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**Datasheet for the decision  
of 10 December 2024**

**Case Number:** T 0325/23 - 3.4.02

**Application Number:** 14765996.5

**Publication Number:** 3017520

**IPC:** H02J3/38, H01L31/00, H01L25/00,  
H01L27/00, H01L31/02

**Language of the proceedings:** EN

**Title of invention:**  
Solar cell assembly

**Patent Proprietor:**  
REC Solar Pte. Ltd.

**Opponents:**  
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Kimpfbeck, Thomas  
SOLARWATT GmbH  
Hanwha Solutions Corporation  
Hoffmann Eitle Patent- und Rechtsanwälte  
Partnerschaftsgesellschaft mbB

**Relevant legal provisions:**  
EPC Art. 100(c), 123(2), 123(3)  
RPBA 2020 Art. 12(6)

**Keyword:**

Grounds for opposition - added subject-matter - main request  
(yes)

Amendments - added subject-matter - auxiliary requests IA, IB  
and I to XXIII (yes) - extension of the protection conferred -  
auxiliary request IC (yes)

Late-filed request - circumstances of appeal case justify  
admittance - auxiliary request IC (yes)



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**Boards of Appeal**  
**Chambres de recours**

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Case Number: T 0325/23 - 3.4.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.4.02**  
**of 10 December 2024**

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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted on 15 December  
2022 revoking European patent No. 3017520  
pursuant to Article 101(3) (b) EPC.

**Composition of the Board:**

**Chairwoman** C.D. Vassoille  
**Members:** H. Bronold  
P. Guntz

## **Summary of Facts and Submissions**

- I. The appeal of the patent proprietor (appellant) is against the decision of the opposition division to revoke European patent number 3 017 520.
- II. The opposition division arrived at the conclusion that Article 100(c) EPC prejudiced the maintenance of the patent as granted. It further concluded that auxiliary requests IA and I to XXIII were not suitable to overcome the objection under Article 100(c) EPC against the main request.
- III. The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained as granted after remittal to the opposition division (main request), or, in the alternative, that the patent be maintained in amended form according to one of their auxiliary requests IA, IB, IC and I to XXIII after remittal to the opposition division, all requests as filed with the statement setting out the grounds of appeal.
- IV. Respondent 1 (opponent 1) requested that the appeal be dismissed.  
  
Respondent 2 (opponent 2) requested that the appeal be dismissed and that the case not be remitted to the opposition division in any event.  
  
Respondent 3 (opponent 3) requested that the appeal be dismissed or, in the alternative, that the case be remitted to the opposition division for further examination.

Respondent 4 (opponent 4) requested that the appeal be rejected as inadmissible or, in the alternative, that the appeal be dismissed or that the case be remitted to the opposition division for further prosecution.

Respondent 5 (opponent 5) did not file any substantive submission during the appeal proceedings.

V. Claim 1 according to the main request (patent as granted) reads as follows:

"A solar cell assembly comprising:  
two or more solar cell units coupled in series, wherein each solar cell unit comprises a first solar cell series and a second solar cell series coupled in parallel, characterized in that the first and second solar cell series each including a plurality of half-cut solar cells connecting in series respectively; and a by-pass diode coupled to each solar cell unit, wherein the by-pass diode is coupled in parallel with the first solar cell series and second solar cell series respectively,  
a plurality of junction boxes, each junction box comprising exactly one of the by-pass diodes, wherein the solar cell assembly is a solar cell module or a portion of a solar cell module,  
wherein the solar cell series are coupled with the by-pass diodes via cross-connectors, the cross-connectors of all the solar cell units being combined as a single row central cross-connector assembly that is placed substantially in a centre line of the solar cell assembly, and  
wherein the junction boxes are placed substantially in a centre line of the solar cell assembly." (emphasis added by the Board for the feature referred to hereinafter as "feature (h)")

- VI. In a communication pursuant to Article 15(1) RPBA the Board indicated its preliminary opinion that the appeal was admissible and that the ground for opposition under Article 100(c) EPC prejudiced the maintenance of the patent as granted because feature (h) of claim 1 was not directly and unambiguously derivable from the original application. Regarding the auxiliary requests the Board was of the preliminary opinion that auxiliary requests IA and I to XXIII were not suitable to overcome the objection under Article 100(c) EPC against the main request. The Board was further inclined not to admit auxiliary requests IB and IC into the appeal proceedings.
- VII. Claim 1 according to auxiliary requests IA, IB and I to XXIII comprises feature (h) as emphasised above in claim 1 according to the main request in unamended form.
- VIII. In claim 1 according to auxiliary request IC "a single row" in feature (h) has been replaced by "one".
- IX. The parties' arguments which are of particular relevance for the decision are detailed below together with the reasons for the decision.

## **Reasons for the Decision**

### **Admissibility of the appeal - Article 108 EPC and Rule 99(2) EPC**

1. It was disputed whether the appeal is admissible.
2. Under Article 108, third sentence, EPC, the appeal has to be substantiated in accordance with the Implementing Regulations (Rule 99(2) EPC). Whether or not sufficient grounds relating to all requests are submitted, is immaterial for the purposes of the admissibility of the appeal, because the admissibility of an appeal can only be assessed as a whole. In other words, if the admissibility requirements of Article 108, third sentence, EPC are fulfilled in respect of at least one request, let alone of several requests, the appeal as a whole will be admissible (see T 509/07, T 1763/06, and Case Law of the Boards of Appeal, 10th edition 2022, V.A.2.6.3).
3. The Board notes in this context that the appellant in their statement setting out the grounds of appeal provided arguments why they consider the contested decision not to be correct with respect to the original disclosure for feature (h).
4. Therefore, the Board is satisfied that the appellant has sufficiently substantiated their appeal in the sense of Rule 99(2) EPC. Consequently, the Board concludes that the appeal is admissible pursuant to Article 108, third sentence, EPC.

**Main request**

Interpretation of feature (h)

5. The appellant argued that contrary to the opposition division's approach the file history should not be taken into account when assessing the original disclosure of a patent application. In particular, they argued that the fact that the then applicant had intended to limit claim 1 over prior art document D9 during the examination proceedings by the inclusion of the disputed term "single row" had no bearing on the assessment of the admissibility of the amendments during opposition proceedings or opposition appeal proceedings.
  
6. The Board agrees that in general there exists no *file wrapper estoppel* in proceedings under the EPC. A *file wrapper estoppel* is a concept in US patent law. It refers to the doctrine that the patent proprietor may be estopped from enforcing an interpretation of patent claims that is inconsistent with statements made during the patent prosecution process. This concept does not exist in the EPC. However, as argued by the respondents, the fact that the appellant had argued during the prosecution of the corresponding patent application that the limitation "single row" added to claim 1 was made in order to limit the subject-matter of claim 1 against prior art document D9 which disclosed "multiple rows", can be taken as an indication that a narrow interpretation of the term "single row" is at least not technically unreasonable. It is therefore appropriate, at a later stage of the proceedings, to follow such a narrow interpretation,

which had even been adopted by the appellant during earlier proceedings. Such an interpretation does not correspond to a "file wrapper estoppel" because it does not limit the interpretation of a certain feature to what was argued by the then applicant for all future proceedings. Rather, the consideration of such events in the file history is used to determine whether an interpretation is technically reasonable or not, without excluding other interpretations.

7. The Board thus agrees with the respondents and with the contested decision that a narrow interpretation of the disputed term "single row" is technically reasonable, without limiting the term to only this interpretation.
8. The opposition division on the one hand found that the assembly according to feature (h) could comprise multiple connectors arranged in a plurality of different lines - e.g. in three separate lines - such that the entire assembly takes a single row or area within the structure of the solar cell module. On the other hand the opposition division also found that another reasonable technical interpretation of the expression "single row" was a single connector line or a busbar. The appellant also argued that the term "single row" can encompass a single connector line as well as multiple connector lines. The Board thus considers the interpretation of the term "single row" as set out in section 3.12 of the contested decision plausible.

Multiple interpretations possible

9. However, the Board does not agree with the appellant's assumption that once an interpretation of a feature,

such as feature (h) in the present case, was determined, it could only be assessed whether this interpretation contravened Article 100(c) EPC. Other interpretations were, according to the appellant, no longer relevant for the assessment of the admissibility of amendments.

10. According to settled case law of the Boards of Appeal, all technically reasonable interpretations of an ambiguous claim have to be considered. If one of those interpretations contains matter that extends beyond the content of the application as originally filed, it has to be concluded that there is added subject-matter (Case Law of the Boards of Appeal, 10th Edition 2022, II.E.1.3.9e) ).
11. In the context of claim interpretation the appellant further argued that a non-specific definition in a claim should be given its broadest technically sensible meaning and referred *inter alia* to the Case Law of the Boards of Appeal in sections II.A.6.1 and I.C.4.1. According to the appellant, the broadest technically sensible meaning of "single row [sic] cross-connector assembly" coincided with "one central cross-connector assembly" such that there was no inadmissible amendment.
12. The Board disagrees. While it is true that according to the two latter citations of the Case Law of the Boards of Appeal a non-specific definition in a claim should be given its broadest technically sensible meaning, none of these citations refer to the interpretation of claims in the context of assessing the admissibility of amendments under Article 100(c) EPC or Article 123(2) EPC.

13. The Board therefore concludes that all technically reasonable interpretations of feature (h) have to be taken into account for the assessment under Article 100(c) EPC. Therefore, the Board concludes that it has to be assessed whether the possible interpretation of feature (h), according to which "single row" means a single connector line, was already encompassed by the content of the application as filed in accordance with Article 100(c) EPC.

Original disclosure for feature (h)

14. The appellant objects to the opposition division's conclusion that a single conductor line was not originally disclosed. With respect to the original disclosure for feature (h) the appellant presented two lines of argument which are dealt with in the following.
15. According to their first line of argument, the appellant essentially brought forward that original figures 2a, 3a and 3b and page 10 of the original description provided original disclosure for feature (h).
16. According to the appellant, the person skilled in the art learned from figure 2a that the embodiment shown in figure 2a has bypass diodes arranged in a central area of the solar module. Due to the fact that according to figure 2a a single junction box housed three bypass diodes, multiple cross-connectors had to be foreseen in the central area. However, the description of the embodiment according to figure 2a on page 10, second paragraph, contained explanations of variations of the embodiment shown in figure 2a. One variation was to

foresee an equal number of junction boxes and bypass diodes "in the centre line". The same paragraph also taught that other placements of the junction boxes which minimise the amount of cross-connectors may also be useful. When implementing the variations of the embodiment of figure 2a it was implicit for the person skilled in the art to arrange the cross-connectors to lie in a straight line, as this was for example shown in figures 3a and 3b. Therefore, the disputed feature (h) was implicitly disclosed in the application as originally filed and claim 1 did not contravene Article 100(c) EPC.

17. The Board is not convinced by the appellant's first line of argument. Even if it were to be assumed that a "single row central cross-connector assembly" as defined in claim 1 was disclosed by figure 2a and the first and second paragraph of page 10 of the original description in the sense of the above-mentioned narrow interpretation, the Board agrees with the respondents that the disputed feature still represents an inadmissible intermediate generalisation. The two paragraphs on page 10, which according to the appellant provide original disclosure for the disputed feature, describe the alternative embodiment consistently linked with two further limitations. Firstly, the junction boxes are not only "substantially placed in the centre line" but also "substantially equidistant from each other or edges" and secondly they are "placed substantially in the centre line of the rear side of the module" (emphasis added by the Board).
  
18. At least with respect to the placement of the junction boxes on the rear side of the module, feature (h) represents an intermediate generalisation. As brought forward by the respondents, the second paragraph on

page 10 mentions the "rear side" four times in its first eight lines of text. Therefore, it cannot be assumed that the "rear side" is not interlinked with the disputed feature of a "single row". In particular, the placement on the rear side is defined explicitly with respect to the centre line of the assembly or module. The corresponding wording of the second paragraph on page 10 reads

*"placed substantially in the centre line of the rear side"*

and is therefore directly linked to the placement in the centre line of the module.

Therefore at least the omission of "rear side" in claim 1 constitutes an inadmissible intermediate generalisation.

19. The appellant's second line of argument was directed to the overall disclosure of the application as filed.
20. The appellant essentially argued that throughout the original application the placement of the cross-connectors was presented as dependent on the placement of the bypass diodes only. The placement of the cross-connectors did not depend on the type of bypass diodes, be they placed in a junction box or fabricated in the laminate of the module. This already became clear from the structure of the originally filed claims. Of these, claims 9 to 12 dealt with bypass diodes placed in junction boxes and claims 13, 15 and 16 related to integrated (laminated) bypass diodes. However, claims 14 and 19 defined combinations of bypass diodes in junction boxes and integrated bypass diodes. It was thus clear that according to the overall disclosure of

the application as filed, the type of bypass diodes, be they in a junction box or integrated in the module, was independent of the placement of the bypass diodes. Therefore, according to the appellant, the person skilled in the art would implicitly have learned from figures 2a and 3a that the arrangement of bypass diodes shown in figure 3a was not limited to laminated bypass diodes but was meant to cover also bypass diodes placed in junction boxes. Thereby three junction boxes could be placed as shown in figure 3a which would result in a single row arrangement of the cross-connectors as defined in feature (h) in claim 1.

21. Moreover, the original description contained on page 4 a statement that *"it is to be understood that the features of the various embodiments described herein are not mutually exclusive and can exist in various combinations and permutations."* and on page 14 the statement that *"elements described in association with different embodiments may be combined"*.
22. Regarding the latter two citations of the description the Board agrees with the respondents that neither the citation of page 4 nor the one of page 14 constitute an unambiguous disclosure. They merely set out hypothetical possibilities without defining any respective technical content.
23. Regarding the remaining overall disclosure, the Board also finds the respondents' arguments persuasive. The respondents argued *inter alia* that even if it was assumed that the application as filed disclosed the arrangement of junction boxes in a single row as defined in claim 1 of the granted patent, this would still constitute an inadmissible intermediate generalisation because, as discussed above with respect

to the appellant's first line of argument, the "rear side" is still not defined in claim 1 and the appellant's arguments rely heavily on the second paragraph of page 10 which explicitly interlinks the "rear side" with the "centre line" and the placement of the junction boxes, which, even according to the appellant, determine the placement of the cross-connectors.

24. The further argument of the appellant that "single row" meant "one" wherein "row" was redundant to "centre line" does not convince the Board either. The term "a single row" defines a number in combination with a geometric appearance whereas "one" is just an undefined number.
  
25. The appellant's additional arguments against the pertinence of "rear side" for feature (h) do not convince the Board either. It is correct that the disputed feature (h) does not explicitly deal with the placement of junction boxes but that is neither the case for the second paragraph on page 10 of the application as filed, on which the appellant bases its arguments in favour of feature (h). The content of this paragraph explicitly focuses on the placement of the junction boxes and does not explicitly mention the arrangement of the cross-connectors. Further, as the appellant argues itself, the placement of the cross-connectors is dependent on the placement of the junction boxes because the cross-connectors need to connect to the bypass diodes in the junction boxes. In view of the emphasis given to the "rear side" in the second paragraph of page 10 the Board holds "rear side" to be intrinsically linked to the placement of the junction boxes and therefore also intrinsically linked to the placement of the cross-connectors. This finding

is not diminished by the further aspect raised by the appellant that the skilled person would anyway place the junction boxes on the rear side of a solar module, but it is rather strengthened.

26. Therefore, the Board concludes that the ground for opposition pursuant to Article 100(c) EPC prejudices the maintenance of the patent as granted.

**Auxiliary requests IA, IB and I to XXIII - Article 123(2) EPC**

27. During the oral proceedings the Board gave its preliminary opinion that auxiliary requests IA, IB and I to XXIII contravened Article 123(2) EPC for the same reasons as the main request with respect to Article 100(c) EPC.
28. None of the parties wished to argue further. The appellant referred to its arguments presented in writing regarding auxiliary requests IA and IB and I to XXIII.
29. The Board notes in this respect that the appellant's arguments presented in writing regarding auxiliary requests IA and IB and I to XXIII do not deal with the decisive aspect of the inadmissible intermediate generalisation in feature (h) of claim 1 as granted and how this would be overcome by any of auxiliary requests IA, IB and I to XXIII. Therefore, the appellant's arguments presented in writing have no bearing on the Board's opinion regarding the intermediate generalisation found in feature (h) of claim 1 according to the main request. Thus, the Board sees no reason to deviate from its preliminary opinion given

during the oral proceedings regarding auxiliary requests IA, IB and I to XXIII.

30. The Board therefore concludes that auxiliary requests IA, IB and I to XXIII contravene Article 123(2) EPC.

**Auxiliary request IC - Article 12(6) RPBA**

31. With respect to the admissibility of auxiliary request IC the appellant argued that they were not in a position to file this request until they became aware of the grounds for the contested decision.
32. The opposition division had been positive for them with respect to Article 100(c) EPC in its preliminary opinion dated 24 March 2022. Also during the oral proceedings before the opposition division it did not become evident for the appellant that the opposition division had in fact interpreted granted claim 1 broadly in the sense that it encompassed an arrangement of cross-connectors in multiple lines as well as a single line cross-connector arrangement and that only the latter one contravened Article 100(c) EPC. Since the appellant had assumed that the opposition division exclusively interpreted claim 1 narrowly (i.e. the latter mentioned interpretation), the filing of subject-matter corresponding to auxiliary request IC would not have made any sense because it evidently would have contravened Article 123(3) EPC.
33. Although the respondents argued that the oral proceedings before the opposition division took two days and at the latest at the middle of day two it must have been evident for the appellant that granted claim 1 was likely to be found to contravene Article 100(c)

EPC, the Board agrees with the appellant that the circumstances of the first instance proceedings justify the late filing of auxiliary request IC. In particular, the Board agrees that the first occasion where the broad interpretation of claim 1 by the opposition division became apparent is the written decision dated 15 December 2022. Even in the minutes of the oral proceedings before the opposition division there is no clear hint that the opposition division interpreted granted claim 1 other than according to the narrow interpretation limited to a single line of cross-connectors in the sense of a bus bar (see the minutes sections 3.16 to 3.38) contrary to how feature (h) was interpreted by the opposition division in the contested decision in section 3.12.

34. The Board therefore exercised its discretion under Article 12(6) RPBA to admit auxiliary request IC into the appeal proceedings.

**Auxiliary request IC - Article 123(3) EPC**

35. Regarding the alleged extension of the scope of protection conferred by granted claim 1, the appellant essentially argued that because the Board had adopted a broad interpretation of feature (h) in granted claim 1, the amendment from "a single row" to "one" did not extend the scope of protection conferred. Moreover, there existed no *file wrapper estoppel* in proceedings under the EPC so that the appellant's / former applicant's arguments made during prosecution of the corresponding European patent application had no bearing on the interpretation of the scope of protection of granted claim 1. Submissions made after the priority date were not suitable to change the

interpretation of the disclosure of the application as filed. Claim 1 according to auxiliary request IC was in accordance with the broad interpretation of granted claim 1 as given in section 3.12 of the contested decision.

36. While the Board agrees with the appellant that the broad interpretation in section 3.12 of the contested decision is one possible interpretation, the Board disagrees that claim 1 according to auxiliary request IC does not contravene Article 123(3) EPC.
37. The opposition division had found in section 3.12 that feature (h) might refer to a situation where
- "the assembly comprises multiple connectors arranged in a plurality of different lines - e.g. in three separate lines - such that the entire assembly takes a single row or area within the structure of the solar cell module"*
38. However, by replacing "a single row" with "one" in claim 1 according to auxiliary request IC, claim 1 now encompasses embodiments which, while they still comprise cross-connectors in multiple lines, these lines no longer need to form a single row of cross-connectors, as correctly argued by the respondents. For example, as also presented by the respondents, the arrangement could comprise 9 cross-connectors in 3 lines where the 3 lines are spaced apart that far from each other that they can no longer be interpreted to form a single row. Such an arrangement was however not encompassed by claim 1 as granted.
39. Therefore, claim 1 according to auxiliary request IC extends the protection conferred by the patent as

granted and consequently contravenes Article 123(3) EPC.

**Request for remittal**

40. Since there is no allowable request of the appellant on file there is no basis for remitting the case to the department of first instance.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairwoman:



L. Gabor

C.D. Vassoille

Decision electronically authenticated