22, paragraph 9: *"In some areas, the reflective electrodes 140 are exposed, and in the mesa-etched areas 150, the first semiconductor layer 110 is exposed. Further, in a region where the reflective electrodes 140 are not exposed, the lower insulating layer 200 completely shields the reflective electrodes 140").* However, the use of the singular in this paragraph does not necessarily lead the skilled person to understand that there is only one mesa. It can also, and indeed quite readily, be understood that there are separate reflective electrodes, some of which are exposed and others covered. Since this is what the skilled person infers from the sectional view of Figure 24, they will adopt the latter interpretation. As explained above, the fact that a configuration with more than one electrode (and thus more than one mesa) is suboptimal in terms of performance and efficiency does not change this.

68. Furthermore, the comparison of BK3 and B4, as well as the differences highlighted by Viosys based on BK3', show that the changes proposed by Viosys with regard to the translation of lines 19 to 24 on page 31 of BK1, which refer to Figure 24, are identical to the translation of lines 14 to 21 on page 28, which refer to the embodiment of Figs. 19 and 20, which (undisputedly) shows an embodiment with 3 mesas and thus 3 electrodes. The relevant text passage from BK1 and the proposed translation from BK3 are reproduced below:

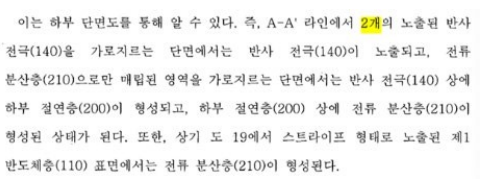
Page 31, lines 19 to 24:



이는 하부 단면도를 통해 알 수 있다. 즉, D-D' 라인에서 2개의 노출된 반사 전극(140)을 가로지르는 단면에서는 반사 전극(140)이 노출되고, 전류 분산층(210)으로만 매립된 영역을 가로지르는 단면에서는 반사 전극(140) 상에 하부 절연층(200)이 형성되고, 하부 절연층(200) 상에 전류 분산층(210)이 형성된 상태가 된다. 또한, 상기 도 25에서 홀 형태로 노출된 제1 반도체층(110) 표면에서는 전류 분산층(210)이 형성된다.

~~This can be confirmed through a lower sectional view.~~ This can be confirmed through a lower sectional view. Specifically, in the sectional view taken along line D-D', two parts of the reflective ~~electrodes~~electrode 140 are exposed in ~~a portion intersecting~~portions where the line D-D' intersects the two exposed parts of the reflective ~~electrodes~~electrode 140, ~~and in a portion taken along line intersecting a region buried only by the incurrent spreading layer 210,~~while the lower insulation layer 200 is formed on the reflective ~~electrodes~~electrode 140 and the current spreading layer 210 is formed on the lower insulation layer 200 in a portion where the line D-D' intersects a region buried by the current spreading layer 210. Further, in Figure 25, the current spreading layer 210 is formed on the surface of the first semiconductor layer 110 exposed in a hole shape.

Page 28, lines 14 to 21:



이는 하부 단면도를 통해 알 수 있다. 즉, A-A' 라인에서 2개의 노출된 반사 전극(140)을 가로지르는 단면에서는 반사 전극(140)이 노출되고, 전류 분산층(210)으로만 매립된 영역을 가로지르는 단면에서는 반사 전극(140) 상에 하부 절연층(200)이 형성되고, 하부 절연층(200) 상에 전류 분산층(210)이 형성된 상태가 된다. 또한, 상기 도 19에서 스트라이프 형태로 노출된 제1 반도체층(110) 표면에서는 전류 분산층(210)이 형성된다.

This can be confirmed through a lower sectional view. ~~This can be confirmed through a lower sectional view.~~ Specifically, in the sectional view taken along line A-A', two parts of the reflective ~~electrodes~~electrode 140 are exposed in a portion intersecting the two exposed parts of the reflective ~~electrodes~~electrode 140, and in a portion taken along a line intersecting a region buried only by the incurrent spreading layer 210, the lower insulation layer 200 is formed on the reflective ~~electrodes~~electrode 140 and the current spreading layer 210 is formed on the lower insulation layer 200 . Further, in Figure 19, the current spreading layer 210 is formed on the surface of the first semiconductor layer 110 exposed in a stripe shape.

69. Viosys essentially argues that the skilled person, based solely on the use of the phrase "two parts of the reflective electrode" (or rather, the Korean equivalent) in the context of Fig. 24, the skilled person would recognise that Fig. 24 refers to an embodiment with one electrode and thus one mesa. However, the Court of Appeal cannot see how the skilled person could infer from the use of a phrase (the Korean equivalent of Viosys's translation of "two parts of the reflective electrode") that the LED shown in Fig. 24 has only one electrode. In the same document, this wording is also used to describe an LED with multiple mesas and thus multiple electrodes. This is all the more true in view of the similar sectional views of the two embodiments, as already mentioned in paragraph 55 above. It follows that the skilled person would understand the inconsistent wording "2 reflective electrodes" as "2 reflective electrodes". Even if the skilled person had doubts, there is no clear and unambiguous disclosure of an embodiment with only one mesa in the earlier application.

Cutting method

70. As a second line of argument that the earlier application also discloses embodiments with only one mesa, Viosys refers to page 12 of the earlier application and claims that in the embodiment of Figure 10, several strip-shaped mesas are initially provided and that, after applying pads 37a, 37b are applied, the chip is split between the mesas and divided into several individual LEDs, ultimately resulting in LEDs with only one mesa.
71. The relevant paragraph reads: "Thereafter, the substrate 21 is divided into individual light emitting diode chips, thereby providing final light emitting diodes."
72. This argument is also invalid. Contrary to what Viosys claims, this paragraph does not state that "the chip is split between the mesas". The earlier application does not provide any indication of how the cutting process works, let alone that it works in such a way that the resulting individual LEDs each consist of only one mesa. On the contrary, the immediately following paragraphs describe a single LED (diode in the singular) comprising "the mesas M" or "the plurality of mesas M" or "each of the mesas M". The skilled person will therefore understand that the cutting process results in individual LEDs, each containing more than one mesa.
73. The Court of Appeal could not find a single reference in the earlier application to an LED with only one mesa that could support Viosys's argument that the cutting process would result in an LED with one mesa. In the absence of a clear reference to this effect in the earlier application and substantiation by Viosys — for example, through a party-appointed expert opinion — showing that the skilled person would necessarily assume that the cutting process would result in an LED with a single mesa, the mere theoretical possibility that an LED with a single mesa could be created is not sufficient to constitute a clear and unambiguous disclosure.

An embodiment not shown in the figures

74. Viosys further claimed that the earlier application discloses a further embodiment corresponding to Figures 12 to 23, which is not shown in the figures, with hole-shaped mesa-etched areas as an alternative to the strip shape shown in the figures, resulting in a single continuous mesa. However, this is not the understanding of the skilled person, who, upon reading the entire document, will find that this alternative is in fact depicted in Figures 24 to 26 for the following reasons.
75. With regard to the embodiment of Figures 24 to 26, the earlier application states the following on page 22, paragraphs 5 and 6:
    *"Figures 24 to 26 are plan views and sectional views of a light-emitting diode module having the structure of Figure 12 in accordance with a fourth embodiment of the invention. Referring to Figure 24, in this embodiment, mesa-etched areas 150 of Figure 18 are formed in a hole type. Accordingly, a first semiconductor layer 110 is exposed in a substantially circular shape" (*underlining added).
76. The reference to Figure 18 is understood by the skilled person here as a cross-reference to the paragraph spanning pages 16 and 17. This paragraph describes the etching process in relation to the embodiments of Figures 13–18. It also mentions that the mesage-etched areas may be strip-like or hole-like:
    "Referring to Figure 14, part of the active layer 120 and part of the second semiconductor layer 130 are removed by typical etching. As a result, the first semiconductor layer 110 is partially exposed. Through the etching process, an upper surface of the first semiconductor layer 110 is exposed, and side surfaces of the active layer 120 and the second semiconductor layer 130 are exposed. As a result, the active layer

120 and the second semiconductor layer 130 are partially removed to form trenches and holes through the etching process. In other words, the mesa-etched areas 150 formed from the surface of the second semiconductor layer 130 of Figure 13 to the surface of the first semiconductor layer 110 may be a trench-shaped stripe type or a hole type."

77. With reference to Figure 18, this is repeated on page 19, paragraph 4: "*As described above, the mesa-etched areas 150 may be formed in a stripe type or hole type."*
78. The earlier application then describes the embodiments of Figures 19 to 23 and 24 to 26, which show examples of stripe-shaped and hole-shaped mesa-etched areas, respectively, as is clear from the references to Figure 18 in each case. Page 20, paragraphs 1 and 2 state:
    "Figures 19 to 23 are plan views and sectional views illustrating a method of manufacturing the light-emitting diode having the structure of Figure 12 in accordance with another embodiment of the present invention. Referring to Figure 19, it is assumed that the mesa-etched areas 150 of Figure 18 have a stripe shape. (...)" (underlining added).
    A similar statement is made for Figures 24-26, as quoted above in paragraph 75.
79. Therefore, an embodiment with a mesa does not result from the disclosure of an embodiment that is not shown in the figures.

Figure 12

80. For the sake of completeness, the Court of Appeal also points out that Fig. 12 cannot be the disclosure of an embodiment with a single mesa, as the earlier application clearly states that it is only a *partial view* (see pages 7 and 14, (para. 5) of the earlier application).

Conclusion on impermissible extension

81. The Court of Appeal concludes that the LKD's finding that a claim directed to an LED with only one mesa goes beyond the content of the earlier application is correct.

Subsidiary requests

82. The auxiliary requests all relate to embodiments with a single mesa and therefore cannot lead to a legally valid claim. It is therefore not necessary to discuss them.

Further grounds for invalidity

83. The further grounds for invalidity put forward by expert klein, its defence against the alleged infringement by expert, and Viosys's responses to these do not need to be discussed.

Infringement action

84. In view of the invalidity of the patent, there is no need to decide on the alleged infringement of the patent by the contested embodiment.

Conclusion

85. The conclusion from the above is that the patent is invalid due to impermissible extension. None of the grounds for appeal lead to a different conclusion. The appeal must therefore be dismissed.

Costs

86. Viosys is to be regarded as the unsuccessful party in the appeal proceedings. It shall bear the costs of the appeal proceedings, both for the counterclaim for annulment and for the infringement action.

DECISION

In the counterclaim for annulment and in the infringement action: The

Court of Appeal

- dismisses the appeal;
- orders Viosys to bear the costs of the appeal proceedings.

Issued on 5 November 2025

Rian Kalden, Presiding Judge and Rapporteur

Patricia Rombach, legally qualified judge

Ingeborg Simonsson, legally qualified judge

Torsten Duhme, technically qualified judge

Max Tilmann, technically qualified judge