UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VOLTAGE, LLC
Petitioner,

v.

SHOALS TECHNOLOGIES GROUP, LLC,
Patent Owner.

Case PGR2024-00022
U.S. Patent No. 11,689,153

PATENT OWNER PRELIMINARY RESPONSE

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EXHIBIT LIST

Exhibit No.	Description
2001	Declaration of Joshua Weiner in Support of Patent Owner's Preliminary Response
2002	Curriculum Vitae of Joshua Weiner
2003	Combined Transcripts of Public Versions of Evidentiary Hearing in ITC Investigation No. 337-TA-1365, *Certain Photovoltaic Connectors and Components Thereof*, March 18-22, 2024 [EDIS Doc. IDs 816318, 816393, 816472, 816792, 816795]
2004	U.S. Patent No. 8,604,342 to Solon.
2005	National Electrical Code (2014).
2006	U.S. Patent No. 8,937,249 to Solon.
2007	U.S. Patent No. 8,408,929 to Solon.
2008	U.S. Patent No. 8,962,998 to Solon.
2009	U.S. Patent Publication No. 2014/0071563 to Solon.
2010	U.S. Patent No. 9,847,196 to Solon.
2011	U.S. Patent No. 9,589,752 to Solon.
2012	U.S. Patent No. 9,847,627 to Solon.
2013	*About NABCEP*, North American Board of Certified Energy Practitioners, https://www.nabcep.org/about-us/.

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2014	*Electricity Explained: Electricity in the United States*, U.S. Energy Information Administration, https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php.
2015	*Solar Explained: Photovoltaics and Electricity*, U.S. Energy Information Administration, https://www.eia.gov/energyexplained/solar/photovoltaics-and-electricity.php#:~:text=Photovoltaic%20cells%20convert%20sunlight%20into,or%20particles%20of%20solar%20energy.
2016	Complainant Shoals Technology Group, LLC's Initial Post-Hearing Brief [Public Version; EDIS Doc. ID 820873]
2017	Complainant Shoals Technology Group, LLC's Reply Post-Hearing Brief [Public Version; EDIS Doc. ID 821478]
2018	Respondents' Post-Hearing Brief [Public Version; EDIS Doc ID 820862]
2019	Respondents' Reply Post-Hearing Brief [Public Version; EDIS Doc ID 820864]

Patent owner Shoals Technology Group, LLC ("Shoals") respectfully submits the following preliminary response pursuant to 37 C.F.R. § 42.207(a).

I. INTRODUCTION AND SUMMARY OF ARGUMENTS

Voltage[1] has not demonstrated that it is more likely than not that at least one of the claims of the '153 patent[2] is unpatentable, so the Board should deny the petition and decline to institute trial. Voltage contends "there is a reasonable likelihood that [it] will prevail," Pet. 17, but that lesser "reasonable likelihood" standard for instituting trial applies only in IPR proceedings, not in PGR matters such as this. *Compare* 35 U.S.C. § 314(a) (IPR trial institution standard is "reasonable likelihood") *with* 35 U.S.C. § 324(a) (PGR trial institution standard is "more likely than not"). Voltage's burden here was to prove unpatentability "more likely than not" at the petition stage, but the evidence and arguments submitted fall well short of that mark.[3]

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[1] "Voltage" refers to the petitioner Voltage, LLC and its real party-in-interest, parent company Ningbo Voltage Smart Production Co.

[2] U.S. Patent No. 11,689,153.

[3] The "more likely than not" standard is the very definition of the "preponderance of the evidence" standard of proof used post-institution, to determine whether a petitioner has proven unpatentability. *Warner-Lambert Co. v. Teva Pharms. USA,*

First, there are global failures that render the petition incapable of meeting the required standard, including Voltage's failure to confront known evidence of objective indicia of nonobviousness developed in an ITC investigation involving both Shoals and Voltage. Independently fatal is the failure of Voltage's expert witness, Dr. Kenny, to possess the solar industry experience required to competently speak to the views of a person of ordinary skill in the art (POSA) of "assemblies for connecting *solar panel arrays* to an inverter," as claimed in the '153 patent. EX1001 at, e.g., 1:21–24.[4] A resulting failure is that neither Dr. Kenny nor Voltage understands the claims or how they relate to the asserted references, which failure further renders the petition ineffectual.

As for the individually stated grounds for unpatentability, those reliant on obviousness (Grounds 1–7) share a major common flaw—conclusory assertions masquerading as motivation to combine with no evidentiary support and no evidence of a reasonable expectation of success. The Amphenol-based grounds (Grounds 2–4) are further hobbled by the petition's failure to show that Amphenol

Inc., 418 F.3d 1326, 1341 n. 15 (Fed. Cir. 2005) ("… a preponderance of the evidence, ... simply requires proving that [the issue] was more likely than not to have occurred").

[4] All instances of emphasis are supplied by Shoals unless otherwise indicated.

qualifies as a printed publication under 35 U.S.C. § 102(a)(1). Moreover, the solar array illustrations in Amphenol do not disclose what Voltage's unqualified expert says it does. Dr. Kenny's lack of solar experience also affects the Yamawaki-based grounds (Grounds 5–7), as he mistakenly reads Yamawaki as teaching something that it does not teach. Conclusory assertions and lack of understanding likewise doom Ground 1, as does the fact that the Solon '741-Yamawaki combination, if even reached, still lacks several structural elements required by the claims.

Finally, Ground 8 purports to assert unpatentability based on indefiniteness and lack of written description support. But these arguments fail because they are based on an overwrought claim construction proposal that the judge in the ITC investigation had rejected before Voltage filed the present petition. Applying the correct claim construction, there is no viable argument for unpatentability based on either definiteness or written description.

II. LEVEL OF SKILL IN THE ART

In the ITC proceeding,[5] Judge Bhattacharyya issued a claim construction order that included a finding as to the level of ordinary skill in the art: someone

[5] *Certain Photovoltaic Connectors and Components Thereof*, Investigation No. 337-TA-1365. *See* 88 Fed. Reg. 37905 (June 9, 2023), *as amended*, 88 Fed. Reg. 56883 (Aug. 21, 2023).

with "at least a bachelor's degree in mechanical or electrical engineering or a related scientific field and at least two years experience working with photovoltaic systems and electrical wiring, with recognition that more education could substitute for experience and that experience combined with training could substitute for formal education." EX1017, 12. A photovoltaic (PV) system is a solar electricity generation system in which "PV conversion produces electricity directly from sunlight in a photovoltaic cell." EX2014, 4; EX2015, 1. Voltage argued at the ITC, as it does here, that photovoltaic experience—solar experience[6]—is unnecessary for understanding how a POSA would have viewed a patent having "lead assembly for connecting solar panel arrays" in its title. Pet. 13; EX1001. Judge Bhattacharyya correctly rejected that argument.

Shoals' expert witness, Joshua Weiner, is a NABCEP[7]-certified solar practitioner with over 20 years of experience scaling project management and design teams within the solar PV integration industry. EX2002; EX2001, ¶¶ 5–16. He readily meets the solar experience component of the POSA definition.

[6] POSAs tend (now and in 2014) to use PV, photovoltaic, and solar interchangeably when referring to energy producing systems. EX2001, ¶ 48. Shoals does the same herein.

[7] North American Board of Certified Energy Practitioners. EX2002; EX2013, 2.

EX2003,[8] 1262:19–1263:9 (admission in ITC hearing as solar expert); 1257:5–1262:18 (foundation). Voltage's expert witness, in contrast, has no solar experience at all and cannot purport to channel the perspectives of a POSA, as explained further in section IV.A.1, below.

Judge Bhattacharya was right about the level of skill requiring solar experience, as application of the law to the facts confirms. The level of ordinary skill in the art may be determined by reference to several factors, including "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007) (citation and quotation marks omitted). "These factors are not exhaustive but are merely a guide to determining the level of ordinary skill in the art." *Id.*

The lead assembly claimed in the '153 patent is a component of what is typically referred to in the solar industry as Electrical Balance of Systems, or EBOS. EBOS components include things such as wire harnesses, connectors, fuses, combiner boxes, inverters, and other components used in the collection and

[8] EX2003 is the public version of the ITC hearing transcript. Citations refer to the page numbers appearing in upper right corner of each page.

storage of energy generated by solar power systems. EX2001, ¶ 8. According to Mr. Weiner, innovation was "endemic" to solar EBOS around the time of filing for the '153 patent. EX2001, ¶ 43. The '153 patent's sole named inventor, Dean Solon, was prolific during that period, filing ten different EBOS patent applications between 2010 and 2014, including the application for the '153 patent. *Id.* at ¶ 43–44. EX1001; EX1005; EX2004; EX2006–EX2012.

By the early 2010s, the solar field had matured to the point of specialization. Within the field, people and companies were increasingly specialized between "rooftop" systems, on the one hand, and utility-scale systems, on the other. Component designers were increasingly specialized between panels, EBOS, and other BOS (Balance of Systems) components. EX2001, ¶ 45. Mr. Weiner's declaration outlines the timeline, including the creation of regulatory articles devoted to solar installations (EX2005, 690.31(A)), the introduction of the first solar PV installer certification examination (EX2013, 2), and the generation of new product safety standards (EX2005, Annex A), to name a few. EX2001 ¶ 45.

As for types of problems encountered, solar EBOS presents unique challenges. To put solar EBOS into context, according to the U.S. Energy Information Administration's website:

> The United States uses many different energy sources and technologies to generate electricity. …

> The three major categories of energy for electricity generation are fossil fuels (coal, natural gas, and petroleum), nuclear energy, and renewable energy sources.

EX2014, 1.

Renewable energy sources are further subdivided into wind, hydro, biomass, geothermal—and solar. *Id.* "Photovoltaic (PV) and solar-thermal power are the two main types of solar electricity generation technologies." *Id.* "Most solar-thermal power systems use steam turbines to generate electricity," just like fossil fuel and nuclear power systems. *Id.* Photovoltaic systems are different: "PV conversion produces electricity directly from sunlight in a photovoltaic cell" with each PV cell generating around 1–2 Watts. *Id.* To be useful for larger-scale electricity generation, PV cells are electrically connected in a packaged, weather-tight PV *module*. EX2015, 2. PV modules may then be wired together thereby aggregating the generated power. *Id.*

PV systems create direct current (DC) electricity while steam and other turbine systems, on the other hand, typically generate alternating current (AC) electricity. *Id.* "Nearly all electricity is supplied as alternating current (AC) in electricity transmission and distribution systems;" likewise, nearly all the electricity used by consumers (residential and commercial) is also AC. *Id.*

The fact that PV electrical generation uses panels of PV cells, rather than turbines, must be borne in mind in evaluating the transferability of technology

from non-PV environments to PV environments. EX2001, ¶ 51. In particular, any electricity-generating system will have BOS (including EBOS) components for taking electricity generated by those production components to the "grid" through which the electricity will be distributed. But PV BOS has to work with electricity-producing components that are relatively much more dispersed than in turbine systems. PV BOS will generally have much greater outdoor, environmental exposure than turbine BOS because, unlike turbines, solar panels cannot be housed in a dam or powerplant building. Also, PV BOS consists mainly of DC power rather than AC power. EX2001, ¶ 51.

As Mr. Weiner indicates, regulatory considerations amplify the weight of the technical distinctions between PV and non-PV installations. *Id.* at ¶ 52. Codes generally require electrical system components to be certified by a nationally recognized Testing Laboratory, or NRTL. *Id.* Because certification is both structure- and use-specific, changing either the structural characteristics or the use of a component requires re-certification. And there is no guarantee that certification will be made for either the modified structure or the alternative use. *Id.* In addition, there is no guarantee that the same device is certified at different points in time. Regulations change with the evolution of the technology and the understanding of the risks associated therewith. *Id.* This is particularly true of PV

installations in the past several decades as the technology has undergone technological shifts commensurate with burgeoning, widespread technology. *Id.*

As Mr. Weiner testifies, "these differences between PV and other forms of electricity generation should be accounted for, when describing a POSA." EX2001, ¶ 53. This is particularly true because the '153 patent is solar PV-specific on its face. This is reflected in its title, abstract, the preambles of each independent claim, and many other claim elements that specifically recite "solar module," "solar array," and "solar panel." EX1001.

In view of the foregoing, Shoals agrees with Judge Bhattacharyya's determination in the ITC proceeding that the level of ordinary skill in the art requires at least two years of experience working with photovoltaic systems and electrical wiring. EX1017, 12.

III. CLAIM CONSTRUCTION

Shoals also agrees with the considered claim constructions issued by Judge Bhattacharyya in the ITC proceeding regarding the terms "primary mold," "aperture," and "extending partially." EX1017, 36, 37, 41, 49.

primary mold: "[a] mold fully encasing the nexus and substantially sealing the nexus from external environmental conditions." *Id.* at 37.

aperture: "the entire pathway of the [feeder cable/drop line] within the [undermold or primary mold] when viewed as if the [feeder cable or drop line] were removed." *Id.* at 41.

extending partially: "[t]he 'second aperture' and 'third aperture' terms correspond to the pathway in the undermold/primary mold of the claimed 'first drop line' and 'second drop line,' respectively." *Id.* at 49.

These constructions articulate how a POSA would have understood the plain meaning of this language, as is clear from the analysis Judge Bhattacharyya provided in the claim construction order. Relying wholly on the intrinsic record, as neither party engaged a claim construction expert witness, the order explains that the term "primary mold" is a "molded material" which has a particular function defined in claims 21 and 24 as "fully encase[ing] the nexus so as to substantially seal the nexus from external environmental conditions." EX1017, 36–37; EX1001, cl. 21, 24. Indeed, the '153 specification provides that the molded assembly is "profoundly durable, resistant to environmental factors such as temperature fluctuations, debris, and moisture, and is strong enough to be buried." EX1001 at 6:10–13. This is supported by the many figures in the '153 patent that illustrate various views of molds encasing the nexus. *See, e.g.*, *id.*, Figs. 5–8, 11–52, 54, 55–58, and 60. In light of the specification, a skilled artisan would have understood

that the "primary mold" is molded material fully encasing the nexus and substantially sealing the nexus from external environmental conditions.

The term "aperture" was introduced in the claims of the '254 patent[9]—the parent of the '153 patent—via an examiner's amendment. EX1021, 103–105. Similar aperture limitations are included in the '153 patent. As noted by Judge Bhattacharyya, claim limitations related to the aperture terms (e.g., first, second, and third apertures) include the relationship between the aperture and the structure (i.e., the feeder cable or drop line) to which the aperture corresponds. EX1017, 38–39; EX1001, cls. 1, 21, 24. The "aperture" must simply be able to accommodate a respective [feeder cable/drop line] and/or securing means, which is commensurate with the construction as ordered.

For the term "extending partially," the meaning is clear from the claims, as noted in the claim construction order: "[t]he claim language ties the 'second aperture' and the 'third aperture' to these [first and second] drop lines [respectively] and, as discussed *supra,* the 'aperture' terms are defined with reference to pathways for the claimed drop line(s) and/or feeder cable." EX1017, 49. For example, the claims state, "a second aperture extending partially through the undermold … wherein the drop line extends from the second aperture."

[9] U.S. Patent No. 10,992,254.

EX1001, cl. 1. This is further confirmed in the figures which illustrate drop lines in the undermold/primary mold and extending from the undermold/primary mold. *Id.*, Figs. 47–49, 51–54. Therefore, the natural reading of the claims conveys that the aperture is coextensive with the respective drop lines, which is reflected in the above construction of the phrase "extending partially."

For purposes of this preliminary response, all other claim language should likewise be assigned its plain and ordinary meaning.

IV. THE PETITION FAILS TO DEMONSTRATE THAT IT IS MORE LIKELY THAN NOT THAT AT LEAST 1 OF THE CHALLENGED CLAIMS IS UNPATENTABLE.

The petition fails in a variety of ways to make the showing required by statute: "that it is *more likely than not* that at least 1 of the claims challenged in the petition is unpatentable." 35 U.S.C. § 324(a). Some failures are global and thus negate the required showing for all asserted grounds of unpatentability. Others affect only specific grounds (or groups of grounds) but are no less fatal to those affected grounds.

A. At least three global failures negate the required showing as to all asserted grounds.

The petition suffers from three global shortfalls that, alone or collectively, negate any possibility of demonstrating that it is more likely than not that at least one of the challenged claims is unpatentable. First, Voltage's expert witness, Dr. Kenny, lacks the experience with solar power installations required to competently

opine as to what a POSA would have understood at the relevant time (September 2014). Second, and as a result, neither he nor Voltage understands the claims of the '153 patent and, more specifically, how they relate to the asserted prior art references. Third, the petition fails to confront evidence of objective indicia of nonobviousness that was known to Voltage prior to filing the present petition.

1. Voltage's proffered expert witness lacks solar experience and is therefore not qualified to testify as to the perspective of a person of skill in the art as of September 2014.

Obviousness, definiteness, and written description support are evaluated from the POSA's perspective. *Otsuka Pharm. Co., v. Sandoz, Inc.*, 678 F.3d 1280, 1296 (Fed. Cir. 2012) (for obviousness, "[w]hat matters is the path that the person of ordinary skill in the art would have followed, as evidenced by the pertinent prior art"); *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910, (2014) (for definiteness, "a patent's claims, viewed in light of the specification and prosecution history, [must] inform those skilled in the art about the scope of the invention with reasonable certainty"); *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc) (for written description, "the test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date").

The views of non-POSAs on these issues are thus irrelevant distractions. *Kyocera Senco Indus. Tools Inc. v. Int'l Trade Comm'n*, 22 F.4th 1369, 1376–78 (Fed. Cir. 2022). But Voltage has not provided *any* analysis of obviousness, definiteness, or written description from the perspective of a POSA in the field of the'153 patent, which requires *solar experience*. *See* § II, above. Voltage concedes in the petition that the field of endeavor of the '153 patent is "electrical connectors and *solar installations*." Pet. 136. And Dr. Kenny himself agreed in his sworn ITC testimony that the pertinent field of the '153 patent is: "methods and apparatus for a lead assembly for use in a *solar energy installation* ... *solar power systems* and a method of construction a *solar power installation*." EX2003, 1230:1–24.

Yet Dr. Kenny, although certainly qualified in other areas, admitted in the ITC that he has "no experience with photovoltaic systems," EX2003, 1231:22–24, professional or otherwise, *id.*, 1187:1–11, 1221:3–19, 1226:8–1229:22, 1228:20–1229:2. Dr. Kenny thus concedes that he is not a POSA under the correct definition from the ITC claim construction order, which requires "at least two years experience working with photovoltaic systems." EX1017, 12.

In addition, Dr. Kenny has no education, formal or otherwise, related to photovoltaic systems and electrical wiring of photovoltaic systems, so he cannot substitute his lack of practical experience with additional education. EX2003, 1187:1–11, 1221:3–19. He testified at the ITC that he did not take any "classes that

were specific to any content that is related to installing or building solar installations." EX2003, 1229:14–16. Indeed, in response to Judge Bhattacharyya's direct inquiry about his experience with such systems, Dr. Kenny could only muster that it was "part of [his] education in physics" in that he worked with "semiconductor devices" where electrons flow through band structures where energy may be extracted. *Id.*, 1186:23–1187:7. However, understanding semiconductor physics is a far cry indeed from experience in photovoltaic *systems*, their layout, construction, and infrastructure.

Dr. Kenny also testified at the ITC that he has not authored any papers that include solar-related subject matter; that he has not participated in symposia related to solar installations; and that he has not testified as an expert witness in any solar cases. EX2003, 1226:8–1229:22. He agreed that the word "solar" does not appear on his résumé, and that he has not consulted or advised on the design or implementation of a solar installation of any size. *Id.*, 1228:3–10 In fact, Dr. Kenny testified that his only solar experience was related to personal use of "low-power applications for consumer-grade electronics," e.g., charging phones and camping trips. *Id.*, 1228:20–1229:2.

Further, Dr. Kenny admitted that he does not have any solar-related certifications or accreditations, nor does he have any working knowledge of codes or standards that relate to solar, prior to his work on this case, such as, for example,

sections of the National Electrical Code (NEC) that govern solar installations. EX2003, 1229:18–22.

Despite Dr. Kenny's admission at the ITC that he has no solar-related experience, let alone expertise, and despite Voltage's present attempts to read "solar" and "photovoltaic" out of the relevant field of the '153 patent, Voltage nevertheless argues in the petition that a POSA would have had a working knowledge of solar-related chapters of the NEC. For example, Voltage states at least four times in its petition that "a POSITA would have been familiar with the NEC 2002 which illustrates Figure 690.1(B)." *See, e.g.*, Pet. 31, 61, 89, 118. But Dr. Kenny expressly admitted at the ITC that he had *no knowledge* of the NEC sections—including section 690—that govern solar installations. EX2003, 1229:18–22.

> Q. [D]id you have any familiarity or working knowledge of the National Electrical Code as it pertains to solar?
> A. Almost certainly not.

Id. Thus, while a POSA would certainly have been familiar with the applicable NEC sections, Dr. Kenny is in no position to divine what that person would have understood of them.

Moreover, the POSA in 2014 would have looked to the then-current NEC, not the 2002 version that Dr. Kenny points to, filed as EX1010. The NEC was updated at least in 2011 and 2014 (EX2005), both of which were much more

relevant in 2014 to the state of the art and to those working in the field of the '153 patent. EX2001, ¶ 63. Indeed, reliance on the 2002 version of the NEC in the 2014 timeframe would have constituted a serious health and safety risk. EX2001, ¶ 64. In the twelve-year period between the 2002 and 2014, safer products, means, and methods were created to improve the functionality and safety of solar installations, particularly for EBOS. *Id.* As such, a POSA in 2014 would never have looked to the 2002 version of the NEC for guidance because doing so would have created an unnecessary risk. *Id.*

Looking to an outdated NEC is not Dr. Kenny's only mistake. He also cites to a chapter from a solar textbook from ***2001*** (EX1011) which, even in 2014, was woefully out of date. EX2001, ¶ 63. These mistakes further underscore Dr. Kenny's complete lack of experience with solar power generation systems and consequent inability to speak to the state of the art or the POSA perspective in 2014.

Dr. Kenny has neither the experience nor the educational training in the field of the photovoltaic systems required of a POSA under the correct definition, so the Board should assign no weight to his opinions. *HVLPO2, LLC v. Oxygen Frog, LLC*, 949 F.3d 685, 688–89 (Fed. Cir. 2020) ("Issues of infringement and validity 'are analyzed in great part from the perspective of a person of ordinary skill in the art,' such that a witness who is 'not qualified as an expert by knowledge, skill,

experience, training, or education in the pertinent art ... [cannot] assist the trier of fact to understand the evidence or to determine a fact in issue.'") (citations omitted). Indeed, the Federal Circuit has recently commented that POSA-level testimony from one who lacks POSA qualification could "serve[] only to cause mischief and confuse," and "amount[ ] to nothing more than advocacy from the witness stand":

> To offer expert testimony from the perspective of a skilled artisan in a patent case—like for claim construction, validity, or infringement—a witness must at least have ordinary skill in the art. *Without that skill, the witness' opinions are neither relevant nor reliable.* The opinions would not be based on any specialized knowledge, training, or experience that would be helpful to the factfinder. In fact, "[a]dmitting testimony from a person ... with no skill in the pertinent art serves only to cause mischief and confuse the factfinder." *Sundance*[, *Inc. v. DeMonte Fabricating Ltd.*], 550 F.3d [1356,] 1362 [(Fed. Cir. 2008)]. That testimony would "amount[ ] to nothing more than advocacy from the witness stand." *Id.* at 1364–65.

Kyocera, 22 F.4th at 1376–78 (bracketed case citation material added). The Board should thus assign no weight to Dr. Kenny's testimony insofar as it purports to state the views of a POSA in 2014.

2. The petition demonstrates a failure to understand the invention, arising from Dr. Kenny's lack of solar industry experience.

An inevitable consequence of Dr. Kenny's inexperience with photovoltaic systems is his, and thus Voltage's, flawed understanding of the inventive concept embodied by the challenged claims. The petition misses fundamental architectural differences between the cited art on the one hand and the claimed invention on the other. The '153 patent is not just a simplification or consolidation of architecture existing at the time of filing, as Voltage suggests. *See, e.g.*, Pet. 19. Rather, the '153 patent represents a fundamental shift in the architecture of utility-scale solar power installations; a shift that cannot be boiled down to a combination of cables, wires, connections, or various wire harnesses.

The '153 patent acknowledges that the prior art includes, for example, solar modules, solar panels, insulated wires, molds, wire harnesses, and combiner boxes. The '153 patent thus informs the skilled artisan that those individual elements are not the claimed invention. Instead, the invention taught by the '153 patent is a novel and nonobvious combination of elements.

The '153 patent explains, for example, the prior art use of wire harness architecture, including that of Solon '741, EX1005. Figs. 1 and 2 from the '153 patent illustrate the prior art architecture:

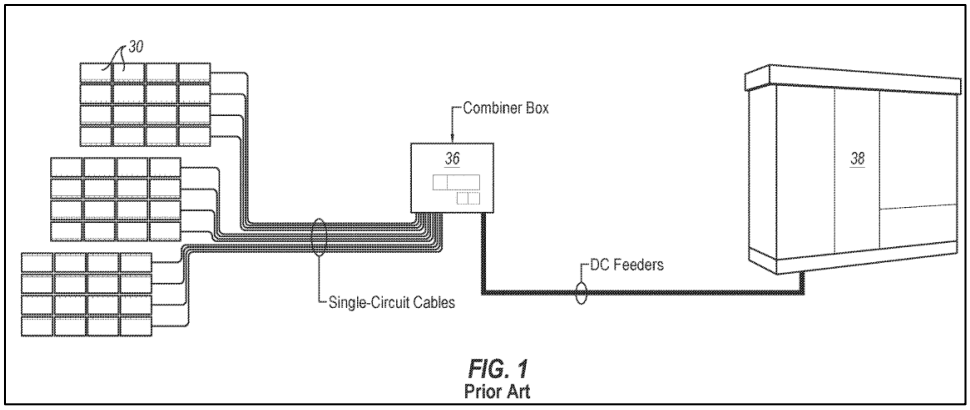


FIG. 1
Prior Art

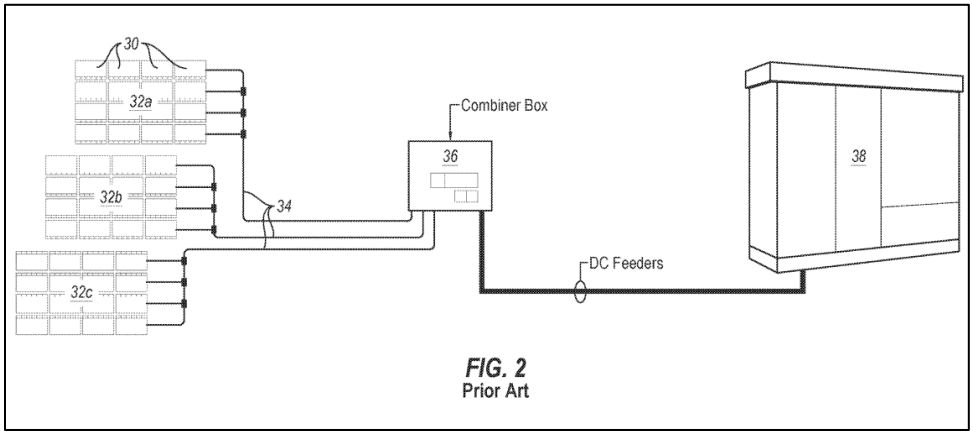


FIG. 2
Prior Art

EX1001, Figs. 1–2.

The ’153 patent explains that Fig. 2 is a simplification of the architecture illustrated in Fig. 1, where the simplification that was achieved “by the wire harness of U.S. Pat. No. 8,604,342 [Solon ’342, EX2004].”[10] EX1001, 1:32–36. Solon ’342 is an earlier of Dean Solon’s EBOS patents that “relates generally to … simplifying the electrical infrastructure associated with solar energy utilities.” EX2004, 1:8–11. The ’153 patent explains further that “FIG. 1 depicts a

[10] Two other then-pending Solon patent applications that show the same wire harness are also identified.

conventional wiring configuration with each solar panel individually wired to a central combiner box," and that "FIG. 2 depicts an improved but known wiring configuration with solar panels harnessed together to form solar arrays, with each solar array individually wired to a central combiner box." EX1001 at 2:21–27.

The '153 patent explains the progression from Fig. 1 to Fig. 2 as follows:

> As depicted in FIG. 1, a conventional solar power configuration includes a plurality of solar panels 30 each connected to a central combiner box 36, and a plurality of combiner boxes (not shown) connected to an inverter. The inverter converts the direct current (DC) generated by the solar panels into alternating power (AC), which goes in the "grid".
>
> The configuration of FIG. 1 has been simplified in recent years by the wire harness of [Solon '342 and other Solon applications[11]], all of which are hereby incorporated by reference. More specifically, as shown in FIG. 2, wire harnesses 34 connect multiple solar panels 30 in an array 32, so each array has a single input via wire harness 34 into the combiner box.

Id. at 1:25–39. In short, the single-circuit cables of Fig. 1—designed to take power from individual solar panels (i.e., a collection of modules[12]) to a combiner box—

[11] See note 10.

[12] EX2001, ¶ 71.

are grouped into the wire harnesses (ref. no. 34) of Fig. 2. However, the '153 patent qualifies this simplification as progress, not victory: "Unfortunately, however, a combiner box is still a necessary component in known solar power installations because the energy from solar arrays must be combined prior to going into an inverter." *Id.* at 1:44–47.

Fig. 3 depicts the subsequent improvement, the invention of the '153 patent: the *lead assembly* which is designed to consolidate power from wire harnesses at a nexus encased by a mold. EX1001 at, e.g., cl. 1. The lead assembly enables a totally different solar power architecture, one that does not need a combiner box. *Id.* at Figs. 3–4. Fig. 3 schematically represents this shift from old to new architecture, crossing out the combiner box for illustrative purposes:

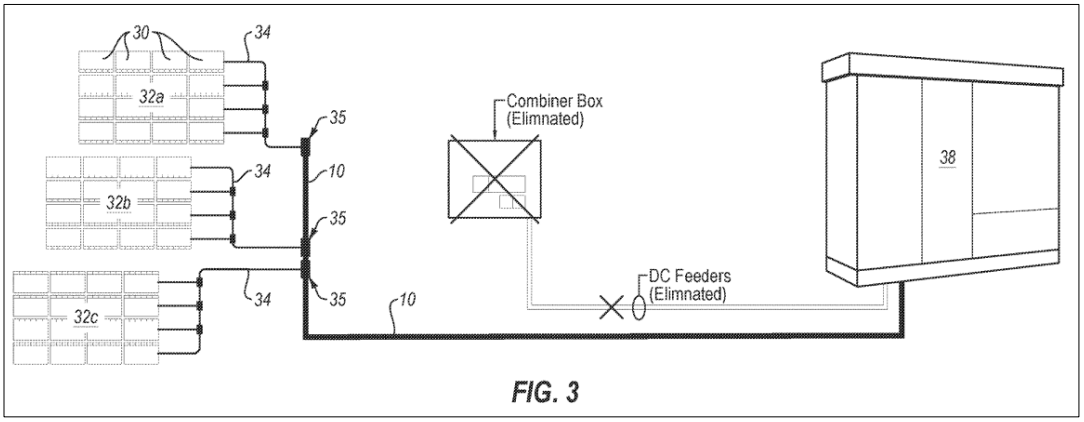


FIG. 3

Id. at 2:28–31. Fig. 4 schematically represents a system including the lead assembly:

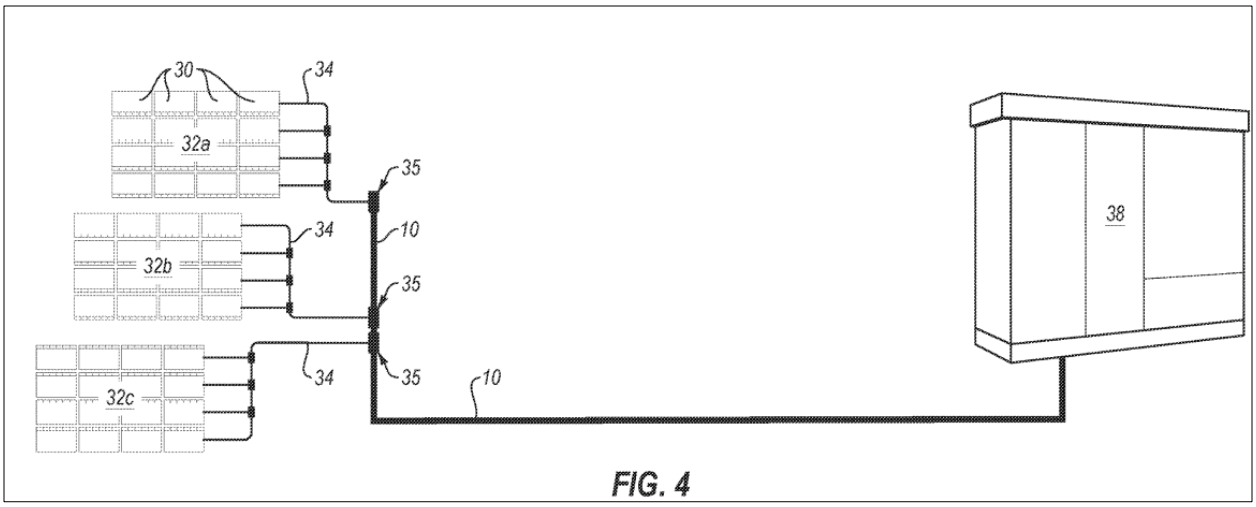


FIG. 4

Id. at 2:32–33. The ’153 patent thus teaches a difference between consolidating and thereby reducing the number of connections feeding into combiner boxes—in the manner taught, for example, by Solon ’342 and Solon ’741—and eliminating the combiner boxes, in the manner taught by the ’153 patent.

Voltage’s asserted grounds for unpatentability reflect Voltage’s failure to grasp this distinction; a natural result of relying on an expert with no solar experience.

3. The petition fails to confront known evidence of objective indicia of nonobviousness.

Obviousness is a question of law based on underlying facts. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 427 (2007). The underlying facts are the four *Graham* factors, namely: (1) the scope and content of the prior art; (2) differences between the prior art and the claims at issue; (3) the level of ordinary skill in the pertinent art; and (4) objective indicia of nonobviousness, often called secondary

considerations, such as long-felt but unmet need, industry skepticism, industry praise, and commercial success. *Id.*; *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). A determination of obviousness "requires consideration of all four *Graham* factors, and it is error to reach a conclusion of obviousness until all those factors are considered." *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc). Voltage's burden as the petitioner was to prove unpatentability "more likely than not" at the petition stage, so a wholesale failure to address known evidence of one of the four *Graham* factors—factor (4) regarding objective indicia of nonobviousness—amounts to a failure to carry that burden, because "[o]bjective indicia of nonobviousness must be considered in every case where present." *Id.*

A few weeks before Voltage filed the present petition, Shoals and Voltage litigated the issue of the patentability—specifically, the alleged obviousness and indefiniteness—of the '153 patent, in a one-week evidentiary hearing before Judge Bhattacharyya of the U.S. International Trade Commission.[13] The hearing was the culmination of a one-year investigation in which Shoals disclosed to Voltage, and put through the adversarial crucible, evidence of objective indicia of nonobviousness, including (1) long-felt but unmet need, (2) industry skepticism,

[13] See note 5.

(3) industry praise, (4) commercial success, and (5) the nexus between the commercial product and the claims. At the hearing, through three fact witnesses and two experts, Shoals presented considerable testimonial and documentary evidence as to each of these issues. Voltage did not present any rebuttal evidence at the hearing. Shoals incorporated that same hearing evidence into its post-hearing briefs. EX2016, § VII.F (pp. 125–132); EX2017, § VI.C (pp. 56–57).[14] Voltage failed to identify any countervailing evidence in its responsive post-hearing brief, EX2019, or in its initial brief, EX2018.[15]

[14] Shoals does not seek here to circumvent the word-count limitation by referring to these arguments or to the evidence cited therein. Rather, the point is to illustrate that the objective indicia issues were undeniably disclosed to Voltage at the hearing and in the months leading up to it, in a manner and with the kind of clarity and evidentiary support that remove any possibility that Voltage was, as it claims in the petition, "unaware of any secondary considerations relevant to the '153 patent." Pet. 17.

[15] Exhibits 2016–2019 are the redacted public versions of these briefs, retrieved from the ITC's EDIS electronic filing system, *https://edis.usitc.gov*., as is the consolidated transcript of Exhibit 2003. Shoals represents, per its duty of candor, that it holds a good faith belief that the redactions do not obscure any evidence,

The Board has seen this scenario before and has "cautioned petitioners … that petitions may be denied if they do not address *known evidence of secondary considerations*." *Stryker Corp. v. KFx Medical, LLC*, No. IPR2019-00817, Paper 10 at 28–29 (PTAB Sept. 16, 2019) (citing *Robert Bosch Tool Corp. v. SD3 LLC*, IPR2016-01751, Paper 15 at 23 (PTAB Mar. 22, 2017) (denying institution in view of objective indicia presented during an ITC proceeding[16] but not addressed in petition)); *Coalition for Affordable Drugs V LLC v. Hoffman–LaRoche, Inc.*, IPR2015–01792, Paper 14 at 18 (PTAB Mar. 11, 2016) (denying institution, in part for failure to address objective indicia considered by Examiner during original prosecution).

testimony, or argument from Voltage regarding objective indicia of nonobviousness.

[16] The ITC proceeding in the *Robert Bosch* case had ended, with a final determination by the judge upholding validity and relying in part on "very strong" secondary considerations evidence. Paper 15 at 23. The Board therefore took the unusual step of considering that evidence at the petition stage. *Id.* The initial determination in Shoals ITC case against Voltage, 337-TA-1365, is not expected until August 16, 2024. *See* EDIS Doc. ID 825297.

The Board should thus deny Voltage's petition for failure to address all four Graham factors despite knowing of Shoals' concrete and crystalized arguments and evidence regarding objective indicia of nonobviousness.

B. The petition's obviousness-based grounds fail (Grounds 1–7).

Obviousness is based on an underlying factual determination of "whether a [POSA] would have been motivated to combine the prior art to achieve the claimed invention and whether there would have been a reasonable expectation of success in doing so." *TQ Delta, LLC v. Cisco Sys.*, 942 F.3d 1352, 1357 (Fed. Cir. 2019) (citation omitted). A finding of obviousness "cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR*, 550 U.S. at 418 (2007) (citation omitted). "This requirement is as much rooted in the Administrative Procedure Act, which ensures due process and non-arbitrary decision making, as it is in § 103." *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Accordingly, "a conclusory assertion with no explanation is inadequate to support a finding that there would have been a motivation to combine" because "[t]his type of finding, without more, tracks the *ex post* reasoning *KSR* warned of and fails to identify any actual reason why a skilled artisan would have combined the elements in the manner claimed." *In re Van Os*, 844 F.3d 1359, 1361–62 (Fed. Cir. 2017)

(citing *KSR*, 550 U.S. at 418, 421). Moreover, "[c]onclusory expert testimony does not qualify as substantial evidence." *TQ Delta*, 942 F.3d at 1358.

Here, Voltage and its expert assert alleged motivations to combine the prior art that are based on conclusory, substance-free testimony and, therefore, are unsupported by evidence. There is no basis for concluding that, more likely than not, a person of skill in the art would have combined Amphenol (even if it could qualify as prior art), Shao, Yamawaki, Tamura and/or Solon '741 to arrive at the claimed inventions of the '153 patent.

1. The Amphenol-based combinations of Grounds 2, 3, and 4 fail to demonstrate that it is more likely than not that any challenged claim is unpatentable.

a. The evidence does not prove it more likely than not that the Amphenol reference qualifies as a printed publication.

"Because there are many ways in which a reference may be disseminated to the interested public, 'public accessibility' has been called the touchstone in determining whether a reference constitutes a 'printed publication.'" *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016) (quoting *In re Hall*, 781 F.2d 897, 898–99 (Fed. Cir. 1986)). "A given reference is 'publicly accessible' upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it." *SRI Int'l,*

Inc. v. Internet Sec. Sys., Inc., 511 F.3d 1186, 1194 (Fed. Cir. 2008) (quoting *Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374, 1378 (Fed. Cir. 2006)).

It is Voltage's burden to show that the Amphenol reference, EX1007, was publicly accessible before the September 2014 priority date of the '153 patent. That burden could vary with the nature of the proceeding, as well as the stage. For IPR proceedings, the Precedential Opinions Panel expressly held in *Hulu* that, at the petition stage, the evidence has to meet the statutory institution standard of "reasonable likelihood" of prevailing:

> [A]t the institution stage, the petition must identify, with particularity, evidence sufficient to establish a reasonable likelihood that the reference was publicly accessible before the critical date of the challenged patent and therefore that there is a reasonable likelihood that it qualifies as a printed publication.

Hulu, LLC v. Sound View Innovations, LLC, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential). That "reasonable likelihood" standard does not govern here, but the precedential *Hulu* holding still controls, just with the "more likely than not" PGR standard in place of "reasonable likelihood":

> We recognize that *Hulu* originated from an IPR, but with one exception, we treat the holding in *Hulu* as equally applying to this PGR. Instead of using the "reasonable likelihood" threshold standard associated with an IPR for determining whether Homedics® Video II was accessible publicly before critical date of the '376 and, therefore, qualifies as a

> printed publication, *we use the "more likely than not" threshold standard associated with a PGR*. *Compare* 35 U.S.C. § 314(a), *with* 35 U.S.C.

London Luxury LLC v. E & E Co., Ltd., PGR2021-00083, Paper 10 at 35 (PTAB Nov. 15, 2021). Thus, under the *Hulu* test as modified for PGR petitions:

> the petition must identify, with particularity, evidence sufficient to establish ~~a reasonable likelihood~~ that it is more likely than not that the reference was publicly accessible before the critical date of the challenged patent and therefore that ~~there is a reasonable likelihood~~ it is more likely than not that it qualifies as a printed publication.

Hulu, IPR2018-01039, Paper 29 at 13, with language deleted (in strikethrough) and added (in underline) as per *London Luxury*, PGR2021-00083, Paper 10 at 35.

The petition in this case fails to identify, with particularity, evidence sufficient to establish that it is more likely than not that the Amphenol reference was publicly accessible before September 2014. Instead, the petition simply states that Amphenol "was published no later than November 30, 2012, … as established in the declaration of Gary Joseph (EX1024)," citing Amphenol's cover page for support. Pet. 6.

The cover page does not indicate the document was "published" on November 30, 2012, or any other date. Rather, it identifies that date as the "ICS 18-6 Release date." EX1007, 1. There is no evidence on which to base an inference

that the phrase "ICS 18-6 Release date" implies publication, but even if there were, that would not be enough without a showing that the distribution included skilled artisans. *SRI Int'l*, 511 F.3d at 1197 ("Unlike the posters hung at a conference in *Klopfenstein*, the Live Traffic paper was not publicized or placed in front of the interested public.").

As for Mr. Joseph's declaration, it suffers from a number of problems. First, it comes from a current employee of Voltage—the petitioner—regarding an issue on which his bias, even if unconscious, likely taints his recollection. EX1024, ¶ 1. Next, Mr. Joseph purports to testify regarding the availability, offers for sale, and advertising of generally described products, *id.*, ¶¶ 4–7, 8, but the petition makes no mention of any such event. It instead alleges only that Amphenol "is prior art under 35 U.S.C. § 102(a)(1) because it was published no later than November 30, 2012." Pet. 6. The only issue raised by the petition is whether Amphenol qualifies as a printed publication.

On that front, Mr. Joseph provides no specifics or evidence that the document labeled EX1007,[17] the alleged Amphenol refence, was ever

[17] Mr. Joseph does not refer to EX1007, but instead refers to what appears to be an identical document attached as Exhibit A to his declaration, which he calls "the Solar Line Brochure." EX1024, ¶ 2.

"disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it." *SRI Int'l*, 511 F.3d at 1194. Instead, he speaks in generalities about "Amphenol's regular practice," and his resulting assumption that EX1007 "would have been publicly available for anyone visiting Amphenol's website to download around or after its Release Date of November 2012," with no evidence to prove that, or how POSAs would have located the document using reasonable diligence. EX1024, ¶ 8. Regarding dissemination, Mr. Joseph speaks not of the cited Amphenol reference, but of "a recent or current version of it," which he claims, without elaboration or proof, would have been "available for distribution to potential customers and at business development events in the United States, including trade shows, conferences, and meetings with potential and existing customers." *Id.*, ¶ 9. This assertion accomplishes nothing, as it does not speak to the actual document at issue, nor does it allege facts or cite evidence to support an inference that the customers and conference/tradeshow attendees were POSAs.

Mr. Joseph does not identify whether he is the source for EX1007, or how Voltage found it. It is reasonable to infer from his declaration, however, that it is a recent find, because he states that he "recognizes" it "as a true and accurate copy of the Solar Line Brochure that would have been publicly available around or after its stated Release Date of November 2012." EX1024, ¶ 10. So the provenance of

EX1007 itself is unknown, but the basis for Mr. Joseph's "recognition" is even more thin. He compares the alleged Amphenol reference to a different document, one that he *was* willing to identify as having come from his files, but circularly cites nothing more than the "ICS-18-2" "Release Date" as proof of that document's date. *Id.* Nor does he explain the significance, if any, of the "ICS" number, or identify any metadata associated with that second document, attached as Exhibit B to his declaration, or otherwise explain how it is "a version" of EX1007. *Id.* A visual comparison of the two certainly begs the question of how that could be so.

Mr. Joseph's declaration is so general and threadbare that it cannot satisfy the "more likely than not" standard required in this PGR to establish the public accessibility of the Amphenol reference via dissemination or availability to interested and reasonably diligent POSAs. *Adama Agan Ltd. v. Bayer Cropscience LP*, PGR2022-00057, Paper 9 at 29–34 (PTAB Feb. 13, 2023) ("Without any additional evidence, such as testimonial evidence from someone with knowledge about what this electronic record means in terms of the public accessibility of the reference for persons interested and ordinarily skilled in the subject matter or art, Petitioner has submitted insufficient evidence that the EPA Section 18 Memorandum is publicly accessible.").

b. Amphenol does not disclose what Voltage and its unqualified expert say it discloses.

Even if Voltage and Dr. Kenny adequately showed evidence of the Amphenol brochure's public availability (they do not), Amphenol does not teach what Dr. Kenny and Voltage propose. In particular, Amphenol does not teach a lead assembly connecting to wire harnesses to alleviate the need for combiner boxes in utility-scale solar installations, as taught and claimed by the '153 patent.

To begin, Voltage and Dr. Kenny conflate a wire harness with intra-module wiring. A "wire harness" as identified in the claims and specification of the '153 patent is a solar component that includes a "central trunk" and "a plurality of branches," where each of the plurality of branches is configured to electrically connect to a separate solar panel contained in an array of a plurality of solar panels. EX1001, cl. 1. Figure 4 of the '153 patent (shown below) is instructive.

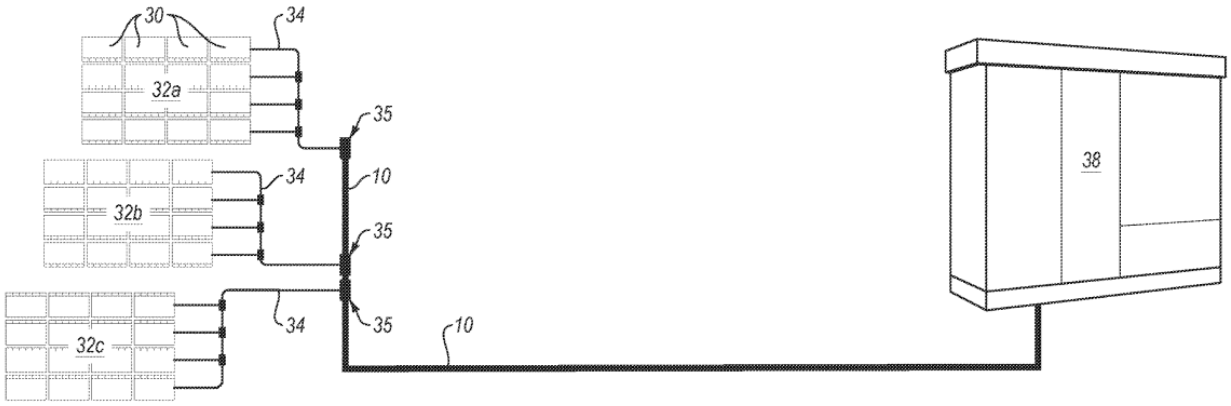
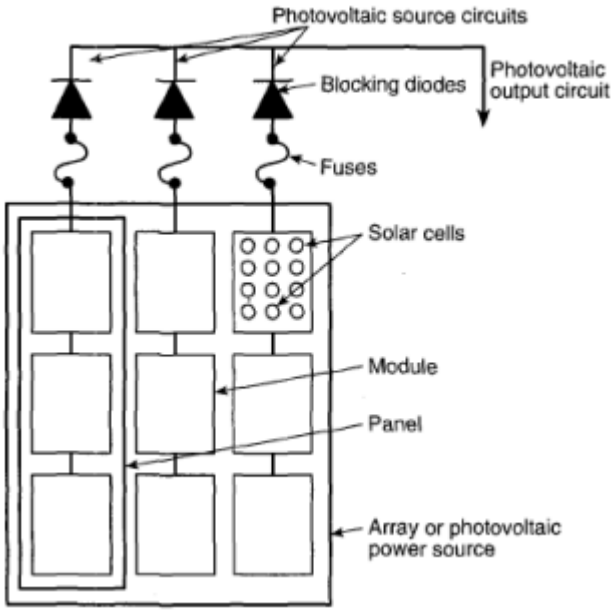


FIG. 4

EX1001, Fig. 4. In figure 4, each solar wire harness 34 includes, as an example, four branches that each connect to the output of a separate solar panel (formed

from a row of modules 30). In this way, each wire harness 34 groups the outputs of four solar panels, which each form a separate solar array (32a, 32b, and 32c, respectively).

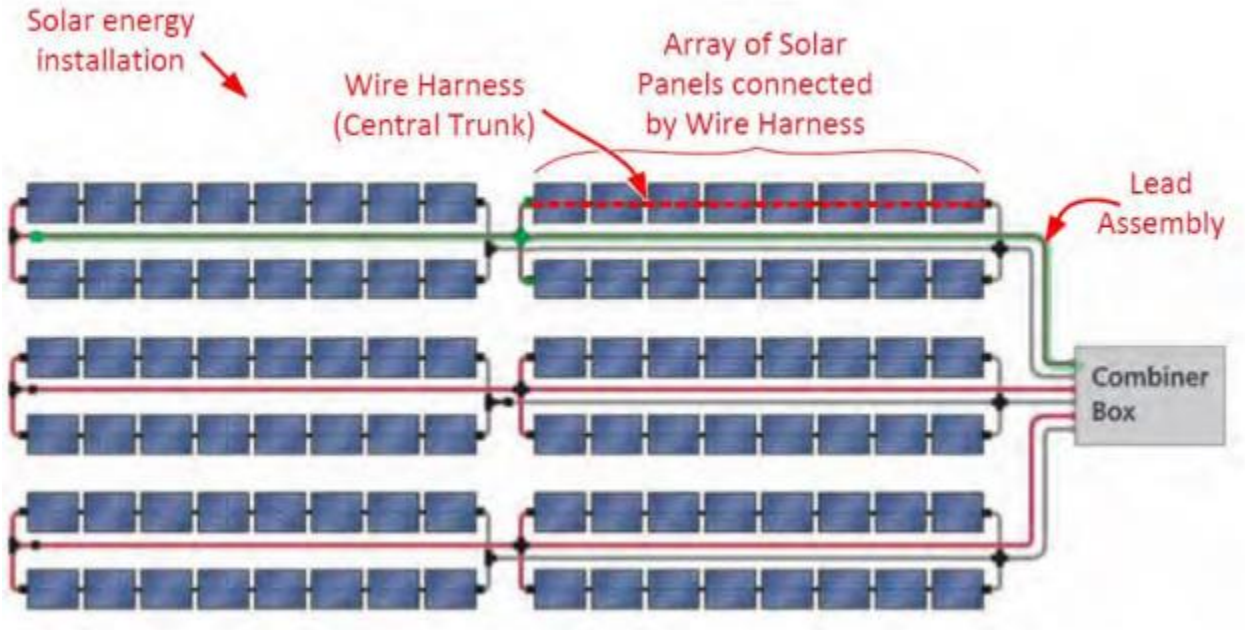
Use of intra-module wiring between solar modules to form a solar panel is a well-known concept. Indeed, the concept is even illustrated in the NEC section (section 690) cited by Dr. Kenny in his expert declaration. EX1003, ¶ 93 (*citing* EX1010). Section 690.1(A) illustrates the following:



EX1010, Figure 690.1(A). The figure above shows three columns each of three solar modules, each column forming a single solar panel. The lines between solar modules indicate electrical connections or intra-module wiring between the solar modules. What is not shown in Figure 690.1(A) is a wire harness: individual branches each connecting to an output of one of the solar panels (of which there

are three in the figure) and grouping those outputs at a central trunk. A wire harness is not the same as intra-module wiring, as Mr. Weiner points out in his declaration, the scale and purpose are entirely different. EX2001, ¶ 89.

To illustrate its point, Voltage created the following annotated figure from the Amphenol brochure as evidence that Amphenol teaches wire harnesses and lead assemblies.



EX1003, ¶ 185 (citing EX1007, p. 5 with annotations). Dr. Kenny includes a red dotted line between the solar modules shown in the Amphenol brochure and declares that the red dotted line shows the existence of a wire harness. Not so.

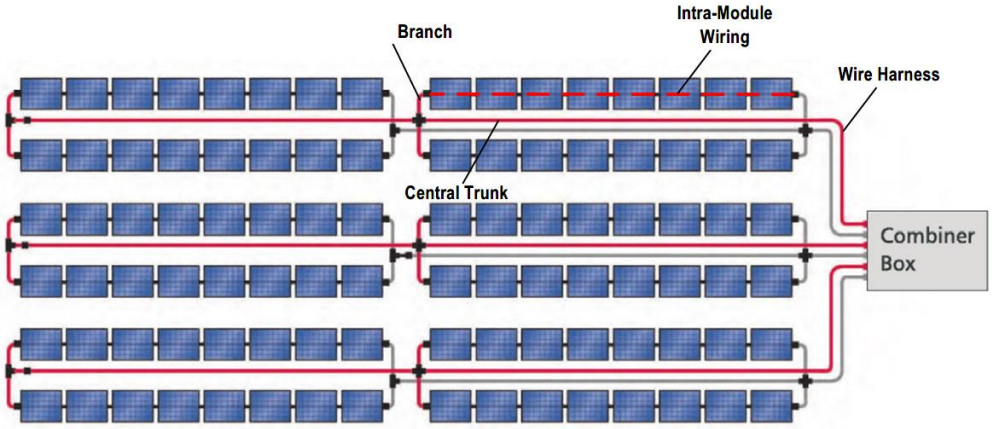
First, nothing in Amphenol indicates what sort of wiring connects the solar modules in each row. Indeed, there are many wiring techniques between modules that can be employed such as, for example, stringing modules together with wiring

from individual junction boxes, skip-stringing, parallel wiring, etc. EX2001, ¶ 91. However, these wiring techniques have nothing to do with a wire harness. Regardless of the wiring used to electrically connect various solar modules together, at the end of each row of solar modules is an output—positive and negative—which will be connected to, for example, a branch of a wire harness. This is clearly the case in Amphenol. As shown in the figure above, each solar panel (row of solar modules) has an output that is connected to a branch corresponding to the green line in Dr. Kenny's annotation. However, what he has labeled a "lead assembly" is actually just a wire harness, like the wire harness 34 in figure 4 of the '153 patent and the wire harness in claim 1(a) of the '153 patent.

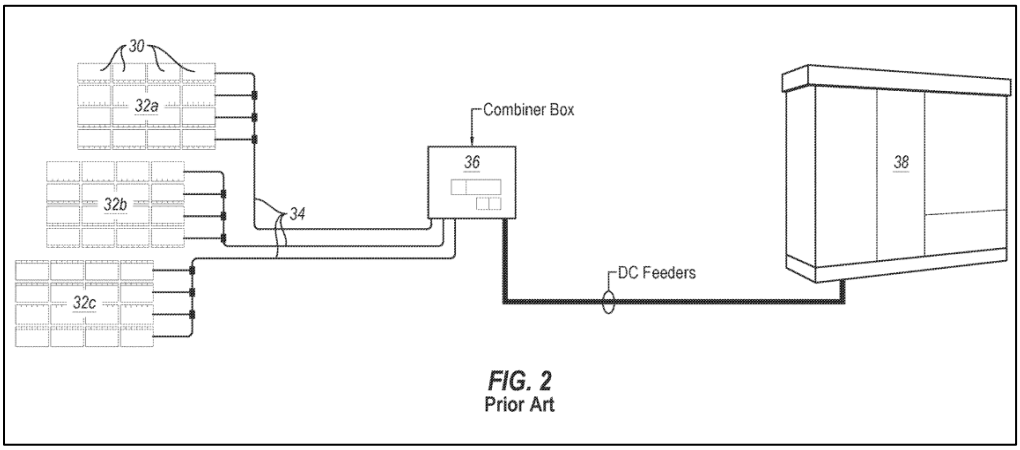
That the green lines in the above-annotated figure in Amphenol is a wire harness is also evident based on what the central trunk of the wire harness is connected to—a combiner box. Again, the purpose of the lead assembly is to eliminate the need for a combiner box. If the green line was truly a lead assembly, its central trunk would connect directly to an inverter rather than a combiner box, as shown, for example, in figure 4 of the '153 patent. EX1001, Fig. 4. It does not, however, because what Voltage labels a lead assembly is, instead, a wire harness. What it labels a wire harness is some form of intra-module wiring.

According to Mr. Weiner, Amphenol teaches a common architectural layout of a utility-scale solar power installation prior to the invention of the lead assembly

disclosed in the ’153 patent. EX2001, ¶ 93. The properly annotated layout of the figure in Amphenol is as follows:



EX1007, p. 5 (Weiner annotations); EX2001, ¶ 93. Indeed, this architectural layout is consistent with the layout described in the ’153 patent as prior art shown, for example, in figure 2 below:



EX1001, Fig. 2. Figure 2, like Amphenol, illustrates rows of solar modules (30) wired together to form solar panels. The outputs of those solar panels are individually connected to respective branches of the wire harnesses (34) and the

power from each solar panel is grouped at the central trunk of the wire harness (34). Figure 2 shows three wire harnesses (34) whose power is consolidated at a combiner box (36), just like the figure in Amphenol. EX2001, ¶ 93.

In sum, Amphenol does not disclose what Voltage indicates. Amphenol does not include any information whatsoever about the intra-module wiring electrically connecting the solar modules together and Dr. Kenny, upon whom Voltage relies, does not remedy that deficiency by relying on any other materials or expertise in the field. Regardless, intra-module wiring is not a wire harness.

What Dr. Kenny indicates is a lead assembly in Amphenol is, in fact, a wire harness, as defined by the '153 patent. Therefore, Amphenol does not teach any elements of the claims corresponding to the lead assembly, including, for example, "a feeder cable," "drop line," "nexus," "apertures," "undermold," and "overmold." And none of the references combined with Amphenol remedies that deficiency. As such, grounds 2–4 fail to show each of the elements of the challenged claim. Therefore, none of the claims of the '153 patent is rendered obvious by Amphenol and any of the combinations listed in grounds 2–4.

c. The petition provides only conclusory assertions, supported only by Dr. Kenny's conclusory opinions, as to the POSA's alleged motivation to combine Amphenol with Shao, Yamawaki, and/or Tamura.

"Conclusory statements" alone are not sufficient for stating of an explicit reason for why a skilled artisan would have combined the elements in the way the

claimed new invention does. *KSR*, 550 U.S. at 418; *In re Nuvasive, Inc*., 842 F.3d 1376, 1383 (Fed. Cir. 2016).

For each of Grounds 2, 3, and 4, Voltage provides nothing more than a conclusory assertion that a POSA would have been motivated to combine the references. Voltage and its expert rely on essentially two arguments as the basis for combining references. First, Voltage argues that since the references are from the same or analogous fields, or are directed to complementary technologies, there would have been a motivation to combine them. Second, Voltage and its expert recite alleged benefits of the references as the basis for a combination (e.g., if one reference discloses a benefit, then there necessarily would have been a reason to combine that reference with another reference).

None of the reasons offered are adequate because at no point do they provide "a plausible rationale as to why the prior art references would have worked together to render the [patent claims] obvious," *Power-One, Inc. v. Artesyn Tech., Inc*., 599 F.3d 1343, 1352 (Fed. Cir. 2010), or explain "why a person of skill in the art would have combined elements from specific references in the way the claimed invention does," *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012). *See also Personal Web Technologies, LLC v. Apple, Inc.*, 848 F.3d 987, 993-94 (Fed. Cir. 2017) ("But that reasoning seems to say no more than that a skilled artisan, once presented with the two references, would

have understood that they could be combined. And that is not enough: it does not imply a motivation to pick out those two references and combine them to arrive at the claimed invention. ... Indeed, the Board nowhere clearly explained, or cited evidence showing, *how* the combination of the two references was supposed to work.") (emphasis in original); *Comcast Cable Commc'ns, LLC v. Promptu Sys. Corp.*, 838 F. App'x 555, 557 (Fed. Cir. 2021) (affirming the Board's finding that "Comcast had not proven a motivation to combine because it merely (1) alleged the references came from the same field of study and address the same problem; and (2) recited boilerplate legal conclusions untethered to any claim language.").

First, "a broad characterization of [prior art references] as both falling within the same alleged field … without more, is not enough for [a petitioner] to meet its burden of presenting a sufficient rationale to support an obviousness conclusion." *Securus Techs., Inc. v. Global Tel*Link Corp.*, 701 F. App'x 971, 977 (Fed. Cir. 2017); *Comcast Cable Commc'ns, LLC* at 557 (upholding Board's finding that no motivation to combine based on allegation that references came from the same field of study and address the same problem).

For the base combination of Amphenol and Shao, common to Grounds 2, 3, and 4, Voltage relies largely on the fact that the references are analogous, or directed to complementary or similar technologies, as a reason for combination. For example, Voltage and its expert assert that "[b]oth Amphenol and Shao

address the general problem of providing convenient, flexible, reliable, and low-cost wiring assemblies," Pet. 42, and that "both … *are analogous prior art* to the '153 Patent because they are directed to wiring assemblies like those claimed in the '153 Patent." *Id.* Adding Yamawaki, as argued in Grounds 2 and 3, Voltage restates the analogousness rationale, alleging that Amphenol, Shao, and Yamawaki all "… *disclose cable assemblies with branching junctions*." *Id.* at 45. The stated reason for adding Tamura, as argued in Grounds 3 and 4, is again based on the alleged analogousness of the references: "Amphenol, Shao, Yamawaki, and Tamura … are directed to wiring assemblies like those claimed in the '153 Patent." *Id.* at 74–74. Voltage, and its expert, argue that because references are similar, or directed to like problems, "a POSITA … would [thus] be aware of and motivated to consider" those references. Pet. 42. This argument and expert testimony amount to no more than mere recitation of the alleged teachings of the prior art references and how they are allegedly "similar" or are directed to similar problems. Further, "awareness" of a reference does not lead to motivation, and thus provides no reason to combine the references to arrive at the specific claimed inventions of the '153 patent.

Voltage and its expert also recite generic benefits of a given reference as a basis for combining with another reference. For example, in support of the alleged motivation to combine Amphenol with Shao, Voltage's expert Dr. Kenny testifies:

"a POSITA would be motivated to combine the teachings of Amphenol and Shao because the wire harnesses, lead assemblies and solar photovoltaic power generation systems disclosed by Amphenol are intended for use in a harsh outdoor environment and would benefit from added protection from the elements and improved reliability for the branch structures provided by the more robust design and manufacturing processes for the connectors disclosed in Shao." EX1003, ¶ 201. This type of reasoning is prevalent throughout Dr. Kenny's testimony for all grounds: Dr. Kenny identifies alleged features of a given reference, and then reasons that since another reference might benefit from such a feature, then a POSA would necessarily have been motivated to combine the references. Nothing in this testimony provides a specific and meaningful reason or motivation to combine the references. Instead, the testimony just states what a reference allegedly discloses, that a base reference "would benefit" from a given feature and that a POSA thus "would be motivated"[18] to combine the teachings of the two

[18] The test for obviousness is what "would have been" obvious at the time the claimed invention was made, not what "would be" obvious at some undefined point in time. The failure of Voltage's expert to even consider the right time frame as part of his obviousness analysis further reveals how slapdash the analysis is. *See InTouch*, 751 F.3d at 1352 ("Not once during Dr. Yanco's direct examination

references. Notably, at no point does Dr. Kenny provide any explanation of *how* the combination would have been achieved or *why* the combination would have resulted in the alleged benefit.

These are the type of meaningless, substance-free "motivation" statements that the Federal Circuit has repeatedly rejected as insufficient and tainted with hindsight bias. *See, e.g.*, *InTouch*, 751 F.3d at 1352 ("VGo's expert also succumbed to hindsight bias in her obviousness analysis. Dr. Yanco's testimony primarily consisted of conclusory references to her belief that one of ordinary skill in the art *could* combine these references, not that they *would* have been motivated to do so.") (emphasis in original); *ActiveVideo*, 694 F.3d at 1328 ("This testimony is generic and bears no relation to any specific combination of prior art elements. It also fails to explain why a person of ordinary skill in the art would have combined elements from specific references *in the way the claimed invention does*.") (emphasis in original); *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1373 (Fed. Cir. 2008) ("Dr. Patterson suggested that one of skill in the art was motivated to find a method capable of genotyping because at least one prior art reference had

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regarding the '357 patent did she analyze what one of skill in the art would have understood as of 2001. Dr. Yanco simply opined what a skilled artisan could accomplish in 2011; that is not the relevant inquiry.").

disclosed that 'different genotypes of HCV respond differently to interferon therapy.' The district court was … correct that knowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references to reach the particular claimed method."); *DSS Tech. Mgmt., Inc. v. Apple Inc.*, 885 F.3d 1367, 1376 (Fed. Cir. 2018) ("To the extent the Board's obviousness findings were based on Dr. Hu's testimony … her 'conclusory statements and unspecific expert testimony' are insufficient to support the Board's findings."); *TQ Delta*, 942 F.3d at 1362 ("Dr. Tellado's *ipse dixit* declaration 'fail[s] to provide any meaningful explanation for why one of ordinary skill in the art would be motivated to combine these references *at the time of this invention*.' It also 'fails to explain why a person of ordinary skill in the art would have combined elements from specific references *in the way the claimed invention does*.' Without this support, Dr. Tellado's declaration ultimately fails 'to resist the temptation to read into the prior art the teachings of the invention in issue.'") (emphasis in original) (internal citations omitted); *Shenzhen Jimuyida Tech. Co., Ltd. v. Artec Eur. S.A.R.L.*, No. IPR2023-01148, Paper 6 at 22–23 (PTAB Jan. 16, 2024) (holding the expert's statement that the combination "'improv[ed] the efficiency of a 3D scanning system' lacks substantive explanation of *how* efficiency would have been improved over what was taught … or *why* the [POSA] would have found the efficiency of [the prior system] lacking."); *Shopkick, Inc. v. Novitaz, Inc.*,

IPR2015-00279, Paper 7 at 29–30 (PTAB May 29, 2015) (denying institution and explaining that "conclusory labels do not substitute for a fact-based analysis … establishing what is being modified and why, based on the differences between the prior art and the claimed invention, it would have been obvious to a person of ordinary skill to make the modification").

This pattern of offering substance-free "motivations" is consistent throughout the petition. For example, Voltage and its expert argue that Shao would be combined with Amphenol because Shao allegedly provides "*enhanced protection* from environmental factors" along with "*additional guidance* for designing and fabricating the cross junctions disclosed in Amphenol." *Id.* at 43–44. The addition of Tamura allegedly would result in "*greater protections* of power cable joints with an outer mold as taught by Tamura" and that "*better adhesion* is achieved by an injection molded PVC outermold over a polyethylene (PE) undermold, which provides *better waterproofing*." *Id.* at 75, 77 ("greater protections").

Voltage fails to explain what constitutes such "enhanced protection," "better adhesion," or "better waterproofing." These are just broad benefits stated as mere conclusions, which cannot provide a sufficient factual basis for a motivation to combine the references. Nowhere does Voltage or its expert explain *how* an alleged benefit from one reference would have been achieved in a primary reference, or

why a POSA would have found the alleged benefit lacking in the primary reference. Voltage does not explain how Shao would have provided the additional protection to the teachings in Amphenol. Voltage also does not confront or explain *how* an indoor device (taught by Shao) would have provided enhanced protection from environmental factors as compared to the outdoor device (taught by Amphenol). Further, Voltage does not explain *why* a POSA would have thought that the Amphenol device was in need of enhanced protection from environmental factors. "[C]onclusory labels do not substitute a fact-based analysis," *Shopkick*, IPR2015-00279, Paper 7 at 29–30, and Voltage's alleged motivations to combine are simple conclusory labels.

In sum, Voltage has not adequately shown that it would have been more likely than not that a POSA would have been motivated, at the time of the invention of the 153 patent, to combine Amphenol with Shao, Yamawaki, and/or Tamura.

2. The Yamawaki-based combinations of Grounds 5, 6, and 7 fail to demonstrate that it is more likely than not that any challenged claim is unpatentable.

Voltage fails to demonstrate that it is more likely than not that the combination of Yamawaki and Shao renders obvious any of the independent claims of the '153 patent. Voltage fails to show that a POSA would have been motivated to make the combination of Yamawaki with Shao. Even if the

combination were viable, it still fails to teach many of the elements of the independent claims. Thus, the Yamawaki-Shao combination does not render any of the claims of the ’153 patent obvious.

a. The petition provides only conclusory assertions, supported only by Dr. Kenny’s conclusory opinions, as to the POSA’s alleged motivation to combine Yamawaki with Shao, and Solon ’741 and/or Tamura.

Voltage fails to provide any substantive explanation for why or how a POSA would have been motivated to make the base combination of Yamawaki and Shao, or to add either Solon ’741 or Tamura to that combination. Instead, as with the Amphenol-based grounds (Grounds 2, 3, 4), Voltage simply states that the references are compatible/analogous or that the combinations yield generic benefits, with no reasoning on why the references would be combined to arrive at the specific claimed inventions of the ’153 patent. Such reasoning does not satisfy Voltage’s initial burden of establishing a viable motivation to combine prior art references under §103.

Voltage relies on analogousness in Ground 5 as a substitute for any reasoned motivation to combine Yamawaki with Shao, arguing that “both references address the general problem of providing convenient, flexible, reliable, and low-cost wiring harnesses.” Pet. 102. But, as discussed above, an argument or illustration that the combination includes similar or complementary technology cannot substitute for a proper motivation to combine analysis. Moreover, there is no explanation of how

any combination of Yamawaki and Shao would have made the wire harness more "flexible," more "reliable," and/or more "low-cost."

As it did with Grounds 2–4 discussed above, Voltage argues that there are alleged generic benefits provided by both Yamawaki and Shao that provide a surrogate motivation for the Yamawaki-Shao combination of Ground 5. Specifically, Voltage and its expert assert "that *the sum of the benefits of the individual molds would lead to an improved product*" without providing any explanation as to how the combination of the references would work, let alone how the combination would lead to an "improved product." Pet. 103. Voltage and its expert also assert that a combination would "provide *better sealing against moisture* in a smaller profile for *easier installation*." *Id.* Again, the conclusory basis provides no reasoning for how the combination would provide better sealing, or how installation would be easier, or how Yamawaki would be modified to incorporate the branch junctions of Shao.

Similarly, for Ground 6, the alleged motivation to add Solon '741 to the Yamawaki-Shao combination is stated as "*improving installation* efficiency of fuses, *protection* of the in-line fuse, and wires/fuses for supporting the operating ranges common in these facilities." Pet. 133. On that basis, Voltage and its expert conclude that a "POSITA would have been motivated to incorporate these features into the Yamawaki-Shao combination." *Id.* No actual reasoning is offered. The

alleged motivation offered in Ground 7 for adding Tamura is no better; there the alleged motivation is premised on the conclusion that there would be "*greater protections* of power cable joints with an outer mold" stated for Ground 4. *Id.* at 135–136.

As explained above, broad assertions of alleged benefits arising from the combination do not alone supply the require rationale for making the combination. These conclusory assertions do not explain *how* the broad benefits would be achieved over what was previously taught or *why* a POSA would have found the alleged benefit lacking in the primary reference. Indeed, the alleged motivation offered by Voltage and its expert is precisely the type of conclusory testimony consistently rejected by the Federal Circuit. As emphasized by that court, "[k]nowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references." *ActiveVideo Networks, Inc. v. Verizon Communications, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012) (citations omitted) (rejecting expert's testimony regarding motion to combine for being generic; bearing no relation to any specific combination of prior art elements; failing to explain why a POSA would have combined elements from specific references in the way the claimed invention does; failing to explain how specific references could be combined).

b. The petition fails to show that a POSA would have been motivated to combine Yamawaki and Shao with a reasonable expectation of success.

As explained above, Voltage has failed to articulate any suitable reason for combining Yamawaki and Shao, or to add either Solon '741 or Tamura. The proposed combination of Yamawaki and Shao is improper for other reasons as well, specifically that the combination would not have any reasonable expectation of success.

A finding of obviousness at the time of the invention requires a plausible rationale as to why modifying one prior art reference in view of another prior art reference would have worked. *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1335 (Fed. Cir. 2013). If the record does not show any reasonable expectation that making a significant change to one reference would have been successful, then the burden of proof with respect to invalidity has not been met. *Id.* It is often necessary to further explain how one of ordinary skill would actually make an alleged combination or modification of prior art references. *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012) (noting that the "expert failed to explain how specific references could be combined"); *Cheese Sys., Inc. v. Tetra Pak Cheese and Powder Sys., Inc.*, 725 F.3d 1341, 1354 (Fed. Cir. 2013) (affirming summary judgment of nonobviousness where asserted prior

art references did not provide adequate explanation or guidance regarding how to make necessary modifications to arrive at claimed invention).

Dr. Kenny's fundamental misread of Yamawaki—which may be due to his lack of institutional, solar knowledge—has led to several conclusions regarding the combination of Yamawaki and Shao that are simply untenable both as a technical matter and as a matter of common sense to a skilled artisan. Indeed, the combination of Yamawaki with Shao would foreclose the novelty provided by Yamawaki's wire harness. As such, Voltage has not shown a reasonable expectation of success in the combination.

Voltage proposes that one of ordinary skill would:

(1) Pre-manufacture the wire harnesses in Yamawaki to introduce the crimping and molding processes used to electrically connect the trunk and branch cables in Shao (Pet. 103, 108–114; EX2003, 1209:6–12);

(2) Increase the wire size of the trunk cable in Yamawaki (or decrease the size of the branch cables) thereby causing the alleged aperture sizes through the branch to be different (Pet. 109–110; EX2003, 1205:12–17); and,

(3) Add an additional alleged aperture through the branch junction 33 to accommodate a second drop line (*Id.*).

However, each modification to Yamawaki proposed by Voltage in light of Shao would eliminate the purpose and technical viability of Yamawaki. As Mr.

Weiner describes in his expert report, bolstered by his experience in designing thousands of residential solar installations (EX2001, ¶ 143), a POSA would not combine Yamawaki with Shao because "ultimately . . . [the combination would] break what Yamawaki is trying to teach." EX2001, ¶ 129.

First, a POSA would not pre-manufacture (or, using the terminology of Shao, "prefabricate") the wire harnesses of Yamawaki like the Shao power cable and K-shaped branch because doing so would obviate the utility explicitly taught in Yamawaki; namely, the flexible and adaptable nature of the wire harnesses. EX2001, ¶ 130; EX1006, 4:1–4 (the "lengths of the trunk and branch cables can be adjusted according to the layout or configuration of the photovoltaic modules or module units, and the photovoltaic modules can be increased for extension or rearranged with ease.").

Voltage acknowledges—commensurate with Dr. Kenny's testimony at the ITC—that Yamawaki provides a limited description of the interior structure of the branch junction 33, stating, for example, that Yamawaki "does not illustrate an electrical coupling between [the cables] at the connecting point." Pet. 107; EX2003, 1209:6–8. The figures of the branch junction 33, for example, only illustrate dotted lines showing an apparent electrical connection between the trunk cables and the branch cable as shown, for example, below:

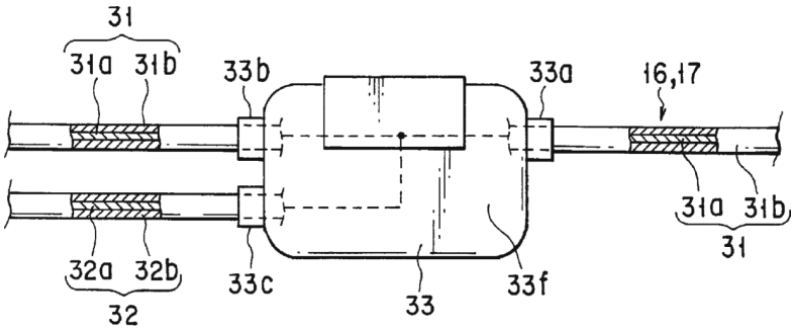
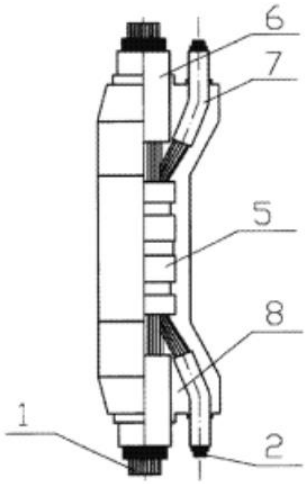


FIG. 9A

EX1006, FIG. 9A. However, Yamawaki expressly teaches that each of the cables are cut to a desired length (in accordance with the layout of a given rooftop configuration) and then plugged into the respective branch cable connecting portions (33a), (33b), and (33c). EX2001, ¶ 131. Yamawaki teaches that this process is to occur on site to conform with the unique nature of each rooftop. *Id.* As Mr. Weiner stated in his declaration, "Yamawaki teaches that one should show up with all your equipment, but field assemble it, because every rooftop is different and [one] needs a flexible, adaptable [harness] to solve the residential problem." *Id.*

By contrast, Shao teaches the "manufacturing all of the [K-shaped junctions] offsite in a manufacturing facility" which enables efficient installation of the junctions in buildings. EX2001, ¶ 132; EX1008 ("The power cable is premanufactured in a factory and fast to lay and mount …."). The K-shaped junction includes a trunk conductor and two branch conductors that are electrically connected using a crimp. EX1008, 5. Shao also teaches a molding over the

conductors which is "described as a sheath made of injection molded material" EX2001, ¶ 132; EX1008, 5. The basic structure of the K-junction taught in Shao is shown, for example, below:



EX1008, FIG. 1. Using the crimped and molded structure of Shao in connection with Yamawaki would break the teachings and benefits of Yamawaki. EX2001, ¶ 132.

Mr. Weiner noted that "a crimped wire would fix [] branch junctions along the trunk" which is contrary to the purpose of Yamawaki which is "to allow flexibility and adaptability" of the branch junctions 33 along the trunk cables. EX2001, ¶ 133. The same is true of the injection molding process that Voltage insists one of ordinary skill would use by stating, for example, that "an injection molded sheath (i.e., an undermold) as taught by Shao, encases the exposed cables and metal clamp holding them together [and provides] better protect[ion] from damage and/or exposure." Pet. 128. However, the use of injection molding would

similarly fix the branch junctions (33) in place thereby compromising the flexible nature of the Yamawaki wire harness. EX2001, ¶ 134. Voltage's proposed modification does not improve the interior structure of the Yamawaki branch junction; it renders it inoperable for its intended purpose. *Id.*

In addition, one would be unable to insert the branch and trunk cables as taught by Yamawaki if the branch junction 33 was prefabricated and injection molded over the branch and trunk cables. EX2001, ¶ 135. Therefore, not only would the crimping and molding in Shao eliminate many of the benefits of Yamawaki, crimping and molding the branch junction 33 flies directly in the face of what Yamawaki teaches which includes the insertion of cables into the branch junction 33. EX1006, 10:19–32.

Second, even if apertures were taught in Yamawaki—which they are not (EX2001, ¶ 136)—a POSA would not look to Shao to increase (or decrease) the wire size and, consequently, the aperture size of either the trunk cables or the branch cables in Yamawaki. Voltage supplies no evidence or support for its assertion that the differently sized cables in Shao would be obvious to use in Yamawaki. In addition, Voltage fails to consider in its analysis the context with which the wire harness in Yamawaki would be used—a residential solar installation. For residential solar installations, Mr. Weiner explained, one would need a "standardized product or service that can somehow morph or adapt to any

kind of rooftop. And that's a tricky challenge." EX2001, ¶ 136. Indeed, as Mr. Weiner stated in his expert declaration and testified at the ITC hearing, the wire harness in Yamawaki seeks to "standardize all the cables" and "make them smaller" to improve, for example, "flexibility around rooftops with tight corners and to get into buildings more efficiently." EX2001, ¶ 137. Mr. Weiner also stated in his declaration that using larger wire would make the "wire more difficult to bend" and would increase the size of the "holes in the side of the house." EX2001, ¶ 137. The concept of increasing the cable sizes is not only absent from any discussion in Yamawaki, but it also does not make sense to a skilled artisan designing residential systems for many of the same reasons. *Id.*

Third, a POSA would not look to Shao to introduce a second drop line and/or a third aperture to the branch junction 33 of Yamawaki as Voltage proposes. EX2003, 1213:22–1214:2. Voltage asserts that one would add a second drop line and a third aperture to the branch junction 33 in Yamawaki because doing so would "reduc[e] the number of junctions needed for the assembly." Pet. 113–114; EX2003, 1207:11–17. Again, Voltage fundamentally misunderstands that Yamawaki teaches a flexible, adjustable, and field-customizable wire harness. Mr. Weiner explained that Shao is interested in the "consolidation of two joints together [whereas] Yamawaki is interested in the distribution or proliferation of its joints or branch junctions." EX2001, ¶ 138. He further explained that if an installer

could only install two-branch, branch junctions (33) (i.e., a branch junction 33 with two branch cables) one "would have [many] longer branch cables, and that was . . . one of the many problems – Yamawaki wanted to solve." EX2001, ¶ 139. Just like the crimping, the molding, and the increased wire sizes, creating a branch junction 33 with two or more branches defeats the flexibility and adaptability Yamawaki itself touts as part of its inventive concept.

Furthermore, Mr. Weiner testified to the fact that even after Dr. Kenny's testimony, he was still unsure of how one would physically connect portions of Shao with Yamawaki. EX2001, ¶ 140. Voltage fails to confront this issue or to otherwise address whether a POSA would have had an expectation of success, and whether it would have been a reasonable expectation. With no plausible evidence to show the existence of such a motivation at the time of the effective filing date, the only reasonable conclusion is that Voltage's stated rationales are hindsight driven. In addition, Voltage's lack of specificity with regard to how one would actually combine Yamawaki and Shao indicates that a skilled artisan would not have understood how to combine the references in order to render the claims obvious as required by law.

3. The Solon '741 + Yamawaki combination of Ground 1 fails to demonstrate that it is more likely than not that any challenged claim is unpatentable.

Voltage alleges that claims 1, 5–7, 11–14, 16, 17, and 21–24 of the '153 patent would have been obvious under 35 U.S.C. § 103 in view of the Solon '741 (U.S. Publication No. 2011/0209741) and Yamawaki (U.S. Patent No. 6,268,559). Pet. 17. Each of the challenged claims is valid over the asserted Solon '741 and Yamawaki combination. First, as described in detail above, Voltage systematically fails to support its obviousness allegations with evidence to demonstrate that a POSA would have been motivated, without the benefit of hindsight, to modify Solon '741, or to combine Solon '741 with Yamawaki. Second, there is nothing in Solon '741 and/or Yamawaki that would support Voltage's conclusory motivations to combine the two references. And third, even if POSA was motivated to combine Solon '741 and Yamawaki, the combination still fails to teach key elements of the claims, including, *inter alia*, a "lead assembly" that is electrically connected to a "wire harness" by way of a "drop line"; an electrical connection between a feeder cable and at least two drop lines at a "nexus". For at least these reasons, Voltage has not carried its burden to show that the claims of the '153 patent are unpatentable as obvious.

a. The petition fails to meet its burden to show that a POSA would have been motivated to combine Solon '741 with Yamawaki with a reasonable expectation of success.

Through Dr. Kenny, Voltage provides three unsupported conclusions for why a POSA would have been motivated to combine the teachings of Solon '741 and Yamawaki: (1) Yamawaki's overmold would provide additional moisture and damage protection to the joints in Solon '741; (2) Yamawaki provides additional guidance in constructing a solar installation over Solon '741; and (3) Yamawaki simplifies the design of a solar power system. Pet. 18–19. Voltage does not support its conclusions with any facts or experience by Dr. Kenny nor does Voltage point to supporting evidence from the text of Solon '741 and/or Yamawaki. For that reason alone, Voltage fails to provide evidence sufficient to support a finding that there would have been a motivation to combine Solon '741 with Yamawaki. *See, e.g.*, *In re Van Os*, 844 F.3d at 1361–62; *Harmonic Inc.*, 815 F.3d. at 1363.

Beyond Voltage's failure to support its conclusory assertions, there is nothing in Solon '741 or Yamawaki to suggest that the branch junctions in Yamawaki would provide additional moisture or damage protection, simplify the design of Solon '741, and/or provide additional guidance for constructing a solar installation as asserted by Voltage.

b. Nothing in Solon ’741 or Yamawaki indicates that the “cover member 33f” in Yamawaki would provide additional moisture or damage protection.

Even if Voltage provided support for its conclusion that modifying Solon ’741 with Yamawaki would provide additional moisture or damage protection (it does not), there is nothing in either Solon ’741 or Yamawaki to support the conclusion. Indeed, there is no evidence that Yamawaki’s branch junction 33 enjoys more moisture and damage protection than that already enjoyed by the joints taught in Solon ’741.

Both Yamawaki and Solon ’741 teach junctions that are sealed, but in different manners. Solon ’741 relies on U.S. Patent No. 8,604,342 (“Solon ’342”) to disclose details of the joints. EX1005, ¶ 29. Solon ’342 represented an improvement directed to “low-leakage electrical joints and wire harnesses” for use in “solar energy utilities.” EX2004, 1:8–15. Solon ’342 describes joints that are “coated in a synthetic rubber sealant” and “encased in a molded polypropylene material including a UV stabilizing agent.” EX2004, 2:1–5. Yamawaki, on the other hand, teaches very little about the branch junctions (33). The “overmold” cited by Voltage is described in Yamawaki as “cover member (33f)” as shown, for example, below:

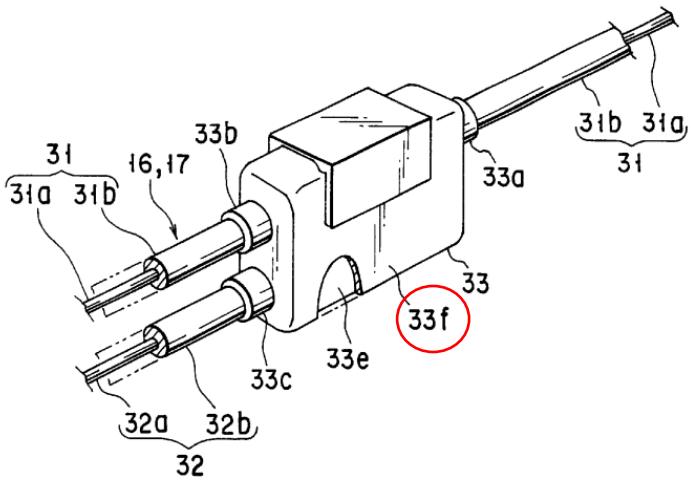


FIG. 9B

EX1006, FIG. 9B (annotated). The specification in Yamawaki describes portions of the cables 31 and 32 as being "inserted in the cable connecting portions 33a and 33b [and] thermowelded to the cover member 33f." *Id.*, 10:35–40.

Voltage and Dr. Kenny appear to rely on the idea that two molds must be better than one. Pet. 18. However, it is understood from the Solon '342 disclosure that the engineering involved in a single mold joint is immense (EX2004, 1:27–57; 4:4–15); for example, the joint needs to be flexible without being prone to damage, strong enough to withstand installation and environmental conditions, weatherproof to resist expanding and contracting of the plastic material with weather and temperature cycles, etc. EX2001, ¶ 150. The addition of a mold does not necessarily lead to improved durability and moisture resistance as Voltage and Dr. Kenny appear to assert. Pet., 18–19. And there is nothing in Solon '741 that

would motivate a POSA to modify the functioning, moisture-proof, low-electrical leakage design of Solon ’741 with another—potentially compromising—layer.

Additionally, one of the benefits of the low leakage joint as described by Solon ’342, is that the “novel construction [brings] substantial savings with respect to *materials*, *know-how*, and *labor*.” EX2004, 4:4–6 (emphasis added.) As such, a skilled artisan would not look to Yamawaki to add materials, know-how, and labor in the form of manufacturing steps and expertise to the process of constructing the joints taught in Solon ’342.

Furthermore, there is nothing to support that a POSA would have a reasonable expectation of success in modifying the joint in Solon ’741 with another mold from Yamawaki. Voltage’s assertion that Yamawaki would provide *additional* moisture or damage protection to the junctions in Solon ’741 (*id.*), is not borne out by the teachings of Yamawaki. Yamawaki’s discussion of moisture resistance is described not with respect to individual branch junctions (33), but with respect to wiring apparatuses as a whole: “[The] reliability of wiring apparatuses 16 and 17 to resist penetration of water can be improved.” EX1006, 13:15–17. Yamawaki is silent with respect to additional moisture and damage protection connected with the cover member (33f), and it is certainly not clear that the cover member (33f) would increase resistance to damage and moisture penetration already enjoyed by the junctions in Solon ’741.

c. A POSA would not look to Yamawaki's rooftop solar architecture to "simplify" the utility-scale architecture taught in Solon '741.

Voltage concludes that Yamawaki's architecture "can simplify the design and construction of a solar array system." Pet., 18–19. The alleged simpler design is apparently "a hierarchical wiring design that collects power from multiple solar panels." *Id.* Voltage's assertion is unsupported and incorrect because, as discussed below, Yamawaki discloses wiring apparatuses for use in residential rooftops and not utility-scale installations.

Yamawaki is designed for rooftop solar installations.[19] In contrast, Solon '741 describes a wire harness for use in utility-scale solar installations. EX1005, ¶¶ 4–5. The difference in scale, regulatory considerations, manufacturing, levels of

[19] Yamawaki's abstract includes a description of the location of solar modules by stating they "are arranged side-by-side on a roof of a building." EX1006, Abstract. Fig. 1 depicts a solar installation on a rooftop, and Yamawaki describes the solar installations as being on a "roof" 13 different times in the specification. EX1006. In addition, Mr. Weiner testified at the ITC hearing that Yamawaki "mentions house and building and how to get wires into a house more efficiently and in rooftop installations. I actually find it a really clever invention for residential rooftops. It addresses a real problem." EX2003 at 1269:21–1270:4.

complexity, and design between residential and utility-scale solar installations cannot be overstated. EX2001, ¶ 154. As such, a POSA would not look to specific details in Yamawaki (e.g., the "hierarchical wiring design") and assume that those design details would be transferrable to a utility-scale application. *Id.* And Voltage does not provide any evidence or impetus for that assumption.

d. Even if there was a reason to combine Solon '741 with Yamawaki, the combination still fails to teach many elements of the claims.

Even if Voltage identified a legally sufficient reason to combine Solon '741 with Yamawaki (which it has not), the evidence offered in Voltage's brief does not satisfy the burden of proving unpatentability more likely than not because the proposed Solon '741/Yamawaki combination still fails to teach many of the elements required by the asserted claims of the '153 patent. In a basic sense, each of Solon '741 and Yamawaki teaches a wire harness, not a lead assembly. EX2001, ¶ 155. And any combination of the two wire harnesses in Solon '741 and Yamawaki would result in another wire harness, not the lead assembly of the '153 patent. *Id.*

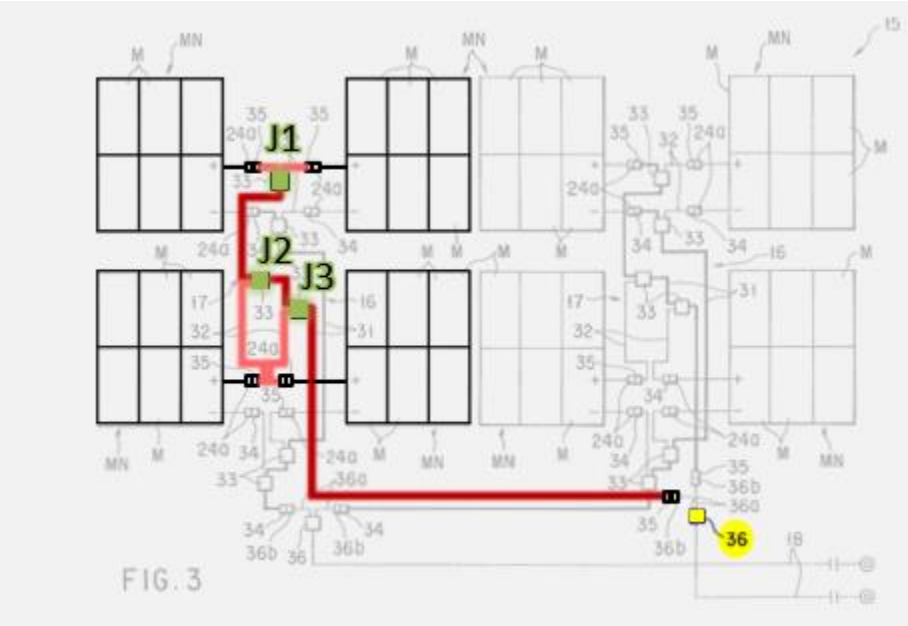
Each of the independent claims of the '153 patent requires four different types of wires—branch, central trunk, drop line, and feeder cable. Branch and central trunk are wires associated with a wire harness (EX1001, 4:41–48), while drop line and feeder cable wires are associated with a lead assembly *Id.* at 4:56–61.

Each wire harness has a central trunk and multiple branches, each connected to a solar panel. *Id.* at 4:43–45. Each wire harness connects to the lead assembly via a drop line (*id.* at 4:46–47, 64–65), and each lead assembly can accommodate more than one drop line to allow connection to multiple wire harnesses. *Id.* at 5:2–9. The independent claims require this relationship of structures in the context of a solar power system having more than one solar array and more than one panel. *Id.* Again, the purpose of the '153 patent was not merely to simplify existing solar installation architectures; rather, the purpose of the lead assembly was to consolidate power from multiple wire harnesses without the need for a combiner box, which it achieved as discussed supra at section IV.A.2.

Solon '741, on the other hand, is just a wire harness. It has branches and a central trunk that meet at cross-joints, but no lead assembly and therefore no drop line to connect to the lead assembly, and no feeder cable associated with the lead assembly. EX2001, ¶ 157. For example, Fig. 2 illustrates wire harness (10) connected to individual junction boxes via branches (12) where each junction box is electrically coupled with an individual solar panel. *Id.* The description of Fig. 2 feeds into the description of Fig. 3 where Solon '741 states that each of those branches (12) "feed[] into one trunk (14)" (*id.* at ¶ 29), where the trunk groups power from multiple solar panels and sends the grouped power to the recombiner box. *Id.* at ¶ 27. Stated differently, Solon '741 teaches a wire harness as described

by the ’153 patent: branches and trunks grouping power from individual solar panels to send to the combiner box (or recombiner box.)[20] Solon ’741 does not teach a lead assembly.

Yamawaki is functionally the same. EX2001, ¶ 159. Yamawaki discloses an adjustable *wire harness* (or “wiring apparatus”) for use in rooftop solar installations. *Id.* Yamawaki’s wiring apparatus groups power from individual solar panels or groups of electrically connected solar modules. *Id.* An example of the wire harness is shown in Yamawaki with respect to Fig. 3, an annotated version of Fig. 3 is shown below:



[20] Functionally, the wire harness in Solon ’741 is the same as the wire harnesses depicted in the ’153 patent. EX2001, ¶¶ 70–72.

EX1006, Fig. 3 (annotated.) The annotated Fig. 3 highlights one of the wire harnesses which includes a trunk cable (shown in dark red) and branch cables (shown in pink) where each of the branch cables connects to a separate output of four solar panels (each denoted as 'MN') EX1006, at 7:64–67; EX2001, ¶ 159. Each solar panel above includes six solar modules (*i.e.*, the smaller rectangles grouped together to form solar panels and denoted at 'M'). *Id.* The output from each individual solar panel is connected to a separate branch cable and then grouped to the trunk cable by way of branch junctions "J1", "J2", and "J3." EX2001, ¶ 159.

The wire harness in Yamawaki is functionally equivalent to the wire harness shown, for example, in Fig. 2 of the '153 patent. *Cf.* EX006, Fig. 3 *with* EX1001, Fig. 2; EX2001, ¶ 160. The difference in Yamawaki is that the wire harness is adjustable to conform to individual layouts of solar panels on individual rooftops. EX2001, ¶ 160. Otherwise, the functionality of the wire harness in Yamawaki was already contemplated in the '153 patent as prior art. EX2001, ¶ 160; EX1001, Figs. 1–2. Yamawaki acknowledges as much: "according to the present invention, there is provided a wiring apparatus, whereby the respective output terminals of a plurality of generating sections [solar panels], each including photovoltaic modules, are connected to one another . . . [so the] number of wiring apparatuses

that extend from the terminals of the photovoltaic modules or module units into a building can be reduced." EX1006, at 3:16–37.

The same structure cannot satisfy both the branch limitation and the drop line limitation because the independent claims require different things from each. EX2001, ¶ 161. The branch structures connect solar panels to a wire harness, but the drop line connects that same wire harness to a lead assembly. *Id.* Similarly, the central trunk of the wire harness cannot simultaneously meet both the central trunk limitation and the feeder cable limitation. *Id.* The independent claims treat them as distinct structures, connected by a drop line. EX1001, cl. 1; *see also,* 4:38–48.

Both Solon '741 and Yamawaki thus fail to teach the "feeder cable," "drop line," and "second drop line" structures required by the independent claims of the '153 patent, and therefore also fails to disclose all the structures that interact with them, including the "nexus" of elements b(iii) and b(iv) where the feeder cable and the two drop lines are electrically connected, the "primary mold" of elements b(iv)(1)–(3) that encases the nexus of feeder cable and drop lines, the "first aperture" of element b(iv)(1) through which the feeder cable extends, the "second aperture" of element b(iv)(2) into which the drop line partially extends, and the "third aperture" of element b(iv)(3) into which the second drop line extends.

To circumvent the apparent deficiencies in its argument, Voltage points to Yamawaki, Figs. 4, 5, and 6 and states:

> Although Solon741 does not explicitly state that the drop line connectors from each drop line are connected to a central trunk of another wiring assembly (i.e., a wiring harness), Yamawaki teaches coupling wire harnesses to other wire harnesses and cable assemblies to pass current from multiple panels to a common connection.

Pet. 21. However, Figs. 4, 5, and 6 similarly fail to disclose a wire harness connected to a lead assembly. EX2001, ¶ 163. Instead, Figs. 4, 5, and 6 demonstrate various ways of wiring a number of solar modules together to form a solar panel.[21] EX1006, 6:10–21; 8:20–9:2. What Voltage analogizes to a "lead assembly" (i.e., wiring apparatuses 16 and 17) remain wire harnesses, they still just group outputs from individual solar panels. EX2001, ¶ 163. Nothing in Yamawaki teaches a wiring apparatus with a feeder cable and drop lines, where the drop lines connect to central trunks of wire harnesses, thereby consolidating power from multiple solar arrays. *Id.*

Indeed, not only does Yamawaki fail to disclose a wiring apparatus consolidating power from multiple wire harnesses, connecting the wire harnesses of Yamawaki together would overload the wire harnesses and lead to failure.

[21] Figs. 4, 5, and 6 are each described as "a circuit diagram showing a wiring structure . . . having photovoltaic modules connected [in parallel/in series/by means of alternative wiring apparatuses]." EX1006, 6:10–21.

EX2001, ¶ 164. Yamawaki, an adjustable wire harness for rooftop systems, and Solon '741, a wire harness with a maximum wire gauge size of eight (EX1005, ¶ 29), cannot handle current and voltage generated from multiple solar arrays. EX2001, ¶ 164. As such, a POSA would not look to combine Solon '741 and Yamawaki to create the invention of the '153 patent or even to solve the identified problem of the '153 patent: to eliminate the combiner box because doing so would certainly lead to overloading the cables, melting the harnesses, and causing fires in the solar installation. EX2001, ¶ 164.

In sum, not only did Voltage not bear its burden to prove that a POSA would have been motivated to combine Solon '741 and Yamawaki and have a reasonable expectation of success in so doing, but even if a POSA did combine the two, the combination would result in another wire harness, not a lead assembly. Further, if the combination was used to solve the problem solved by the lead assembly in the '153 patent, the resulting structure would fail under the currents and voltages consolidated from multiple solar arrays. Thus, the combination of Solon '741 and Yamawaki does not render obvious claims 1, 5–7, 11–14, 16, 17, and 21–24 of the '153 patent.

C. The petition's indefiniteness and written description arguments fail (Ground 8).

Voltage alleges that each of claims 1–24 is unpatentable under 35 U.S.C. § 112 both for failure to meet the written description requirement and as being

indefinite. Pet. 137. Voltage's written description argument hinges on whether the specification provides support for multiple drop lines extending "only partially" through the undermold/primary mold. Its definiteness argument focuses on whether a POSA would have been able to determine—with reasonable certainty—whether the aperture extends only partially or completely through the undermold/primary mold. *Id.* at 15–16. But the specification clearly teaches various embodiments with multiple drop lines extending partially through the undermold/primary mold, so a POSA would have recognized that the inventor was in possession of such an invention, and also would have been able to determine whether an aperture extends partially or completely through the undermold.

1. The petition fails to demonstrate that it is more likely than not that any challenged claim is unpatentable for lack of written description support.

Voltage does not satisfy its burden of proving unpatentability for lack of written description for several reasons. To begin, Voltage offers a construction of "aperture" and then, based on that construction, Voltage states that the "intrinsic record offers no guidance to a POSITA on how to understand the aperture structures within the claimed molds." Pet. 141. However, rather than Voltage's arguments being probative of a lack of written description, Voltage merely highlights the deficiencies in its own incorrect claim construction.

In addition, Voltage makes several arguments that are simply irrelevant to proving a lack of written description: (1) that there is no evidence of the subjective understanding of the Examiner and Applicant explaining the meaning of the term "aperture," (Pet. 140) and (2) that the word "aperture" was used to describe a different feature in the specification. Pet. 138. Neither of the arguments are relevant to the written description requirement.

A specification has an adequate written description when it "reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date" of the patent. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). "[T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art.... [to] show that the inventor actually invented the invention claimed." Id. When examining the written description for particular claim terms, the terms need not appear in the specification verbatim. *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1345 (Fed. Cir. 2016); *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed.Cir.1997.) Claims may be supported by "words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention." *Lockwood*, 107 F.3d at 1572.

The written description analysis is a two-step process. The scope of the claimed subject matter must be ascertained through the performance of a proper

claim construction before comparing that claimed subject matter to the relied-upon disclosure. *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1319 (Fed. Cir. 2011) ("[C]laim construction is inherent in any written description analysis."); *Koninklijke Philips Elecs. N.V. v. Cardiac Sci. Operating Co.*, 590 F.3d 1326, 1336 (Fed.Cir.2010) ("A district court must base its analysis of written description under § 112, ¶ 1 on proper claim construction.") A determination of lack of written description must be based on proper claim construction; one that considers the entire patent, including the written description and prosecution history. *Lochner Techs., LLC v. Vizio, Inc.*, 567 F. App'x 931, 940 (Fed. Cir. 2014) (vacating the court's invalidity decision for lack of written description because the determination was "predicated on a fundamentally flawed claim construction.")

At the PTAB, a petitioner has not demonstrated a reasonable likelihood of prevailing on invalidity for lack of written description if it does not properly support its claim construction. *Ford Motor Co. v. Mass. Inst. Tech.*, No. IPR2020-00010, Paper 9 at 16 (PTAB Mar. 26, 2020.) In *Ford Motor Co*., the petitioner adopted a construction of a claim term argued by the patent owner in a previous district court case. *Id.* at 10. Petitioner did not point to any intrinsic evidence that supported the construction; in fact, petitioner argued that there was a lack of disclosure in specification and prosecution history for its claim construction. *Id.* at 14. Because petitioner skipped the first step of the written description analysis—

i.e., properly supported claim construction—the PTAB held that petitioner did not prove a reasonable likelihood of prevailing on its assertion of lack of written description. *Id.* at 14–16

a. The specification and prosecution history teach two drop lines made of a single wire.

Voltage proposes a construction for the term "aperture" that is not supported by the specification and then asserts that there is no written description support for its proposed construction. Pet. 14; 141. As explained in section III, *supra*, Voltage's claim construction is not consistent with the ALJ's holding in the Markman order,[22] nor is it consistent with the specification of the '153 patent. Voltage's construction of aperture requires, without citing to intrinsic evidence, that the aperture correspond to an entire "cable" or "wire" rather than associated

[22] The Markman Order construes "aperture" as: "entire pathway of the [feeder cable or drop line] within the [undermold or primary mold], when viewed as if the [feeder cable or drop line] were removed." EX1017 at 41 (emphasis added.) Indeed, as the Markman Order points out, as of the Markman hearing, at least, everyone agreed—including Voltage—that "multiple drop lines … may … be comprised of a single cable." *Id.* at 49. Voltage's new position is directly contrary to what they agreed to then.

drop lines/feeder cables as recited in the claims. *Compare* Pet. 14 *with* cls. 1, 21, and 24.

Construed properly, there is no basis for asserting that the term "aperture", "partially extending", and "completely extending" lack written description support in the '153 specification as shown, for example, below. *See, e.g.*, *Lochner*, 567 F. App'x at 940; *Ford Motor Co.*, No. IPR2020-00010, Paper 9 at 10–16. Additionally, because Voltage has not cited or otherwise pointed to *any* evidence, intrinsic or extrinsic, to support its claim construction (Pet. 15), Voltage has not borne its burden of demonstrating that it is more likely than not that at least one of the challenged claims is unpatentable for lack of written description, much like the petitioner in *Ford Motor Co*.

First, the '153 patent explicitly makes clear that a single wire can form two drop lines, which is contrary to Voltage's claim construction for "aperture." For example, the '153 patent describes both Figure 37 and Figure 53, reproduced below, as: "a dual drop lead assembly … with wires exposed at nexus."

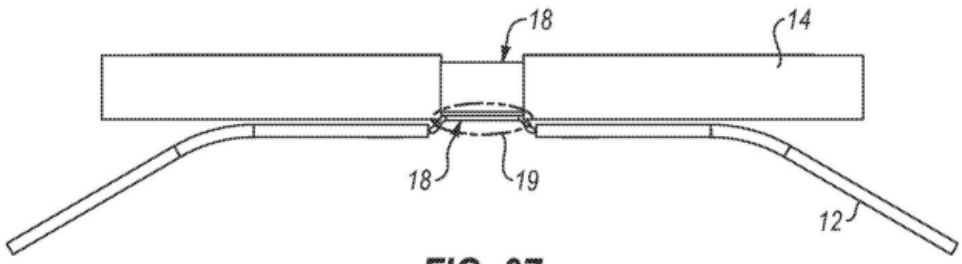


FIG. 37

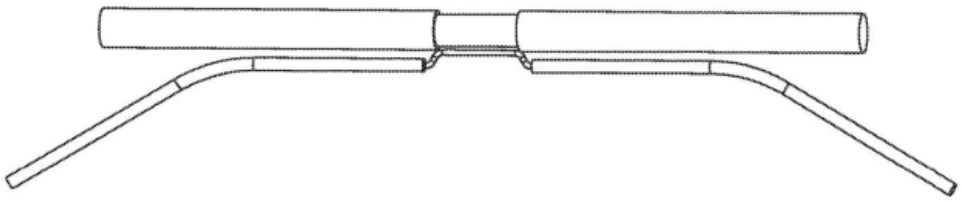
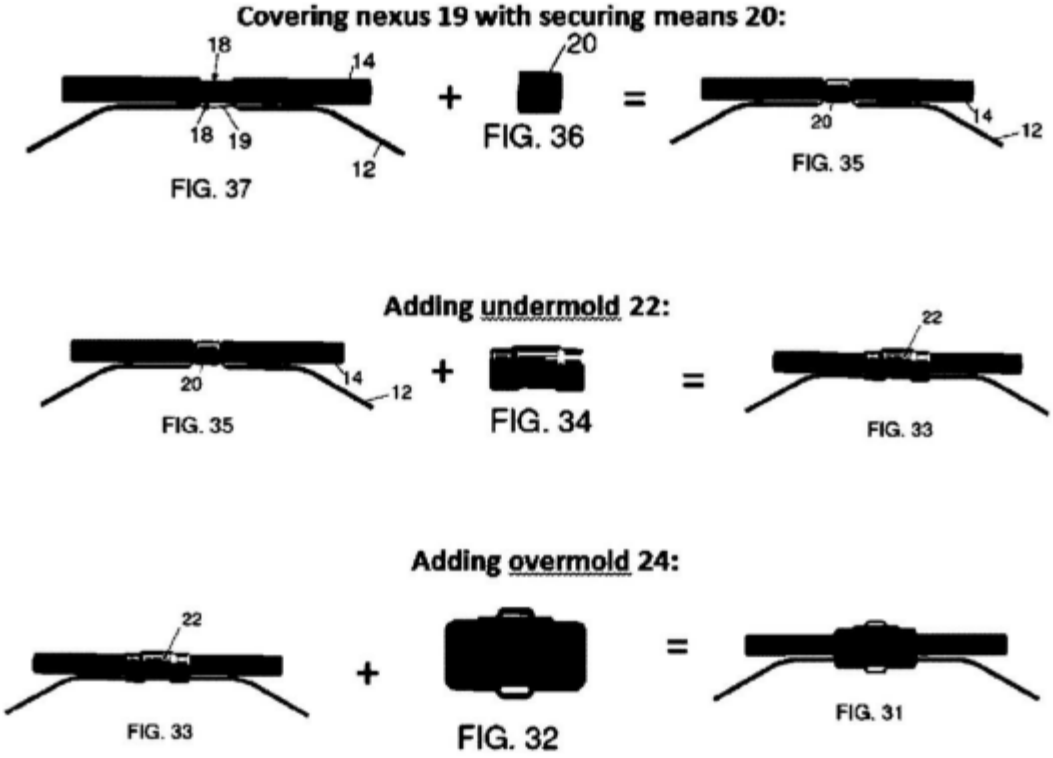


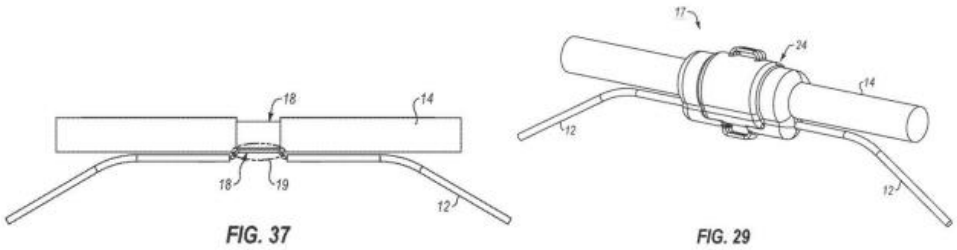
FIG. 53

EX1001 at 3:16–17, 52–53. Indeed, during prosecution of the parent ’254 patent, the examiner observed that Figure 37 (among others) shows “two drop lines … joined to a feeder cable at the nexus.” EX1021 at 290. And both figures show a single wire forming the two drop lines.

The obvious progression was expressly shown during prosecution of the parent ’254 patent:



EX1021 at 233. The specification text makes clear that Figure 29 is an alternative view of the endpoint of that same progression. EX1001 at 4:58–61 ("As shown in FIG. 35, the drop line and feeder cable are held together by compression lug 20, which is surrounded by undermold 22 (FIG. 33), which is surrounded by overmold 24 (FIG. 29).") Thus Figure 37 becomes Figure 29 by successively adding compression lug 20, undermold 22, and overmold 24:



As noted above, the specification expressly describes Figure 29 as having "dual drop lines," each of which is labeled "12" in the Figure. *Id.* at 5:4. And Figure 37 shows only one drop-line wire. Thus, the patent teaches two drop lines formed of a single wire. *CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1153 (Fed. Cir. 1997) ("the patent drawings are highly relevant in construing … the claims"); *Lockwood*, 107 F.3d at 1572 (Fed. Cir. 1997.)

Second, the specification expressly articulates a one-to-one correlation between drop lines and solar array wire harness connections: "each drop line is connected to a solar array"; "each drop line includes a drop line connector for fast and easy connection to the wire harness"; "[e]ach drop line 12 terminates in drop line connector 13, which connects drop line 12 to wire harness connector 35." EX1001, Abstract; 2:9–11; 4:64–65. The patent counts drop lines by counting the number of wire harness connections, with each connection corresponding to one drop line, not by counting the number of wires that the drop lines are made of. Further underscoring the distinction between wires/cables and the drop lines they form, during prosecution of the parent '254 patent the examiner also repeatedly referred to "the wires/conductor used to form the drop lines and feeder cables." EX1002 at 196, 201, 232, 289, 295.

Finally, the claim language expressly ties the second and third apertures to drop lines, not cables. Thus, claim 1 recites "a second aperture … wherein the drop

line extends from the second aperture" and "a third aperture … wherein a second drop line extends from the third aperture"; claim 21 recites "a second aperture … wherein the drop line extends into the second aperture" and "a third aperture … wherein the second drop line extends into the third aperture"; and claim 24 recites "a second aperture … wherein the drop line extends into the second aperture" and "a second drop line … wherein the second drop line extends into a third aperture."

The intrinsic evidence conclusively establishes a firm distinction between wires/cables and the drop lines they form; and it demonstrates that a single wire may form two distinct drop lines—each with its own partially extending aperture. In contrast, Voltage's construction of aperture[23] lacks any support in the specification; indeed, the specification flatly contradicts Voltage's proposed construction with several figures identifying two drop lines made from a single cable. And, just like the petitioner in *Ford Motor Co.* that jumped to its argument about the written description without providing adequate support for its claim construction, so too does Voltage jump over the threshold issue of claim construction. Indeed, Voltage provides no basis in the intrinsic evidence for its construction of aperture. Instead Voltage states its construction as a conclusion,

[23] "A 3-D hole (i.e., the entire pathway for a cable in the [undermold/primary mold]) that exists when viewed as if the entire cable is removed." Pet. 14–15.

much like the petitioner in *Ford Motor Co*. As such, Voltage fails to show a reasonable likelihood of success on the merits of its invalidity claim based on lack of written description.

b. The petition includes makes several arguments that are entirely irrelevant to the written description requirement.

First, Voltage alleges that the aperture "structure was introduced by the examiner for the [parent] '254 patent" in "a new 113-word amendment," and "the Applicant presumably did not understand the scope of the proposed amendments." Pet. 140–141. However, Voltage is wrong about the origin of "aperture," which goes back in the prosecution history to at least 2017, as a term describing what allows access to the nexus. As for the other allegations, Voltage cites no authority for the notion underlying its speculation that absence of an express explanation by the examiner somehow makes the language of the amendment indefinite. Pet. 140–141. On the contrary, the prosecution history must be "viewed … not for the examiner's or the applicant's subjective intent, but as an official record that is created in the knowledge that its audience is not only the patent examining officials and the applicant, but the interested public." *Biogen, Inc. v. Berlex Labs., Inc.*, 318 F.3d 1132, 1139 (Fed. Cir. 2003); *Vitronics*, 90 F.3d at 1584 ("Nor may the inventor's subjective intent as to claim scope, when unexpressed in the patent documents, have any effect.")

Second, Voltage points out that the specification uses "aperture" in a different context than the claims. Pet. 138. However, this does not make the term indefinite. *Blue Calypso*, 815 F.3d at 1345; Manual of Patent Examining Proc. § 2173.05(e) ("that a term … used in the claim has no antecedent basis in the specification disclosure does not mean … that the term … is indefinite"); *Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1180 n. 10 (Fed. Cir. 1995) ("While the MPEP does not have the force of law, it is entitled to judicial notice as an official interpretation of statutes or regulations as long as it is not in conflict therewith.") Instead, whether "aperture" "nonetheless has a reasonably ascertainable meaning," "despite lack of explicit antecedent basis," "must be decided in context." *Energizer Holdings, Inc. v. Int'l Trade Comm'n*, 435 F.3d 1366, 1371 (Fed. Cir. 2006); *Network Com., Inc. v. Microsoft Corp.*, 422 F.3d 1353, 1359 (Fed. Cir. 2005) (affirming construction of claim term that has neither a "commonly understood meaning" nor "a specialized meaning in the relevant art").

2. The petition fails to demonstrate that it is more likely than not that any challenged claim is unpatentable based on indefiniteness.

Voltage also argues that each of the claims is invalid for indefiniteness based on supposed uncertainty about precisely where drop lines end. Pet. 142–150. In support of its assertions, Voltage manufactures several "tests" which are meant to illustrate that the '153 patent and prosecution history "leave a POSITA to speculate

as to . . . whether an 'aperture' extends partially through (or completely through) the [undermold/primary mold]." *Id.* at 142.

A patent should include "claims particularly pointing out and distinctly claiming the subject matter which the inventor … regards as the invention." 35 U.S.C. § 112(b). This is the definiteness requirement. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 902 (2014). "The object of the patent law in requiring the patentee to 'particularly point out and distinctly claim … his invention or discovery,' is not only to secure to him all to which he is entitled, but to apprise the public of what is still open to them." *McClain v. Ortmayer,* 141 U.S. 419, 424 (1891) (quoted in *Nautilus,* 572 U.S. at 909).

That different constructions have been proposed for "aperture" does not make it indefinite. *Nevro Corp. v. Boston Sci. Corp.*, 955 F.3d 35, 41 (Fed. Cir. 2020) ("The test is not … whether a claim is susceptible to differing interpretations."); *ClearOne, Inc. v. Shure Acquisition Holdings, Inc.*, 35 F.4th 1345, 1351 (Fed. Cir. 2022) (holding that the challenged claim was not indefinite despite ClearOne identifying different ways one could interpret the claim terms, stating: "Just because a term is susceptible to more than one meaning does not render it indefinite.") The test, instead, is whether the claim language, read "in light of the specification, the prosecution history, and other relevant evidence,"

permits a skilled artisan to determine infringement, with reasonable certainty. *Nature Simulation Sys. Inc. v. Autodesk, Inc.*, 50 F.4th 1358, 1364 (Fed. Cir. 2022.)

Here, the issue Voltage presents is whether "a POSA can[] . . . with reasonable certainty determine whether an aperture extends completely through or partially through the mold." Pet. 142. Here, the claim construction of aperture discussed in section III, *supra*—which is the same as the construction from the ALJ in the ITC Markman Order (EX1017 at 41)—provides reasonable certainty as to whether the drop-line apertures extend partially or completely through a mold. For the drop-line apertures, Shoals' proposed construction (consistent with the ITC Markman Order) is: "the entire pathway of the drop line within the undermold or primary mold, when viewed as if the drop line were removed." *Id.* Thus, the aperture extends no farther than the combination of mold and drop line; once either the mold or the drop line ends, so too does the aperture.

Multiple experts, including Mr. Weiner, Mr. William Brooks (one of Shoals' technical experts at the ITC) and Dr. Kimberly Cameron (one of Voltage's experts at the ITC) each testified that the drop line ends somewhere within the nexus. EX2003 at 548:7–11 (Mr. Brooks testifying the ends of each drop lines is somewhere in the nexus); 1318:1–13 (Mr. Weiner's testimony corroborating Mr. Brooks' testimony re drop lines); 1127:14–1128:4; 1158:13–1160:17 (Dr.

Cameron, Voltage's expert, indicating the drop lines end somewhere in the nexus.) EX2001, ¶ 176.

Whether or not the aperture—i.e., the drop-line pathway within the mold—stops where the nexus starts, it cannot continue farther than the drop line itself. EX2001, ¶ 177. Each drop line ends within the nexus and "does not go out the other side regardless of what the wire does." *Id.* The nexus, in turn, is fully encased by the undermold (independent claim 1 and claims depending therefrom) or primary mold (independent claims 21 and 24, and dependent claim 23). It follows, inescapably, that the drop line does not extend completely through the mold; therefore, its pathway (aperture) cannot continue completely through the mold, either. *Id.* Voltage's expert, Dr. Cameron, made the point well: "So we already know that we have the drop line and the feeder cable that are electrically coupled at the nexus, and we know that we have an undermold that fully encases the nexus." EX2003 at 1070:9–13.

Voltage's only argument against this testimony is its theory that the drop line is the entire cable. As shown above, its contention is not correct. With that issue resolved, no dispute remains as to whether the drop line ends within the nexus. Once that is settled, there can be no dispute that the drop-line aperture extends only partially through the undermold.

In sum, with the proper construction of aperture and armed with expert agreement from both Voltage and Shoals at the ITC that the drop line ends somewhere within the nexus, the claims read in light of the specification provide a POSA with an understanding of the scope of the claims with reasonable certainty. *Nature Simulation*, 50 F.4th at 1364. As such, each of claims 1–24 is definite.

V. CONCLUSION

The petition fails to show that it is more likely than not that the challenged claims are unpatentable as obvious, indefinite, or lacking written description support. The Board should deny the petition and decline to institute trial.

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Respectfully submitted,

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