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Paper 12
Entered: December 13, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HANWHA SOLUTIONS CORPORATION AND
HANWHA Q CELLS USA, INC.,
Petitioner,

v.

REC SOLAR PTE. LTD.,
Patent Owner.

IPR2021-00989
Patent 10,749,060 B2

Before GRACE KARAFFA OBERMANN, CHRISTOPHER M. KAISER, and BRIAN D. RANGE, *Administrative Patent Judges.*

RANGE, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Hanwha Solutions Corporation and Hanwha Q CELLS USA, Inc. (collectively "Petitioner") filed a Petition (Paper 4, "Pet.") requesting *inter partes* review of claims 1–6, 11, and 13 of U.S. Patent No. 10,749,060 B2. REC Solar Pte. Ltd. ("Patent Owner") filed a Preliminary Response. Paper 8 ("Prelim. Resp."). With our authorization (Ex. 1133), Petitioner filed a Reply Brief (Paper 9, "Reply"), and Patent Owner filed a Sur-Reply Brief (Paper 10, "Sur-Reply"). Petitioner identifies Hanwha Solutions Corporation and Hanwha Q CELLS USA, Inc. as real parties in interest. Pet. 2. Patent Owner identifies REC Solar Pte. Ltd. as the real party in interest. Paper 7, 1. For purposes of this Decision, we accept the parties' contentions regarding real parties in interest.

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314; 37 C.F.R. § 42.4(a) (2020). The standard for institution is set forth in 35 U.S.C. § 314(a), which provides that *inter partes* review may not be instituted unless "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." As discussed below, we determine that Petitioner shows a reasonable likelihood of prevailing with respect to at least one challenged claim. Accordingly, we institute *inter partes* review of all challenged claims based on all grounds asserted in the Petition. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1354, 1359–60 (2018); Patent Trial and Appeal Board Consolidated Trial Practice Guide 5 (Nov. 2019)[1] ("The Board will not institute on fewer than all claims or all challenges in a petition.").

[1] Available at https://www.uspto.gov/TrialPracticeGuideConsolidated.

At this juncture, we have not made a final determination as to the patentability of any challenged claim or any factual or legal issue underlying the patentability inquiry. Any final determination will be based on the record developed during trial. We place Patent Owner on express notice that any argument for patentability not asserted in a timely filed Response to the Petition or in another manner permitted during trial shall be deemed waived, even if that argument was presented in the Preliminary Response.

II. BACKGROUND

A. Related Matters

The parties identify the following as a related matter: *REC Solar Pte. Ltd. v. Hanwha Solutions Corp., et al.*, 1-20-cv-01622 (D. Del. Nov. 30, 2020). Pet. 2; Paper 7, 1.[2] Patent Owner also identifies the following as a related matter: *Hanwha Solutions Corporation and Hanwha Q Cells USA, Inc. v. REC Solar Pte Ltd.*, IPR2021-00988 (PTAB June 2, 2021). Paper 7, 1. Petitioner filed the petition for IPR2021-00988 on the same day as the instant Petition.

B. The '060 Patent (Ex. 1101)

The '060 patent is titled "Solar Cell Assembly." Ex. 1101, code 54. The challenged claims relate to a solar cell assembly that includes one or more solar cell units coupled in series. *Id.* at 2:40–41.

Below, we reproduce Figure 2a of the '060 patent.

[2] On October 29, 2021, the District Court granted without prejudice a motion to dismiss the complaint in *REC Solar Pte. Ltd. v. Hanwha Solutions Corp., et al.* Paper 11, 1. The District Court provided the plaintiff 21 days from October, 29, 2021, to refile the complaint. *Id.*

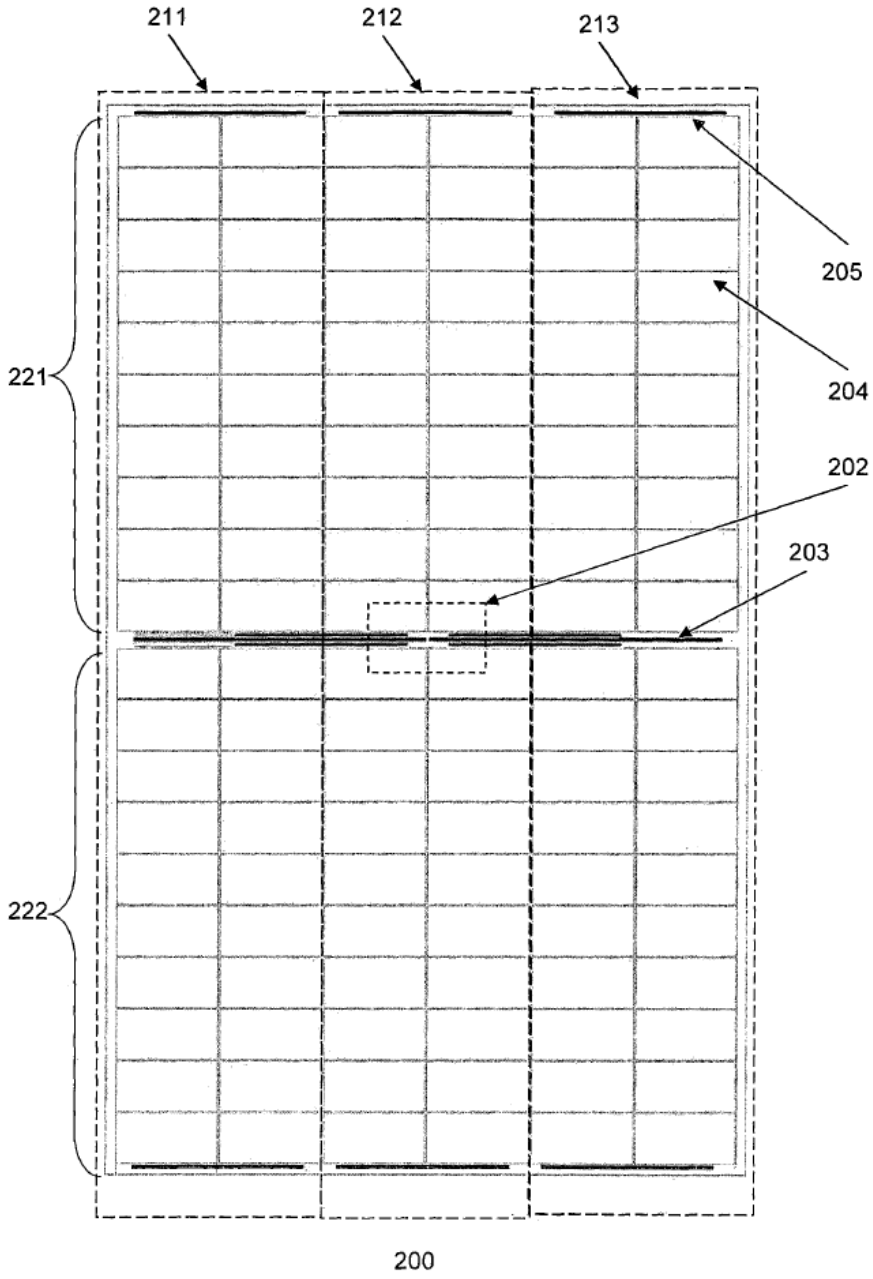


Fig. 2a

The ’060 patent describes Figure 2a as “a solar cell assembly layout 200.” *Id.* at 3:22–23. The ’060 patent describes that the solar cell assembly includes solar cells 204 which are arranged in one or more solar cell units. *Id.* at 3:26–28. As illustrated in Figure 2a, the solar cell assembly includes three solar cell units: a first solar cell unit 211, a second solar cell unit 212,

and a third solar cell unit 213. *Id.* at 3:28–31. The '060 patent further describes that "a solar cell unit includes a first solar cell series and a second solar cell series." *Id.* at 3:34–35. As illustrated in Figure 2a, "the first solar cell unit 211 [ ] includes a first solar cell series 221 and a second solar cell series 222." *Id.* at 3:35–37. As also illustrated in Figure 2a, the solar cells are cut into half and connected in series with each other within each solar cell series. *Id.*

We reproduce Figure 2b of the '060 patent below.

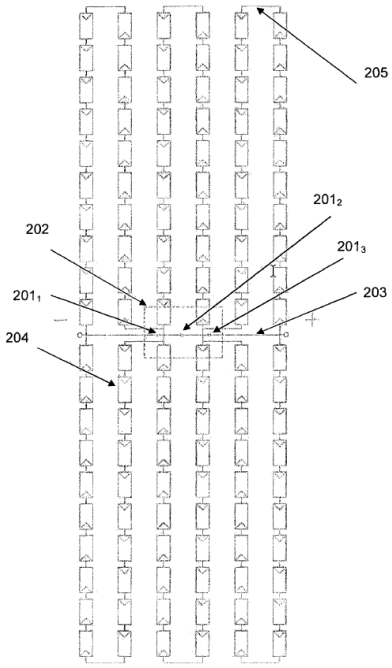


Fig. 2b

The '060 patent describes Figure 2b as "a corresponding electrical schematic diagram." *Id.* at 3:23–24. The '060 patent further describes "the first and second solar cell series within the same solar cell unit share a same by-pass diode." *Id.* at 3:53–54. As illustrated in Figure 2b, "the first and second solar cell series 221 and 222 within the first solar cell unit may share a first by-

pass diode 2011." *Id.* at 4:1–3. "[T]he solar cell series are connected with the by-pass diodes via cross-connectors 203." *Id.* at 4:21–22.

C. Challenged Claims

Petitioner challenges claims 1–6, 11, and 13 of the '060 patent. Pet. 3. Claim 1 is the only challenged independent claim. Claim 1 is illustrative of the claimed subject matter, and we reproduce claim 1 below while adding bracketed identifiers for claim elements.

1. [1pre] A solar cell assembly comprising:

[1a] a first solar cell unit, comprising:

[1b] a first solar cell series including a plurality of half-cut solar cells connected in series; a second solar cell series, coupled in parallel with the first solar cell series, including a plurality of half-cut solar cells connected in series;

[1c] a first bypass diode coupled in parallel with the first solar cell series and the second solar cell series; and

[1d] a first junction box containing the first bypass diode; and

[1e] a second solar cell unit, coupled in series with the first solar cell unit, comprising:

[1f] a third solar cell series including a plurality of half-cut solar cells connected in series; a fourth solar cell series, coupled in parallel with the third solar cell series, including a plurality of half-cut solar cells connected in series;

[1g] a second bypass diode coupled in parallel with the third solar cell series and the fourth solar cell series; and

[1h] a second junction box containing the second bypass diode.

Ex. 1001, 8:2–22; *see also* Pet. 25–45 (using same identifiers).

D. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable based on the following grounds:

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–6, 11, 13	103	Yagiura[3], Shimasaki[4]
2	1–6, 11, 13	103	Yagiura, Shimasaki, Yan[5]

Pet. 19. The Petition is also supported by the Declaration of Dr. Jonathan Kimball. Ex. 1003.

III. DISCRETIONARY DENIAL OF INSTITUTION

Institution of an *inter partes* review is discretionary. Section 314(a) of title 35 of the United States Code provides that "[t]he Director may not authorize an inter partes review to be instituted unless the Director determines that the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." The Supreme Court of the United States ("Supreme Court") has explained that, because § 314 includes no mandate to institute review, "the agency's decision to deny a petition is a matter committed to the Patent Office's discretion." *Cuozzo Speed Techs., LLC v. Lee*, 136 S.Ct. 2131, 2140 (2016); *see also Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (explaining that under § 314(a), "the PTO is permitted, but never compelled, to institute an IPR proceeding"). The Director has

[3] US 8,049,096 B2, issued Nov. 1, 2011 (Ex. 1110).
[4] US 2013/0098423 A1, published Apr. 25, 2013 (Ex. 1118).
[5] CN 102024865 A, published Apr. 20, 2011 (Ex. 1114). We refer to the English translation (Ex. 1115).

delegated his authority under § 314(a) to the Board. 37 C.F.R. § 42.4(a) ("The Board institutes the trial on behalf of the Director.").

As The Patent Trial and Appeal Board Consolidated Trial Practice Guide ("Trial Practice Guide") (Nov. 2019)[6] noted, the Leahy-Smith America Invents Act ("AIA") was "designed to establish a more efficient and streamlined patent system that will improve patent quality and limit unnecessary and counterproductive litigation costs." H.R. Rep. No. 112−98, pt. 1, at 40 (2011), 2011 U.S.C.C.A.N. 67, 69 (Post grant reviews were meant to be "quick and cost effective alternatives to litigation"); *see also* S. Rep. No. 110−259, at 20 (2008). The Board recognized these goals of the AIA, but also "recognize[d] the potential for abuse of the review process by repeated attacks on patents." *General Plastic Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16−17 (PTAB Sept. 6, 2017) (precedential). Here, Petitioner filed two petitions challenging the '060 Patent on the same day (the instant Petition as well as the petition in IPR2021-00988).

Patent Owner makes two arguments regarding discretionary denial. First, Patent Owner contends Petitioner failed to meet its burden to justify its request for institution of two *inter partes* reviews. Prelim. Resp. 1. Second, Patent Owner contends exercise of the Board's discretion to deny institution is appropriate under 35 U.S.C. § 314(a) in view of the aforementioned parallel district court litigation, and further "in view of the decision of the Chinese Patent Office upholding the validity of substantially similar claims over the same or substantially similar art and arguments." *Id.* at 2. Below,

[6] Available at https://www.uspto.gov/TrialPracticeGuideConsolidated.

we address each of Patent Owner's two arguments. As we explain, neither of the arguments persuades us to exercise discretion to deny institution.

A. Multiple Petitions

We first address Patent Owner's argument that Petitioner filed two petitions and has not adequately demonstrated why two petitions are necessary. Prelim. Resp. 7–8. The Trial Practice Guide explains that "there may be circumstances in which more than one petition may be necessary, including, for example, when the patent owner has asserted a large number of claims in litigation." Trial Practice Guide at 59. "In such cases two petitions by a petitioner may be needed, although this should be rare." *Id.* The Trial Practice Guide further instructs that "it is unlikely that circumstances will arise where three or more petitions by a petitioner with respect to a particular patent will be appropriate." *Id.*

On June 2, 2021, Petitioner filed both the instant Petition and a petition for IPR 2021-00988. Petitioner asks the Board to consider the petition for IPR 2021-00988 first. Petitioner's Ranking and Explanation, Paper 3, 1. Petitioner argues that the two grounds of the instant Petition and the three grounds of the petition for IPR 2021-00988 "establish[] invalidity in materially different ways," summarizes the thrust of each ground, and emphasizes "the strength of both petitions." *Id.* at 2–5.

Patent Owner contends multiple petitions were not necessary because Petitioner only challenges eight claims and address the same eight claims in both petitions. Prelim. Resp. 7–9. Further, Patent Owner contends Petitioner offered no meaningful explanation as to why multiple petitions were necessary. *Id.* at 9–10. More specifically, Patent Owner contends Petitioner's argument that both petitions are justified because each petition relies on new prior art and different approaches is not sufficient because every petition

needs to raise new prior art or arguments. *Id.* at 10–13. Patent Owner also argues that creation of a more complete record is not sufficient reason for two petitions because "Petitioner offered no explanation how non-institution of a second [*inter partes*] review would lead to an incomplete record with respect to the first *inter partes* review. Prelim. Resp. 11–12 (citing Paper 3, 2). Further, according to Patent Owner, Petitioner could have filed a consolidated petition that provided their invalidity rationales from both petitions but chose not to. Prelim. Resp. 14–15.

Petitioner responds by arguing that consideration of both petitions is warranted because each relies on different prior art and establishes invalidity in materially different ways. Reply 9–10 (citing Paper 3, 2–5). Petitioner also argues that both petitions are needed due to an uncertainty about how Patent Owner will challenge the obviousness grounds, as the parallel district court proceeding is at an early stage. Reply 10.

In its Sur-Reply, Patent Owner argues Petitioner merely repeats its arguments from its Ranking and Explanation filing and does not address why the Board should exercise its discretion to institute additional petitions. Sur-Reply 1–2 (citing Reply 9–10; Paper 3, 1–2). Patent Owner also argues that Petitioner's filing of multiple petitions is merely an attempt to evade the Board's word limit for petitions. Sur-Reply 2–3. Patent Owner further argues that Petitioner's contention that it does not know how Patent Owner will challenge the obviousness grounds is not credible in view of the Chinese Patent Office proceeding regarding "much of the same art against substantially similar claims." *Id.* at 3.

Here, we decline to exercise discretion to deny this Petition based upon multiple Petitions for four reasons. First, as we explain in Section IV of

this decision, the Petition is strong on the merits, and Patent Owner has, at this stage, offered little argument refuting the merits.

Second, the two parallel petitions are not overly burdensome because the petitions present only five total grounds. Of those five grounds, grounds two and three of the petition for IPR2021-00988 both rely on Zhang. IPR2021-00988, Paper 4, 18. The two grounds of the instant petition both rely on Yagiura and Shimasaki. Pet. 19. Petitioner adds the Yan reference to the second ground as a backup position "[t] o the extent Patent Owner argues . . . that the combination of Yagiura and Shimasaki does not teach multiple junction boxes." *Id.* at 54. Petitioner explains each of the grounds thoroughly, and none of the grounds are ambiguous or overly complicated.

Third, Patent Owner's effort to respond to both petitions is lessened by Patent Owner's familiarity with much of the prior art at issue. Patent Owner contends that the Chinese Patent Office addressed claims "[s]ubstantially similar" to the '060 Patent claims. Prelim. Resp. 2. Patent Owner further contends that, in China, Petitioner raised invalidity challenges that "bear a strong resemblance" to the grounds raised in the two petitions and involve "the same or similar art and arguments." *Id.* at 3. Patent Owner explains that the Chinese proceeding addressed the substance of Yagiura, Huang, Yan, and Wu. *Id.* If Patent Owner is correct that the Chinese proceeding addressed much of the same substance that the *inter partes* reviews will address here, then Patent Owner is already well-prepared to address such reviews.

Fourth, while the two petitions present different invalidity grounds (addressing the same claims), Patent Owner agrees that the two parallel petitions have a great deal of overlap. Prelim. Resp. 14 (noting that the introductions and conclusions of the petitions are "substantially similar").

Because portions of the petitions are similar, this also reduces Patent Owner's burden to respond. Thus, based on the totality of specific circumstances unique to these two petitions, we decline to exercise discretion to deny institution based on parallel petitions.

B. Parallel District Court Proceeding

In *NHK Spring Co., Ltd. v. Intri-Plex Technologies, Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential), the Board determined that the advanced state of a parallel district court proceeding weighs in favor of denying institution under 35 U.S.C. § 314(a). *Id.* at 19–20. In *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential), the Board articulated a list of factors to be considered in determining whether to exercise discretion to deny institution based on an advanced stage of a parallel district court proceeding:

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
>
> 2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
>
> 3. investment in the parallel proceeding by the court and the parties;
>
> 4. overlap between issues raised in the petition and in the parallel proceeding;
>
> 5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
>
> 6. other circumstances that impact the Board's exercise of discretion, including the merits.

Fintiv, Paper 11 at 5–6 (PTAB Mar. 20, 2020). In our analysis below, we address each of the factors.

1. First Factor: Existence or Likelihood of Stay

Patent Owner contends Petitioner has not filed a motion in the district court requesting a stay. Prelim. Resp. 17. Patent Owner also contends that the district court will likely not grant Petitioner a stay should it request one because of "the nature of the relationship between the parties and [Petitioner's] dilatory tactics." *Id.* 17–20; *see also* Sur-Reply 4–5. Therefore, according to Patent Owner, this factor supports denial of institution. Prelim. Resp. 20.

Petitioner contends this factor is neutral because Patent Owner mistakenly presumes that the district court is unlikely to grant a stay given the absence of specific evidence of how the court would rule on any stay motion. Reply 1–3. Further, Petitioner contends it plans to seek a motion to stay after institution because the district court indicated that a motion filed earlier would be premature. *Id.* at 3.

We assess this factor by first noting that the District Court has not yet entertained a motion to stay, much less granted a stay. While Patent Owner cites some District Court for the District of Delaware decisions denying stays where parties are competitors (Prelim Resp. 18–19), the District Court also invited briefing requesting a stay if we were to institute *inter partes* review. Reply 3; Ex. 1035 at 1321-25 ("that is my preference [ ] that we wait until the PTAB has made an institution decision before entertaining a [ ] stay").

The District Court has discretion to grant or deny a motion for stay. *See, e.g., Invensas Corp. v. Samsung Elecs. Co.*, No. CV 17-1363-MN-SRF, 2018 WL 4762957, at *2 (D. Del. Oct. 2, 2018) (citations omitted). Here, we decline to speculate as to what the District Court may choose to do "[i]n the absence of specific evidence." *Sand Revolution II, LLC v. Continental*

Intermodal Group—Trucking LLC, IPR201-01393, Paper 24 at 7 (PTAB June 16, 2020 (informative). As such, this factor is neutral.

2. Second Factor: Proximity of Anticipated Trial Date and Statutory Deadline for Written Decision

Patent Owner contends this factor is effectively neutral because the district court has set a trial date of March 27, 2023, just three months after the projected statutory deadline of December 16, 2022, for the Board's final written decision. Prelim. Resp. 20–21 (citing Ex. 2005, 13); *see also* Sur-Reply 5–6. Petitioner contends this factor favors institution because the Final Written Decision precedes the trial date by several weeks or months. *Id.* at 3–4. There is no indication in the record whether or not the trial date is likely to change.

Because trial is presently set for months after the Board's statutory deadline for completing *inter partes* review, this factor weighs against exercising discretion to deny institution.

3. Third Factor: Investment in Parallel Proceeding

Patent Owner contends that it will have invested over a year in the parallel district court proceeding, where Patent Owner will have produced both its infringement contentions and invalidity contentions well before the institution decision, and where claim construction briefing will conclude shortly after issuance of the institution decision. Prelim. Resp. 21–23; *see also* Sur-Reply 6–7. Thus, according to Patent Owner, this factor supports denial of institution. Prelim. Resp. 23.

Petitioner contends this factor strongly supports institution because the district court has not issued any substantive orders related to *inter partes* review issues, the district court proceeding is still in its early stages, and substantial work remains to be done on invalidity issues. Reply 4–5. Further,

according to Petitioner, it acted promptly by filing its petition three months before even receiving Patent Owner's initial infringement contentions. *Id.* at 5. Petitioner also emphasizes that it filed this Petition merely two weeks after the earliest date the statute allows. *Id.*

We note that the District Court complaint was filed March 4, 2019. Ex. 2006. Petitioner filed the Petition on June 2, 2021. The District Court entered a Scheduling Order on May 27, 2021. Ex. 2005.

We determine that both present investment in the proceedings and Petitioner's diligence weigh against exercising discretion to deny institution. With regard to investment, the third *Fintiv* factor is stated as "investment in the parallel proceeding by the court and the parties." *Fintiv*, Paper 11 at 6, 9. In particular, *Fintiv* refers to "the amount and type of work *already completed* in the parallel litigation by the court and the parties at the time of the institution decision." *Id.* at 9 (emphasis added). As such, Patent Owner's arguments about what efforts the parties and District Court *might* undertake after an institution date are not relevant to this factor.

To date, Patent Owner produced infringement contentions and Petitioner produced invalidity contentions. Presumably, Patent Owner assessed infringement prior to ever filing a District Court action. *See* Fed. R. Civ. P. 11. Therefore, Patent Owner has not established that it has, to date, put any substantial investment into the District Court action (beyond explaining in an infringement contention the same kind of infringement analysis that is required to file the lawsuit and potentially some claim construction activity), and the parties identify no investment by the District Court itself other than a scheduling conference. *See* Ex. 1035 (transcript for scheduling conference); Ex. 2005 (scheduling order).

With regard to diligence, the *Fintiv* decision explains the relevance of Petitioner's diligence as follows: "If the evidence shows that the petitioner filed the petition expeditiously, such as a promptly after becoming aware of the claims being asserted, this fact has weighed against exercising the authority to deny institution under *NHK*." *Fintiv*, Paper 11 at 11. Here, Petitioner diligently filed the petition two weeks after the earliest possible date it could have been filed by statute. Reply 5.

Patent Owner argues that Petitioner was not diligent because it could have filed a post-grant review earlier. Sur-reply at 2. The *Fintiv* decision, however, focuses on diligence in filing "the petition"—i.e., the petition for *inter partes* review at issue. *Fintiv*, Paper 11 at 11–12. Given this context, we do not agree that Petitioner filing a request for *inter partes* review nearly as soon as possible demonstrates lack of diligence. On the contrary, the strategic choice of filing for *inter partes* review, as opposed to post-grant review, is a litigation decision that falls squarely within Petitioner's prerogative. Therefore, based on both investment in the District Court proceeding to date and Petitioner's diligence, the third *Fintiv* factor weighs against exercising discretion to deny institution.

4. Fourth Factor: Overlap Between Issues Raised in Petition and in Parallel Proceeding

Patent Owner contends that the claims the Petition challenges overlap completely with the claims at issue in the parallel district court proceeding. Prelim. Resp. 23–24 (citing Ex. 2007, 6–7); *see also* Sur-Reply 7–8. Patent Owner also contends that Petitioner's filings indicate that the art and arguments in both proceedings will overlap substantially. Prelim. Resp. 24 (citing Paper 3, 2; Pet. 5); *see also* Sur-Reply 7–8. Patent Owner also argues that Petitioner did not provide a stipulation that would ensure lack of

overlapping issues. Prelim. Resp. 24–25. Thus, Patent Owner argues that this factor weighs in favor of denial of institution. *Id.* at 25.

Petitioner contends this factor is either neutral or weighs against discretionary denial because Patent Owner's overlap argument "is premised on pure speculation because [Petitioner] has not yet filed [its] invalidity contentions." Reply 5–6. Further, as argued by Petitioner, the mere fact that "there is significant overlap of the claims" is "not persua[sive]" because "[s]imply put, the same claims often are at issue in an *inter partes* review proceeding and a parallel litigation. *Id.* at 6 (citing *Unified Patents, LLC v. WSOU Invs. LLC*, IPR2021-00378, Paper 14 at 14–15 (PTAB July 23, 2021)).

Here, the District Court proceeding involves the same patent claims, but there is no evidence that the District Court proceeding involves any of the same grounds of invalidity, arguments, evidence, or claim challenges. We will issue our Final Written Decision before trial in the District Court proceeding thus implicating estoppel. Thus, we evaluate this factor as weighing against exercising discretion to deny institution.

5. Fifth Factor: Whether Petitioner and Parallel Proceeding Defendant Are Same

Patent Owner contends this factor weighs in favor of denial of institution because Petitioner is the same party as the defendant in the parallel district court proceeding. Prelim. Resp. 25; *see also* Sur-Reply 9. Petitioner argues this factor favors denial if the trial in the parallel district court proceeding precedes the Board's Final Written Decision and favors institution if the opposite is true. Reply 6. We determine that, here, this factor does not weigh in favor of exercising discretion to deny institution.

6. Sixth Factor: Other Circumstances (Including Merits)

Patent Owner contends the decision of the Chinese Patent Office, confirming the validity of substantially similar claims over the same or substantially the same art and arguments, indicates that the merits of the petition are weak. Prelim. Resp. 26–28; *see also* Sur-Reply 9–10. Therefore, according to Patent Owner, this factor weighs in favor of denial of institution. Prelim. Resp. 28.

Petitioner contends the Petition is strong on the merits. Reply 6. Petitioner further contends the Chinese invalidation proceeding referenced by Patent Owner is inapplicable to the present proceeding because: determination made by foreign tribunals are neither controlling nor persuasive; the challenged claims of the '060 patent differ from those in the Chinese patent; Petitioner has submitted different prior art references and other evidence in the present proceeding; and the determination by the Chinese Patent Office is not even a final decision, where the decision was appealed in April 2021. *Id.* at 7–8.

We agree with Petitioner that the merits of the Petition are strong for the reasons explained in Section IV of this decision. We also agree with Petitioner that the Chinese proceeding does not demonstrate weakness in the Petition. Reply 6–8. For example, Patent Owner does not suggest that the Chinese Patent Office addresses Shimasaki (one basis for both grounds at issue here). We further address three of Patent Owner's allegations regarding the Chinese Patent Office decision below.

First, Patent Owner argues that the Chinese Patent Office determined that the "technical problem to be solved by Yagiura" was different from that of Patent Owner's claim 1. Prelim. Resp. 6. Patent Owner fails to explain how this would impact an invalidity analysis pursuant to United States

patent law. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419–20 (2007) ("In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls . . . . The first error of the Court of Appeals in this case was . . . holding that courts and patent examiners should look only to the problem the patentee was trying to solve.").

Second, Patent Owner argues that the Chinese Patent Office determined that "a plurality of solar connected cells in series" required a series "without any parallel-connected [solar cells]." Prelim. Resp. 6. Patent Owner fails to explain why such a claim construction should apply under United States law. Rather, the plain language of claim 1 at issue uses the word "comprises" and, therefore, does not appear to forbid parallel-connected cells. Ex. 1102, 8:2–22.

Third, Patent Owner argues that the Chinese Patent Office made various determinations that Yagiura or Yan do not teach certain aspects of claim 1. Prelim. Resp. 6–7. Patent Owner's argument, however, does not address the grounds now at issue which also rely on the teachings of Shimasaki.

For the reasons above, the strength of the Petition weighs against exercising discretion to deny institution.

7. Conclusion on the Factors

As we explain above, based on our consideration of all six *Fintiv* factors collectively, we decline to exercise discretion to deny institution.

IV. ANALYSIS

A. Claim Construction

Petitioner argues that all claim terms should be given their plain and ordinary meaning. Pet. 18. Patent Owner does not dispute this. *See generally*

Prelim. Resp. Here, we determine that no claim term requires express construction for purposes of deciding whether to institute review. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms that are in controversy, and only to the extent necessary to resolve the controversy." (internal quotes and citation omitted)).

B. Ground One: Obviousness Based on Yagiura and Shimasaki

For ground one, Petitioner asserts that '060 patent claims 1–6, 11, and 13 are obvious over Yagiura and Shimasaki. We provide an overview of Yagiura and Shimsaki before we address ground one.

1. Overview of Yagiura (Ex. 1110)

Yagiura is a US patent publication that relates to a solar battery cell. Ex. 1110, (10) (57). The solar battery cell has a hexagonal shape and is divided into four parts at a straight line connecting between opposed apexes and a straight line connecting between middle points of opposed sides. *Id.* at (57).

Below, we reproduce Yagiura Figure 1.

FIG. 1

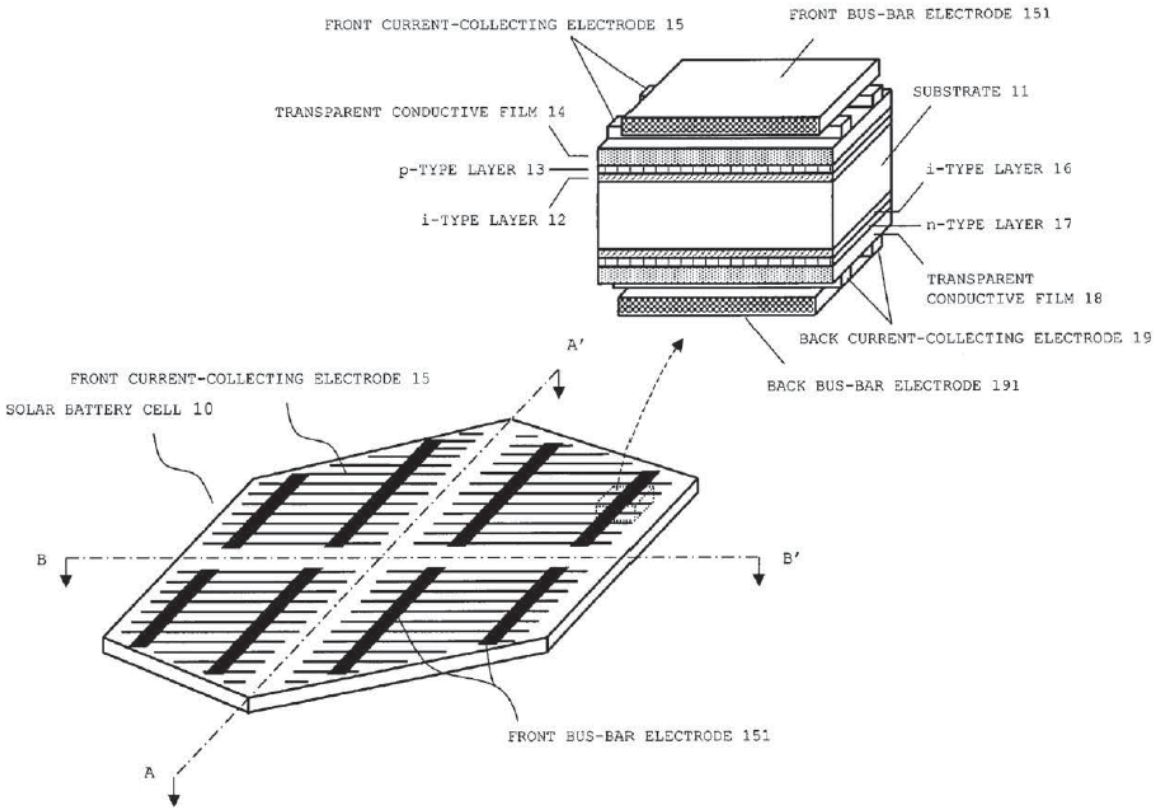
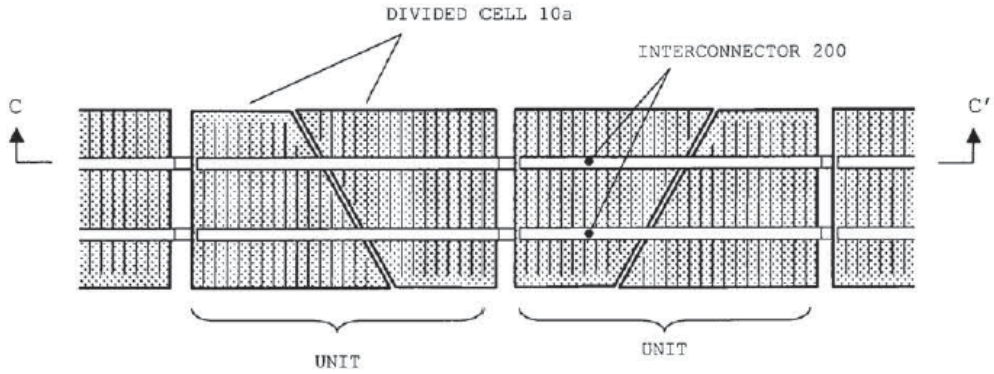


Figure 1 illustrates a configuration of a solar battery cell. *Id.* at 4:49–50. The lower left side of Figure 1 illustrates a solar battery cell 10 with a hexagonal shape when being seen from a plan view. *Id.* at 5:15–17. Front current-collecting electrodes 15 and front bus-bar electrodes 151 are on a front surface, and back current-collecting electrodes 19 and back bus-bar electrodes 191 are formed on a back surface. *Id.* at 5:17–21. The upper right side of Figure 1 illustrates that solar battery cell 10 includes a substrate 11, an i-type layer 12, a p-type layer 13, a transparent electrode film 14, the front current-collecting electrodes 15, an i-type layer 16, a n-type layer 17, a transparent conductive film 18, and the back current-collecting electrodes 19. *Id.* at 5:25–30.

Below, we reproduce Yagiura Figure 3A.

FIG. 3A



EXAMPLE OF CONNECTION BETWEEN UNITS

Figure 3A illustrates a "connection form[ed] between divided cells and connection form[ed] between units." *Id.* at 4:53–55. For the electrical connection between two divided cells 10a, the divided cells 10a are arranged without being turned upside down such that oblique sides thereof oppose each other without deviation. *Id.* at 6:32–35. Two interconnectors 200 are placed on front bus-bar electrodes 151 on front surfaces of the divided cells 10a, and are electrically connected to the front bus-bar electrodes 151. *Id.* at 6:35–38. Thus, Yagiura describes divided cells 10a as "connected in parallel." *Id.* at 6:38–39.

Below, we reproduce Yagiura Figure 5.

FIG. 5

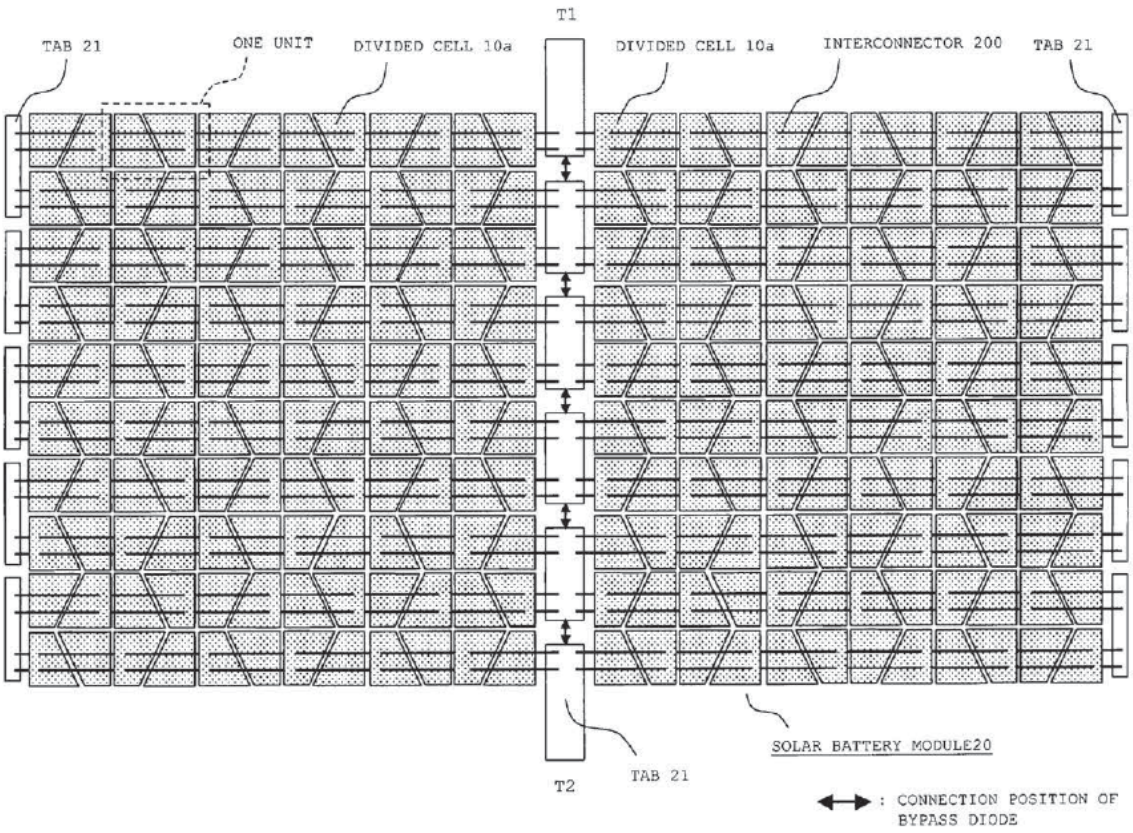


Figure 5 illustrates a unit connection pattern. *Id.* at 4:58–59. In the electrical connection pattern, units in each left row are sequentially connected leftward in series through inter-connectors from a center of a solar battery module 20, and units in each right row are sequentially connected rightward in series through interconnectors from the center of the solar battery module 20. *Id.* at 7:11–16. In unit groups of odd-numbered rows counted from above (*i.e.*, unit groups of first, third, fifth, seventh, and ninth rows), back surfaces of units located at a center are electrically connected to tables 21 located at the center of the solar battery module 20, respectively, and front surfaces of rightmost and leftmost units are electrically connected to tabs 21 located at both ends of the solar battery module 20, respectively. *Id.* at 7:16–23. Further, in unit groups of even-numbered rows counted from above (*i.e.*, unit groups of second, fourth, sixth, eighth, and tenth rows), front surfaces of units located

at a center are electrically connected to the tabs 21 located at the center of the solar battery 20, respectively, and back surfaces of rightmost and leftmost units are electrically connected to the tables 21 located at both ends of the solar battery module 20, respectively. *Id.* at 7:23–30.

In the tabs 21 located at the center of the solar battery module 20, the uppermost tab 21 serves as an output terminal T1 of the solar battery module 20 and the lowermost tab 21 serves as an output terminal T2 of the solar battery module 20. *Id.* at 7:31–34. In this electrical connection pattern, a bypass diode connects between adjoining tabs 21 located at the center of the solar battery module 20 in order to prevent application of reverse voltage, as shown by an arrow in Figure 5. *Id.* at 7:35–38. Here, adjoining tabs 21 are close to each other at the position shown by an arrow in Figure 5; therefore, a bypass diode can be readily inserted between the tabs 21. *Id.* at 7:38–41.

2. Overview of Shimasaki (Ex. 1118)

Shimasaki is a United States patent application publication that relates to a solar battery module. Ex. 1118, (10) (57). The solar battery module includes a plurality of solar battery cells, each being substantially a rectangle, and a ratio of a short side length and a long side length of the substantial rectangle being 1/n:1 (where n is an integer equal to or larger than 2). *Id.* at (57). The solar battery module also includes a plurality of light-receiving-surface bus electrodes parallel to the short side of the substantial rectangle on a light receiving surface. *Id.* The solar battery module further includes rear-surface bus electrodes each at a position on a non-light-receiving surface corresponding to each of the light-receiving surface bus electrodes and includes a light-receiving-surface lead (*i.e.*, an interconnector) that electrically connects the light-receiving-surface bus

electrodes of one of the solar battery cells to the rear-surface bus electrodes of an adjacent one of the solar battery cells. *Id.*

Below, we reproduce Shimasaki Figure 13.

FIG.13

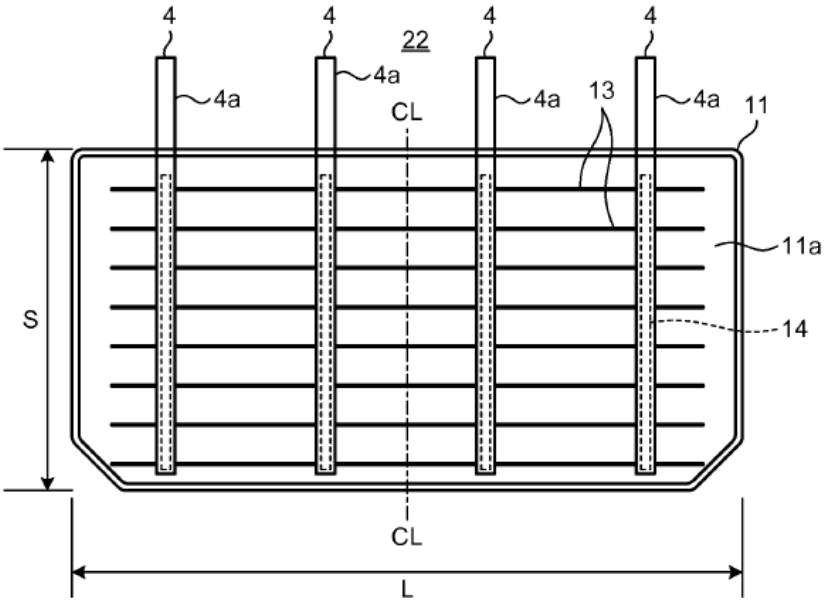


Figure 13 is a top view illustrating a light-receiving-surface bus electrode joined to a solar battery cell used for a solar battery module. *Id.* ¶ 25. A solar battery cell 22 is produced by dividing a square solar battery cell into two in the direction that the light-receiving-surface bus electrode 14 extends and the ratio of the short side length S and the long side length L is 1/2:1. *Id.* ¶ 57. The solar battery cell 22 is formed in such a pattern that the light-receiving-surface bus electrode 14 and the rear-surface bus electrode 15B are line-symmetrical with respect to an imaginary central line CL passing through a middle point of the long side and parallel to the short side. *Id.* ¶ 58. When the light-receiving-surface bus electrode 14 of a certain cell and the rear-surface-bus electrode 15B of an adjacent cell are in the same straight line, these cells can be connected to each other at the shortest distance by leads 4 and 7. *Id.* ¶ 59.

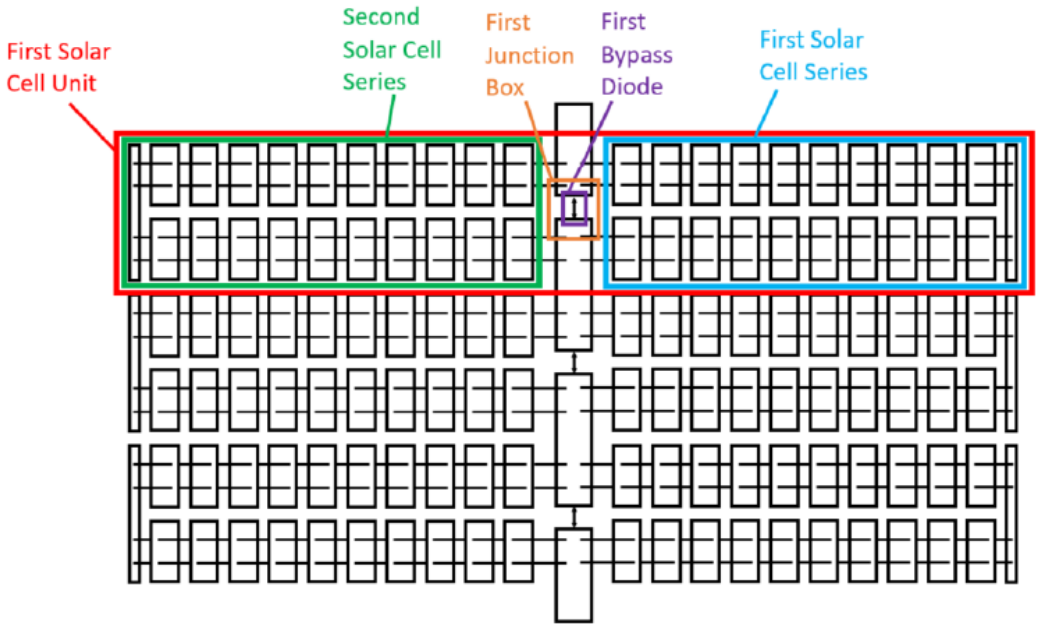
3. Discussion

Based on the present record, we determine that Petitioner sufficiently shows that the subject matter of at least one challenged claim would have been obvious over the combined disclosures of Yagiura and Shimasaki. Pet. 18–53. For example, Yagiura teaches a solar cell assembly (i.e., solar battery modules).[7] Ex. 1110, 1:10, 7–14. Shimasaki teaches unit groups comprising halved cells. *See, e.g.,* Ex. 1118, ¶ 45.

The evidence before us supports a person of skill in the art would have had reason to modify Yagiura based on the halved cell teaching of Shimasaki. For example, the evidence supports that a person of ordinary skill in the art would have recognized that the halved cells of Shimasaki could be formed with fewer and less complicated steps than cells of Yagiura. Pet. 32; Ex. 1110, 6:18–39 (explaining connection between Yagiura's divided cells); Ex. 1103 ¶ 65 (Dr. Kimball explaining why a person of ordinary skill in the art would have recognized the advantage of using Shimasaki's half cell technique with Yagiura); Ex. 1118 ¶ 57 (explaining Shimasaki's half cell configuration). Petitioner's declarant, Dr. Kimball, also opines that a person of skill in the art would have been inclined to use substantially square cells of Shimasaki with Yagiura because such cells were less expensive and easier to obtain. Pet. 32–33; Ex. 1103 ¶ 66.

Petitioner explains how a person of skill in the art would have combined the teachings of Yagiura and Shimasaki. Pet. 33–35. Petitioner illustrates how a person of skill in the art would have incorporated Shimasaki's halved cells into Yagiura with the figure we reproduce below.

[7] For purposes of this decision, we do not need to decide whether or not claim 1's preamble is limiting.

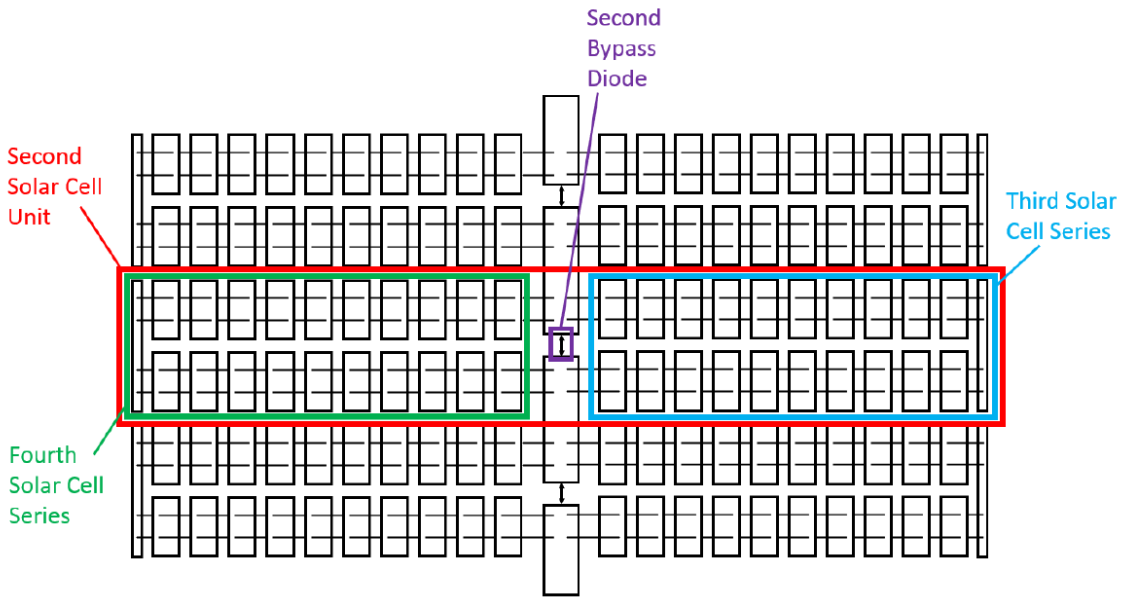


Id. at 40. Petitioner explains that the figure above modifies Yagiura Figure 5 to incorporate the teachings of Yagiura and Shimasaki including Shimasaki's teachings of half cells. Pet. 28. Petitioner annotates the figure by indicating a first solar cell unit (red), first solar cell series (blue), second solar cell series (green), first bypass diode (purple), and (first junction box) orange. The evidence supports that the combination would gain the benefits we explain above. *See also* Ex. 1110, 6:18–39 (Yagiura explaining location of bypass diode), 6:41-46 ("a bypass diode used herein may be . . . attached to a terminal box mounted to a bottom side of the back-surface protection member").

Dr. Kimball explains that Yagiura's figures act as both an electrical configuration and approximation of Yagiura's assembly layout. Ex. 1103 ¶ 79; *see also* Ex. 1110, 7:38–45, 8:5–9, 10:34–39 (Yagiura using position to, according to Petitioner, refer to physical location). Dr. Kimball further explains that Yagiura's diodes are spaced apart, that a person of skill in the art would have recognized that a large junction box is undesirable, and that a

person of skill in the art therefore would have "considered Yagiura to be teaching that each diode was in a separate junction box." Pet. 42–43; Ex. 1103, ¶ 80.

Petitioner also provides an annotated figure to illustrate how the combination of Yagiura and Shimasaki would have met other recitations of claim 1. We reproduce that figure below.



The above figure is similar to the modified Yagiura Figure 5 that we previously reproduced but includes different annotations. Here, Petitioner annotates the figure to indicate a second solar cell unit (red), third solar cell series (blue), fourth solar cell series (green), and second bypass diode (purple).

Petitioner's first ground raises the question of whether Petitioner adequately establishes that a person of skill in the art would have understood the combination of Yagiura and Shimasaki as teaching or suggesting different diodes in different junction boxes. In particular, Dr. Kimball states that a person of skill would have understood Yagiura as teaching that each diode is in a separate junction box, but this teaching does not appear to be

explicit. We will resolve this question based on the full trial record, to the extent necessary, in any final written decision entered in this proceeding. Nothing in this Decision is an invitation for Petitioner to supplement the argument or evidence presented in the Petition with respect to any ground.

Patent Owner does not present any argument disputing Petitioner's position regarding ground one. As explained in Section III(B)(6), above, Patent Owner's arguments regarding the Chinese Patent Office do not undermine Petitioner's persuasive showing. Based on the present record, we determine that Petitioner's ground one establishes a reasonable likelihood of prevailing with respect to at least one challenged claim.

C. Ground Two: Obviousness Based on Yagiura, Shimasaki, and Yan

For ground one, Petitioner asserts that '060 patent claims 1–6, 11, and 13 are obvious over Yagiura and Shimasaki. Ground two relies on Yagiura, Shimasaki, and Yan. Petitioner provides this second ground "[t]o the extent that Patent Owner argues . . . that the combination of Yagiura and Shimasaki does not teach multiple junction boxes." Pet. 54. We provide an overview of Yan before we address ground two.

1. Overview of Yan (Ex. 1115)

Yan is a Chinese patent publication that relates to a connection method for cells of a solar photovoltaic module involving multiple junction boxes. Ex. 1115, (10) (57). A group of cells on the solar photovoltaic module closest to a negative terminal is connected with a negative terminal junction box, where a distance between the negative terminal junction box and the negative terminal is less than one half of the width of the solar cell module. *Id.* at (57). A group of cells on the solar photovoltaic module closest to a positive terminal is connected with a positive terminal junction box, where a distance between the positive terminal junction box and the positive

terminal is less than one half of the width of the solar cell module. *Id.* Further, one or more middle junction boxes are also arranged. *Id.*

Below, we reproduce Yan Figure 3.

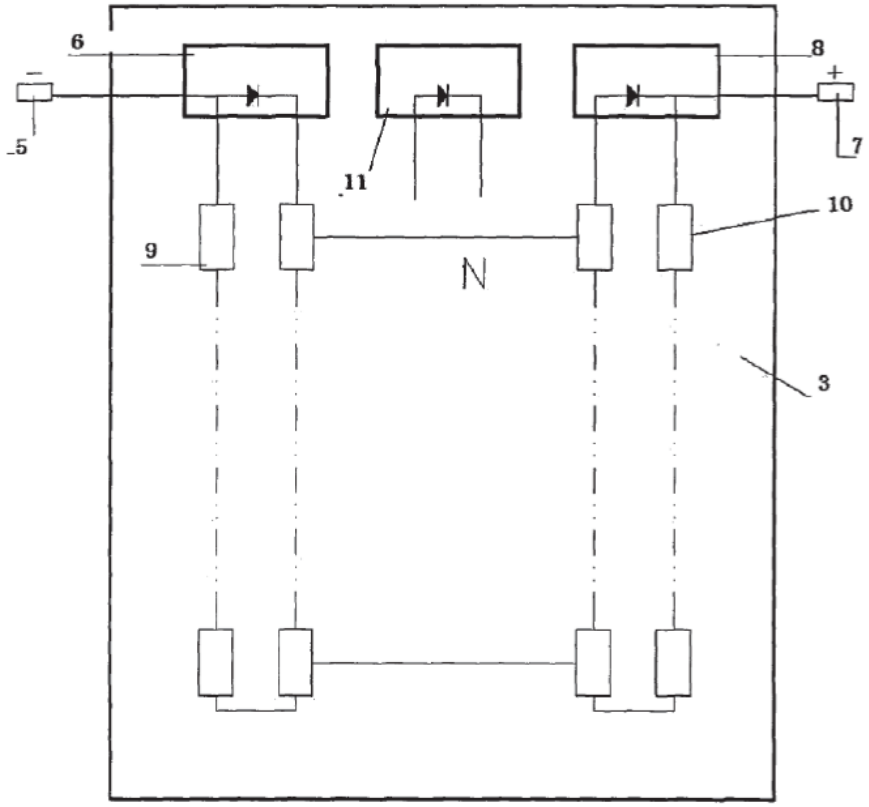


FIG. 3

Figure 3 illustrates a schematic diagram of a connection method that uses a plurality of junction boxes for a solar photovoltaic module. *Id.* ¶ 24. A group of cells 9 on the solar photovoltaic module 3 closest to a negative terminal 5 is connected with a negative terminal junction box 6, where a distance between the negative terminal junction box 6 and the negative terminal 5 is less than one half of the width of the solar cell module 3. *Id.* ¶ 25. A group of cells 10 on the solar photovoltaic module 3 closest to a positive terminal 7 is connected with a positive terminal junction box 8, where a distance between the positive terminal junction box 8 and the positive terminal 7 is less than one half of the width of the solar cell module 3. *Id.* Further, a

middle junction box 11 is provided between the positive terminal junction box 8 and the negative terminal junction box 6. *Id.* ¶ 26.

2. Discussion

Based on the present record, we determine that Petitioner sufficiently shows that the subject matter of at least one challenged claim would have been obvious over the combined disclosures of Yagiura, Shimasaki, and Yan. Pet. 54–69. For the most part, Petitioner's mapping of the references' teachings to the claims overlaps with the mapping for ground one. *Id.* Additionally, Yan teaches multiple junction boxes. Pet. 50; Ex. 1115 ¶ 10, Fig. 3. Yan also teaches one bypass diode per junction box. Ex. 1115 Fig. 3; *see also* Ex. 1103 ¶ 106 (Dr. Kimball explaining that Yan Figure 3 depicts multiple junction boxes "housing one bypass diode per junction box").

The evidence before us supports that a person having ordinary skill in the art would have had a reason to modify Yagiura and Shimasaki by implementing Yan's multiple junction boxes. Ex. 1115 ¶ 11 (Yan teaching use of multiple junction boxes "so that the bus bars are as short as possible"); Ex. 1103 ¶¶ 107, 116 (Dr. Kimball explaining that a person of ordinary skill in the art would have understood that Yagiura and Shimasaki would benefit from Yan's multiple junction boxes because the multiple boxes would reduce series resistance, improve overall output performance, and result in shorter connection cables with reduced resistance).

Patent Owner does not present any argument disputing Petitioner's position regarding ground two. As explained in Section III(B)(6), above, Patent Owner's arguments regarding the Chinese Patent Office proceeding do not undermine the adequacy of Petitioner's showing for purposes of trial institution. Based on the present record, we determine that Petitioner in

ground two establishes a reasonable likelihood of prevailing with respect to at least one challenged claim.

V. CONCLUSION

For the above reasons, we institute an *inter partes* review. 35 U.S.C. § 314(a).

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted as to claims 1–6, 11, and 13 of the '060 patent based on all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), an *inter partes* review of claims 1–6, 11, and 13 of the '060 patent shall commence on the entry date of this Decision, and notice is hereby given of the institution of trial.

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