

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VOLTAGE, LLC
Petitioner,

v.

SHOALS TECHNOLOGIES GROUP, LLC,
Patent Owner.

Case IPR2024-00876
U.S. Patent No. 10,992,254

**DECLARATION OF JOSHUA WEINER IN SUPPORT OF PATENT
OWNER PRELIMINARY RESPONSE**

MAIL STOP PATENT BOARD

Patent Trial and Appeal Board
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, Virginia 22313-1450

Shoals Technologies Group, LLC

EXHIBIT 2001

Voltage, LLC v.

Shoals Technologies Group, LLC

IPR2024-00876

I, Joshua Weiner, hereby declare and state as follows:

I. INTRODUCTION

1. My name is Joshua Weiner. I make this declaration at the request of Shoals Technologies Group, LLC (“Shoals” or “Patent Owner”) in response to and in rebuttal of the petition filed by Voltage, LLC (“Voltage” or “Petitioner”) to institute *inter partes* review (IPR) of U.S. Patent No. 10,992,254 (“the ’254 patent”).

2. More specifically, I have been asked to consider and respond to some of the opinions expressed by Thomas W. Kenny, Ph.D., in his declaration signed May 8, 2024, and filed with the petition as EX1003, titled “Declaration of Thomas W. Kenny in Support of the Petition for Inter Partes Review of U.S. Patent No. 10,992,254.”

3. I am being compensated for my work in this matter at my standard hourly rate of \$650 per hour for consulting services. My compensation in no way depends on the outcome of this proceeding.

4. The opinions expressed in this declaration are based on, among other things, my review of the evidence filed with the petition, although I understand that Patent Owner has the right to object to and seek exclusion of some of that evidence. I may modify my opinions based on additional evidence, including

expert witness testimony, or any other information I may receive in the future. I reserve my right to supplement or amend my opinions as appropriate.

II. PROFESSIONAL BACKGROUND

5. In this section, I provide a summary of my educational background, employment background, expert consulting background, patents and publications, and other relevant qualifications. A more detailed statement of my professional qualifications, including education, publications, certifications and awards, professional activities, consulting engagements, and other relevant experience is included in my resumé, which is incorporated herein by reference herein, and which I understand is being filed concurrently herewith as EX2002.

6. In 2005, I earned a bachelor's degree in astrophysics and astronomy, and a minor in physics, from University of California, Berkeley. My coursework included stellar physics, electromagnetism and optics, high energy particle physics and astrophysics, statistical mechanics and thermodynamics, special and general relativity, nuclear physics, among others.

7. Upon receiving my undergraduate degree in 2005, I began my career at Akeena Solar, one of the leading turn-key residential and commercial solar contractors. From approximately 2006–2009 I worked mainly on the design and installation of solar power installations, including photovoltaic (PV) modules and panels and interconnection of PV electrical systems. From about 2006 to 2009 I

took on a supervisory role managing the engineering and project management teams in designing and implementing solar power installations. Those installations supported over 20 Megawatts of energy generation in both residential and small photovoltaic (PV) systems including over 2,000 residential projects and dozens of commercial and industrial projects.

8. In 2009, I founded SepiSolar, a national renewable energy design, engineering, and consulting company. SepiSolar specializes in supporting solar and energy storage engineering, procurement and construction (EPC) contractors, developers, asset owners, and installers in the development, design, planning, execution, and regulatory navigation of a solar energy project. My expertise in that role includes designing, engineering, and project managing residential, commercial, and utility-scale solar power systems. These solar power systems include components commonly grouped together as Electrical Balance of Systems (EBOS) including, for example, wire harnesses, connectors, fuses, combiner boxes, inverters, and other components used in the collection, storage, and interconnection of energy generated by solar power systems.

9. In May of 2024 I sold the majority of my engineering contracts in SepiSolar and now work for companies operating primarily in the product development and utility-scale solar power production space.

10. In addition to founding SepiSolar, I co-founded Green Charge Networks in 2009. Green Charge Networks was awarded a \$10 million grant from the United States Department of Energy to deploy eight micro-grid and utility-interactive solar and energy storage projects. The purpose of these projects was to optimize “behind-the meter” electricity usage. That is, to improve the ability of buildings and electric vehicles to generate, store, and use electricity. After exiting Green Charge Networks in 2015, I have continued to develop grid-connected and off-grid energy storage and micro-grid projects with roles dedicated to, for example, business, finance, policy, project development, product, hardware, and software.

11. In 2007, I earned from the North American Board of Certified Energy Practitioners (NABCEP) its PV Installation Professional certification, described by the NABCEP as “the gold standard for PV professionals in the renewable energy industry.” (See <https://www.nabcep.org/certifications/nabcep-board-certifications/>.) I have maintained that certification through the present day, which requires ongoing professional training and coursework.

12. In 2010, I was hired by the University of California, Berkeley, to develop and teach an extension program course, “Advanced PV System Design and Project Management,” in solar PV system design, engineering, development, and project management.

13. Throughout my career, I have helped to design and engineer over 1,000 residential solar power systems including, for example, rooftop residential solar power systems. I have, in addition, helped to design and engineer hundreds of commercial, industrial, and agricultural solar power systems as well as over a dozen utility-scale solar power systems. My breadth of experience with different sizes of solar installations has made me intimately familiar with the unique challenges presented by residential solar installations as compared with commercial/industrial scale solar installations, and as further compared with utility-scale solar installations.

14. Over the past 19 years, I have become recognized as an expert in designing and engineering solar power installations. In that capacity, I have been directly involved with several contractual and other disputes. As an expert, matters where I have offered my expert opinion are listed in my case history attached to my CV, Exhibit 2002.

15. Particularly relevant to this IPR, I have provided expert consulting services in connection with the enforcement of the '254 patent at the International Trade Commission (ITC) in the investigation between Patent Owner (Shoals) and Petitioner (Voltage) (the "ITC proceeding"). Specifically, in the ITC proceeding, I provided live expert testimony and prepared a rebuttal expert report on the patentability of the claims of the '254 patent, as well as the claims of U.S. Patent

No. 11,689,153 (“’153 patent”), which issued from a continuation application claiming priority to the earliest effective filing date for the ’254 patent. The ’254 and ’153 patents have identical written description sections and drawings, except the drawings in the ’153 patent are considerably clearer than those of the ’254 patent, so I have use the ’153 patent’s drawings to illustrate my opinions regarding the ’254 patent herein.

16. At the evidentiary hearing in the ITC proceeding, after I testified to my credentials, training and background, the Administrative Law Judge (ALJ) admitted me as an expert in photovoltaic solar energy systems, EBOS, and the electrical wiring for solar systems. EX2003, 1262:19–1263:3.

III. MATERIALS RELIED UPON

17. I have reviewed and relied upon documents filed by Voltage with the Petition and discussed in this Declaration, including the ’254 patent (EX1001), “Solar Line – Photovoltaic Interconnections System – Helios,” Amphenol Industrial Solar Technologies (“Amphenol”) (EX1007), and Chinese Patent No. CN 2785100 to Shao et al. (“Shao”) (EX1008).

18. In addition, I have considered and relied upon parts of the live witness testimony presented at the evidentiary hearing in the ITC proceeding, the public transcripts of which are filed herewith as Exhibit 2003. The ’254 patent had been withdrawn before the hearing, so parts of the testimony were specific to the

claims of the remaining '153 patent. However, the testimony that I refer to herein from that proceeding, including my own, is not specific to anything unique to the '153 patent claims and I believe, therefore, that it remains relevant and supportive of my opinions stated herein. I have likewise relied on orders issued by the ALJ in the ITC proceeding, such as Order No. 16 regarding the level of skill in the art (EX1017). That order also includes claim construction, but my opinions are not dependent on claim construction, so I do not rely on those parts of the order.

19. I have also relied on my over two decades of experience working and teaching in the field of solar installation design.

IV. THE LEVEL OF SKILL IN THE ART REQUIRES SOLAR EXPERIENCE.

20. Counsel has informed me, and I understand, that the scope and content of the prior art is assessed from the perspective of a person of ordinary skill in the art (a "POSA") as of earliest effective filing date for the challenged claims. Since the '254 patent claims priority to Provisional Application No. 62/047,773 and lists September 9, 2014, as its priority date, I will regard that date as the earliest effective filing date for purposes of my analysis. My opinions are offered through the perspective of a POSA, as described below, as of that date.

21. Counsel has informed me, and I understand, that the POSA is a hypothetical person who is presumed to be familiar with the relevant scientific field and its literature at the time of the invention. This hypothetical person is also

a person of ordinary creativity capable of understanding the scientific principles applicable to the pertinent field.

22. I understand from Dr. Kenny's report, that he provides the following description of a skilled artisan, he states:

[A] person of ordinary skill in the art (POSITA) would have a B.S. degree in electrical engineering, mechanical engineering, or an equivalent such as applied physics or general engineering, and two years of professional experience relating to the design and/or manufacturing of electrical wiring and connectors. Lack of professional experience can be remedied by additional education and related experience, and vice versa.

EX1003, ¶ 49. Notably absent from Dr. Kenny's description of a skilled artisan is any reference to knowledge and/or experience with photovoltaics or solar installations. I disagree with that characterization of a POSA as explained in further detail below.

23. In the ITC proceeding, the ALJ determined the level of skill in the art to be someone 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, p. 12. I agree with the ALJ's determination for at least the reasons explained below.

24. I am informed by counsel and I understand that the level of ordinary skill in the art may be determined by reference to certain factors, including (1) the type of problems encountered in the art, (2) prior art solutions to those problems, (3) the rapidity with which innovations are made, (4) the sophistication of the technology, and (5) the educational level of active workers in the field. I further understand that in a given case, every factor may not be present, and one or more factors may predominate.

25. I am familiar with the knowledge of a person of ordinary skill in the field related to the subject matter of the '254 patent in the September 2014 timeframe. In forming my opinions, I considered several things, including the technological problems, regulatory considerations, practical challenges of designing and installing solar power installations, the architecture of various types of solar installations, to name a few considerations. I also considered the sophistication of the technology involved, and the educational background and experience of those actively working in the field at the time including, for example, the inventor of the '254 patent, Dean Solon. A brief explanation of portions of my analysis are included below:

26. I understand Mr. Solon had eight or more years of experience in the solar energy field, and more specifically in EBOS, as of the effective filing date of the '254 patent.

27. I understand from my own experience that innovation was endemic to solar EBOS in and around the early 2010s (and continuing to the present). Mr. Solon's own inventive activity is illustrative. In addition to the '254 patent:

- On July 14, 2009, Mr. Solon filed an application titled "Low Leakage Electrical Joints and Wire Harnesses, and Method of Making the Same," which later issued as U.S. Patent No. 8,604,342 ("Solon '342"). EX2004.
- On March 1, 2010, Mr. Solon filed an application titled "Solar Energy Wire Harness with In-Line Fuses," which later issued as U.S. Patent No. 8,937,249. Dr. Kenny refers to the application for this patent as "Solon '741." EX1005.
- On August 30, 2010, Mr. Solon filed an application titled "Solar Array Recombiner Box with Wireless Monitoring Capability," which later issued as U.S. Patent No. 8,937,249. EX2006.
- On March 28, 2011, Mr. Solon filed an application titled "Guard for Connection Point of Adjoined Wire Connectors," which later issued as U.S. Patent No. 8,408,929. EX2007.

- On February 7, 2013, Mr. Solon filed an application titled “Solar Panel Junction Box Capable of Integrating with a Variety of Accessory Modules, and Method of Use,” which later issued as U.S. Patent No. 8,962,998. EX2008.
- On March 10, 2013, Mr. Solon filed an application titled “Monitoring System for and Method of Preventing Electrical Arcs in a Solar Energy System,” which later published as U.S. Patent Pub. No. 2014/0071563. EX2009.
- On May 3, 2014, Mr. Solon filed an application titled “Master Recombiner Box with Wireless Monitoring Capability,” which later issued as U.S. patent No. 9,847,196. EX2010.
- Also on May 3, 2014, Mr. Solon filed an application titled “Disconnect Cabinet with Wireless Monitoring Capability,” which later issued as U.S. Patent No. 9,589,752. EX2011.
- On October 13, 2014, Mr. Solon filed an application titled “Modular Photovoltaic Power Skid Base System,” which later issued as U.S. Patent No. 9,847,627. EX2012.

28. The foregoing applications were filed before Mr. Solon’s application for the ’254 patent. I understand that Mr. Solon’s inventive activity continued apace, thereafter.

29. By the early 2010s, the solar field had matured to the point that people and companies working in the solar field were generally specialized in it. Within the field, people and companies were increasingly specialized between “rooftop” and utility-scale systems, and component designers were increasingly specialized between panels, EBOS, and other BOS (Balance of Systems) components.

Reflecting and driving that specialization:

- Beginning in 1984, the National Electrical Code (NEC) had a separate article (Article 690) devoted specifically to PV systems.
- The 2014 edition of the NEC (NEC 2014) required that “wiring systems and fittings” be “specifically listed”—by a nationally recognized Testing Laboratory (NRTL), such as Underwriters Laboratory (UL)—“for use on PV arrays.” EX2005, 690.31(A).
- The catalog of Product Safety Standards in NEC 2014’s Informative Annex A (EX2005) already included many PV-specific UL standards, including: Concentrator Photovoltaic Modules and Assemblies, Subject 8703; Connectors for Use in Photovoltaic Systems, Subject 6703; Flat-Plate Photovoltaic Modules and Panels, 1703; Low-Voltage Fuses — Fuses for Photovoltaic Systems, Subject 2579; Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures for Use with Photovoltaic (PV) Systems, Subject

489B; Multi-Pole Connectors for Use in Photovoltaic Systems, Subject 6703A; Photovoltaic DC Arc-Fault Circuit Protection, Subject 1699B; Photovoltaic Junction Boxes, Subject 3730; Photovoltaic Wire, Subject 4703; and Solar Trackers, Subject 3703.

- “The first NABCEP Solar PV Installer certification exam (now called PV Installation Professional) was administered in 2003.” (<https://www.nabcep.org/about-us/>). EX2013.

30. As for types of problems encountered, solar EBOS presents unique challenges. To put solar EBOS in 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.

31. Renewable sources are further subdivided into wind, hydro, biomass, geothermal—and solar. Electricity is generated from most of those sources by using some sort of turbine—most commonly steam turbines (for fossil fuel,

nuclear, biomass, and geothermal), but also gas, hydro, and wind turbines.

EX2014.

32. There are “two main types of solar electricity generation technologies”: photovoltaic (PV) and “solar-thermal power.” “Most solar-thermal power systems use steam turbines to generate electricity,” just like fossil fuel and nuclear power systems. Photovoltaic systems are different: “PV conversion produces electricity directly from sunlight in a photovoltaic cell.” EX2014. Skilled artisans tend (now and in 2014) to use PV, photovoltaic, and solar interchangeably when referring to energy producing systems.

33. “The PV cell is the basic building block of a PV system. ... However, one cell only produces 1 or 2 Watts, which is only enough electricity for small uses, such as powering calculators or wristwatches.” To be useful for larger-scale electricity generation, “PV cells are electrically connected in a packaged, weather-tight PV *module*. EX2015.

34. “Photovoltaic cells generate direct current (DC) electricity.” Steam and other turbines, on the other hand, typically generate alternating current (AC) electricity. “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.*

35. 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. In particular, any electricity generating system will have, in addition to the components (turbines or panels) that generate electricity, 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 (unlike turbines, solar panels cannot be housed in a dam or powerplant building); and PV BOS consists mainly of DC power rather than AC power.

36. Regulatory considerations amplify the weight of the technical distinctions between PV and non-PV installations described above. Codes generally require electrical system components to be certified by NRTLs. 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. 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 understanding the risks associated therewith. This is particularly true of PV installations in the past several decades as the technology has undergone technological shifts commensurate with burgeoning, widespread technology.

37. Differences between PV and other forms of electricity generation should be accounted for, when describing a POSA.

38. Finally, the '254 patent is PV specific. This is reflected in its title, abstract, preambles of each independent claim, and many other claim elements that specifically recited “solar module”, “solar array”, “solar panel”, etc.

39. Based on the foregoing considerations and in light of my review of the '254 patent and its claims, I disagree with Dr. Kenny's description of a skilled artisan. The skilled artisan cannot be accurately described in terms of generic “electrical wiring and connectors,” or without regard to PV-specific education and experience. A more accurate description, and one that was adopted by the ALJ in the ITC proceeding (EX1017), is: someone 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.

40. Based on my experience and training described above and in my resumé, I am qualified and prepared to testify as a person who (1) has a bachelor's degree in a scientific field related to mechanical or electrical engineering; astrophysics and astronomy, in particular; and (2) has at least two years' experience working with photovoltaic systems and electrical wiring; specifically, from 2005 to the present (nearly two decades).

41. I presently meet these qualifications, and likewise met them as of the priority date of the '254 patent. I am therefore qualified to opine as to the perspective of a POSA in this matter, both presently and as of the priority date of the '254 patent.

V. DR. KENNY IS NOT SUFFICIENTLY QUALIFIED TO CREDIBLY OPINE ON THESE ISSUES AS A PERSON OF ORDINARY SKILL IN THE ART.

42. I understand that a threshold inquiry when assessing obviousness is to ask whether the claimed invention would have been obvious to a POSA as of the priority date of the '254 patent. Voltage has failed to offer *any* analysis of invalidity from the perspective of a POSA in the field of the '254 patent because Dr. Kenny does not qualify as a skilled artisan in this case. Indeed, in my several years staffing, training, supervising, and designing solar installations with engineers, I would not look to Dr. Kenny even as a credible candidate to assist in

the design of solar installations, much less offer an expert opinion that is deeply intertwined in the design complexity of solar installations.

43. Dr. Kenny, although certainly qualified in other areas, admitted in the ITC that he has “no experience with photovoltaic systems.” EX2003, 1231:22–24. By extension, he also admits that he is not a POSA under the definition of a POSA set forth in the ITC that Shoals adopts above as the proper definition of a POSA in this instance:

A person of ordinary skill in the art would have had 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, p. 12 (emphasis added). During his testimony at the ITC hearing, Dr. Kenny admitted that he does not have any experience with photovoltaic systems, professional or otherwise. *See, e.g.*, EX2003, 1187:1–11, 1221:3–19, 1226:8–1229:22, 1228:20–1229:2. In addition, Dr. Kenny is not able to substitute the apparent and admitted lack of practical experience with additional education

because he has no education, formal or otherwise, related to PV systems and electrical wiring of PV systems as it relates to the '254 patent. EX2003, 1187:1–11, 1221:3–19. Dr. Kenny stated—in response to the judge’s inquiry about his experience with PV systems—that the extent of his experience related to PV systems was “part of [his] education in physics” in that he worked with “semiconductor devices” where electrons flow through band structures and energy can be extracted. EX2003, 1186:23–1187:7 Understanding semiconductor physics is a far cry indeed from experience in PV systems.

44. Dr. Kenny also testified 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 C.V., and that he has not consulted or advised on the design or implementation of a solar installation of any size. In fact, Dr. Kenny testified that his only PV experience was related to personal use of “low-power applications for consumer-grade electronics” – e.g., charging phones and camping trips. EX2003, 1228:20–1229:2. Nor does Dr. Kenny have the type of education—formal or otherwise—that might substitute for experience. EX1017, p 12. Dr. Kenny testified explicitly 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.

45. In addition to his lack of formal collegiate education regarding solar installations, 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. *See* EX2003, 1229:18–22.

46. Despite his admission at the ITC hearing that he did not have any solar-related experience or expertise and despite Voltage’s attempts at reading out “solar” and “photovoltaics” from the relevant field of the ’254 patent, Voltage nevertheless argues that a POSA would have a working knowledge of solar-related chapters of the NEC. For example, Voltage states at least four (4) 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., pp. 31, 61, 89, 118. Of course, Dr. Kenny admitted at the ITC hearing in March 2024 that he did not have any knowledge of sections—including section 690—which governs solar installations. *See* 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, even according to Voltage's own arguments against the validity of the '254 patent, Dr. Kenny is unable to properly provide an opinion as a skilled artisan in this case.

47. Furthermore, even Dr. Kenny's citation to solar authority illustrates his lack of understanding of the field of solar installations at the time of the '254 patent (ca. 2014). Dr. Kenny cites to a chapter from a solar textbook from 2001 (EX1011) which, even in 2014, was woefully out of date. In addition, Voltage cites to the 2002 version of the NEC (EX1010), but the NEC was updated at least in 2011 and 2014 (EX2005), both of which were much more relevant to the state of the art and to those working in the field of the '254 patent at the time.

48. In addition, use of the 2002 version of the NEC in the 2014 timeframe would, at the time, constitute a serious health and safety risk. 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, this is particularly true for EBOS. As such, a POSA in 2014 would never look to the 2002 version of the NEC for guidance because doing so would create an unnecessary risk. Dr. Kenny's citations to these out-of-date references is an indication that he simply does not understand PV installations and he certainly did not and does not understand the state of the art of PV installations at the time of the '254 patent.

49. In sum, Dr. Kenny admits that he does not have experience or educational training in the field of the '254 patent. As such, Dr. Kenny cannot qualify as a person of skill in the relevant art under the proposed definition. Thus, although Dr. Kenny purports to opine that all the asserted claims of the '254 patent are invalid, those opinions are not credible because that analysis must be from the perspective of a POSA as of the effective filing date of the patent at issue.

50. For all the reasons articulated above, Dr. Kenny should not be considered a POSA with respect to the '254 patent and any opinions offered by Dr. Kenny as an allegedly skilled artisan with respect to the '254 patent and should be excluded or assigned no weight.

VI. THERE IS NO EVIDENCE TO SUGGEST THAT THE AMPHENOL BROCHURE OF EX1007 WAS AVAILABLE TO THE PUBLIC BEFORE THE PRIORITY DATE OF THE '254 PATENT.

51. To begin, it is my understanding that for a printed publication to qualify as prior art, as Voltage and Dr. Kenny allege is the case for the Amphenol brochure, it must be shown that the publication was available to the interested public before the priority date of the '254 patent. However, Voltage and Dr. Kenny provide no basis for showing that the Amphenol brochure was published or otherwise publicly accessible prior to the priority date of the '254 patent. The

Amphenol brochure is, therefore, not prior art and should not be considered in any obviousness analysis including in grounds 1–3 presented in the petition.

52. Dr. Kenny includes one conclusory statement about Amphenol as prior art:

I understand that Amphenol is prior art under AIA § 102(a) because it was published no later than November 30, 2012, more than one (1) year before the earliest possible priority date of the '254 Patent.

EX1003, ¶ 26. Nothing in Dr. Kenny's statement indicates a factual basis for the alleged publication date or public availability. The only date found on the document is an "ICS 18-6 Release Date: November 2012". EX1007, 1. It is not self-evident to what "ICS 18-6" is referring. It is possible that ICS indicates an internal publication or set of documents available to select employees, for example. That date, alone, is certainly not evidence that the document was available to the interested public in November of 2012. Dr. Kenny also refers to his review of archived versions of the Amphenol website, EX1003, ¶ 66, but does not contend or show that EX1007 was available for download via the screen grabs he attaches as EX1027.

53. The only other evidence Voltage points to is a citation to the declaration of Gary Joseph (EX1024), a former sales representative for Amphenol

and current director of sales for Voltage, LLC (EX1024)—the petitioner. However, even Mr. Joseph’s declaration does nothing to corroborate the publication date of the Amphenol brochure. He states that his recollection is that various products included in the Amphenol brochure had been offered for sale in 2012. EX1024, ¶¶ 4–6. However, Voltage and Dr. Kenny are not, to my knowledge, alleging the products as prior art based on sales dates; instead, they put forward the brochure as printed publication prior art. As a publication, the best evidence that Voltage points to is Mr. Joseph’s statement that “it was Amphenol’s regular practice to make at least the latest version of the Solar Line Brochure available for download on Amphenol’s website.” EX1024, ¶ 8. Mr. Joseph does not declare that he remembers *this* brochure, EX1007, being available or that *this* brochure, EX1007, was ever available. Indeed, he does not explain what an ICS Release Date is or corroborate that such brochures would have been available to the public. His testimony is that some form of a product brochure was available to the public in 2012. His testimony says nothing about the public availability of *this* brochure, EX1007.

54. Therefore, it is my understanding that at least due to the above, Voltage and Dr. Kenny have not shown that the Amphenol brochure was available to the public by the priority date of the ’254 patent and, therefore, the brochure cannot be considered prior art for purposes of any invalidity analysis including

invalidity for obviousness. Based on the above, grounds 1–3 do not render the claims of the '254 patent obvious.

VII. EVEN IF THE AMPHENOL BROCHURE WAS AVAILABLE TO THE PUBLIC, IT DOES NOT TEACH WHAT DR. KENNY ALLEGES.

55. 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 in the '254 patent.

56. 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 '254 patent is a device 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 '254 patent (shown below) is instructive:

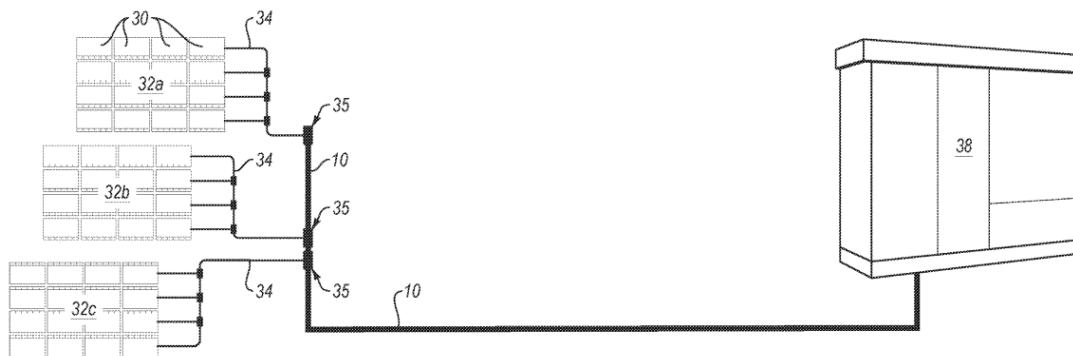
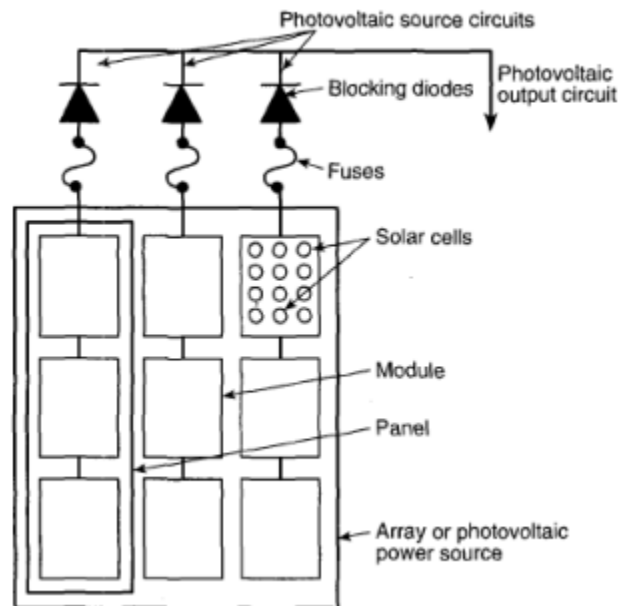


FIG. 4

EX1001, Fig. 4. In figure 4, wire harnesses 34 each include, as an example, four (4) branches each connecting to the output of a solar panel (or a group of modules 30). In this instance, figure 4 shows a row of solar modules 30—each an individual solar panel—connected to one of the four branches in the wire harness. Each wire harness 34 collectively groups outputs of the solar panels, forming a solar array (32a, 32b, and 32c, respectively).

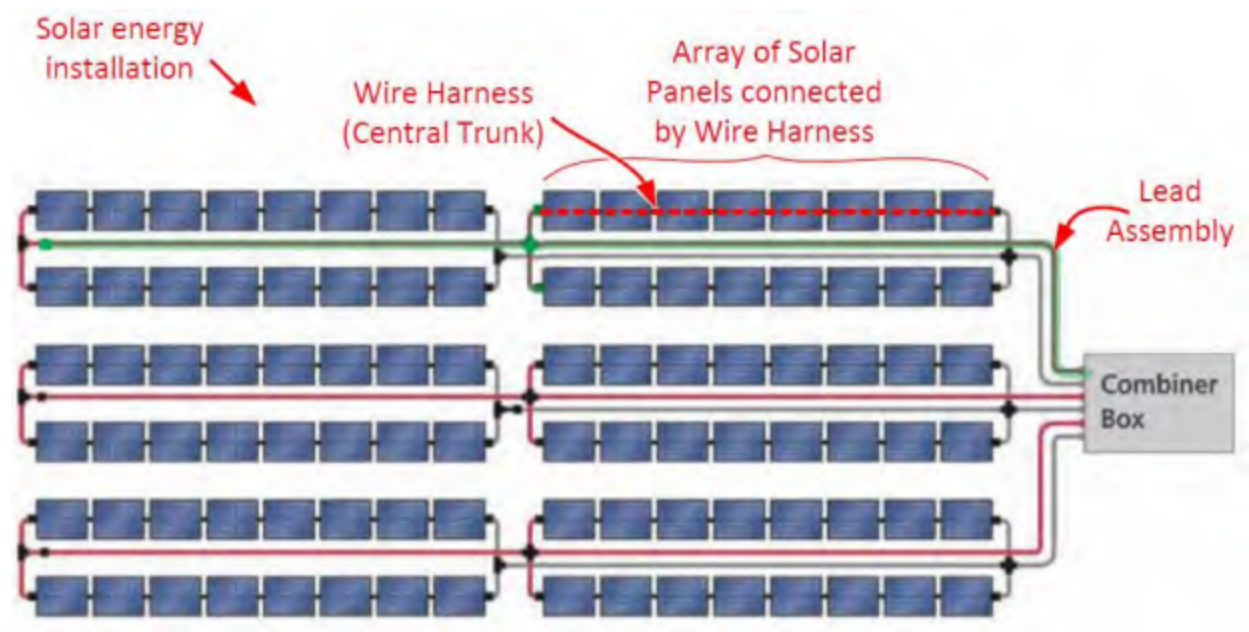
57. Use of intra-module wiring between solar modules to form a solar panel is a well-known concept. Indeed, the concept is even illustrated in the NEC section (section 690) cited by Dr. Kenny in his expert declaration. See EX1003-39 (*citing* EX1010). Section 690.1(A) illustrates the following:



EX1010, Fig. 690.1(A). The figure above shows three modules in a column, each of the modules is connected to another one of the modules in the column, forming a

solar panel. The lines between solar modules indicate electrical connections or intra-module wiring between the solar modules. What is not shown in Fig. 690.1(A) is a wire harness: individual branches connecting to outputs of solar panels and grouping those outputs at a central trunk. A wire harness is not the same as intra-module wiring, the scale and purpose are entirely different.

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



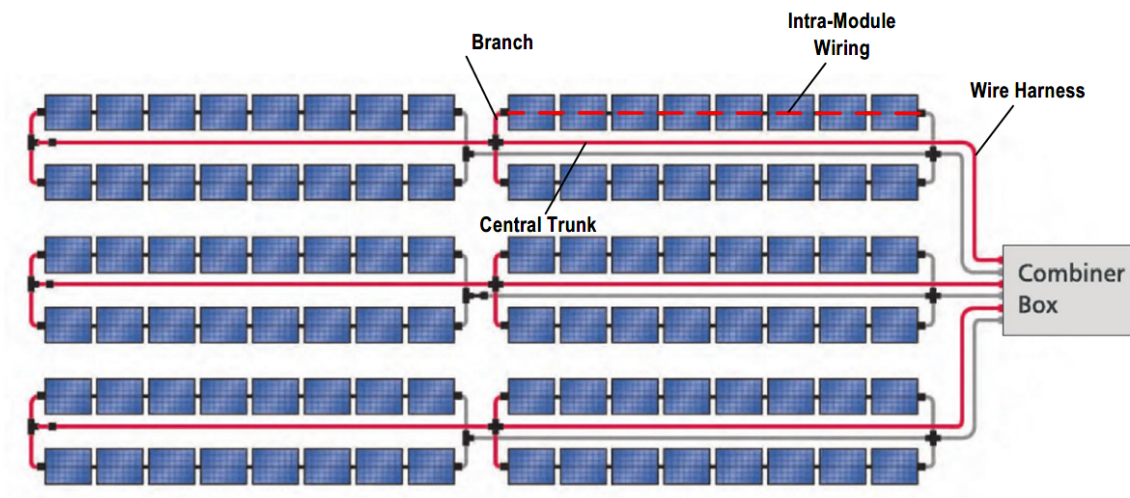
EX1003-99 (citing EX1007, p. 5 with annotations). Dr. Kenny includes a red dotted line between the solar modules shown in the Amphenol brochure and declares that the red dotted line shows the existence of a wire harness. Not so.

59. 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. However, each of 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 ’254 patent and the wire harness in claim 1(a) of the ’254 patent.

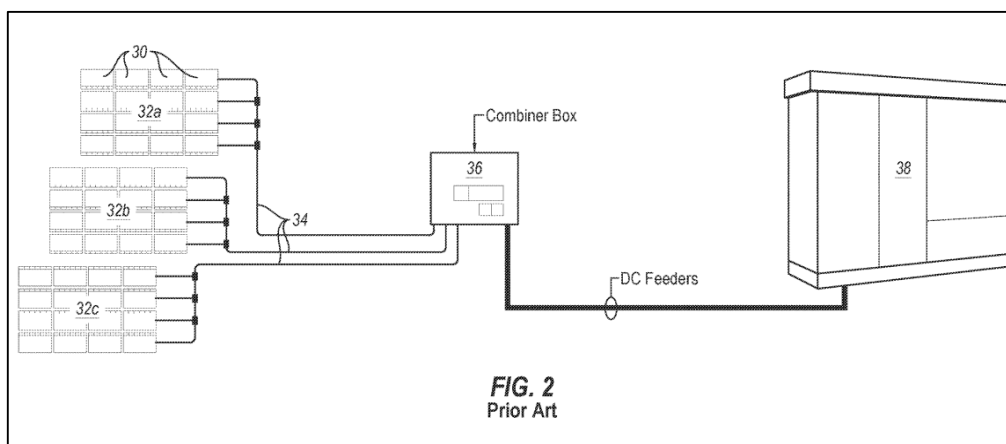
60. That the green lines in the above-annotated figure in Amphenol is a wire harness is also evident based on what the central trunk of the wire harness is connected to—a combiner box. Again, the purpose of the lead assembly is to eliminate the need for a combiner box. If the green line was truly a lead assembly, its central trunk would connect directly to an inverter rather than a combiner box, as shown, for example, in figure 4 of the ’254 patent. EX1001, Fig. 4. It does not,

however, because what Dr. Kenny labels as a lead assembly is, in fact, a wire harness and what he labels a wire harness is some form of intra-module wiring.

61. From my experience, what Amphenol teaches is a common architectural layout of a utility-scale solar power installation prior to the invention of the lead assembly disclosed in the '254 patent. The proper annotated layout of the figure in Amphenol is as follows:



EX1007, p. 5 (Weiner annotations). Indeed, this architectural layout is consistent with the layout described in the '254 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.

62. In sum, Amphenol does not disclose what Dr. Kenny indicates. Amphenol does not include any information whatsoever about the intra module wiring electrically connecting the solar modules together and Dr. Kenny does not remedy that deficiency by relying on any other materials or expertise in the field. In addition, even assuming any number of methods of electrically connecting the solar modules together, that intra-module wiring is not a wire harness, and what Dr. Kenny indicates is a lead assembly in Amphenol is, in fact, a wire harness, as defined by the '254 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”, “overmold”, etc. and none of the references combined with Amphenol remedies that deficiency. As such, grounds 1–3 fail to show each of the elements of any claim in the ’254 patent. Therefore, none of the claims of the ’254 patent is rendered obvious by Amphenol and any of the combinations listed in grounds 1–3.

VIII. SHAO IS NOT ANALOGOUS ART TO THE ’254 PATENT.

63. It is my understanding that in order to determine whether prior art would have been available to a POSA, the prior art must be analogous. I understand that determining whether cited art is analogous is a two-pronged test: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. Because the Shao reference is from a different field of endeavor than the ’254 patent and is not pertinent to the problem addressed by the inventor of the ’254 patent, it is not analogous art and should not be considered as prior art to the ’254 patent.

A. The Shao reference and the ’254 patent are in different fields of endeavor.

64. While it is clear that Voltage’s first characterization of the field in its petition is attempting to read out any mention of “solar” in the field of endeavor of

the '254 patent, the '254 patent is clearly centered around utility-scale solar installations. Indeed, the specification and claims are replete with the references to solar and solar installations including the title, abstract, figure descriptions, figures, and claims. Indeed, the independent claims recite many elements directed to solar installations specifically; for example, “[a] lead assembly for use in a solar installation”, “a plurality of branches that each are configured to electrically connect to a separate solar panel in an array of solar panels”, “[a] solar power system”, “a plurality of solar panels” “a first solar array”, “a second solar array”, to name a few. *See, e.g.*, EX1001, cls. 1, 21, and 24. As such, it would be inaccurate to omit any reference to solar installations or solar power systems in the field of endeavor of the '254 patent.

65. Remaining consistent with the characterization of the field of endeavor of the '153 patent offered at the ITC hearing, the continuation of the '254 patent, the field of endeavor of the '254 patent is solar energy installations or solar power system.

66. In contrast, the record is clear that Shao has nothing to do with solar applications, and Dr. Kenny agreed at the ITC hearing by stating: “[t]here’s no mention of solar technology in the Shao patent.” EX2003, 1202:21–23. Voltage’s petition and Dr. Kenny’s declaration does not offer any support for the idea that Shao has anything to do with solar installations. Indeed, there is no mention of

using the branch junction of Shao in any solar installation. Instead, Shao relates to branch cabling for indoor power distribution. Branch cabling is found “between the final overcurrent device protecting the circuit and the outlet.” *See* EX2005, 100 [definition of “Branch Circuit”]. Shao does not once suggest an application to a solar environment or solar installation. Indeed, the word “solar” does not appear once in the disclosure.

67. Dr. Kenny does not offer any testimony or other support explaining why the field of the ’254 patent (solar energy installations) could be said to be in the same field as Shao (AC power distribution). The opposite is true: a POSA would conclude that Shao is not applicable to solar applications and a skilled artisan would not look to Shao to inform solar component design decisions for several reasons.

68. First, Shao discloses a device intended specifically for AC power distribution within a multistory building (e.g., vertically between floors of a building), which has nothing to do with DC power consolidation from wire harnesses as addressed by the ’254 patent.

69. Second, Shao concerns only AC power distribution. AC components generally have no applicability to design decisions within a DC power system, the environment of a solar power system, i.e., the types of systems at issue here. Typically, AC is a weaker rating than the ratings required for a DC power system.

Thus, one skilled in the art would not look to a device in a weaker-rated AC context and determine that the device must have an application in the DC design context. It may be the case that a skilled artisan would look to a DC device for application in an AC design, but the reverse is not true. Therefore, one of skill in the art would not look to Shao (an AC device) and use it in the context of solar power installations of the type described by the '254 patent (DC context).

70. Third, Shao is intended for AC power distribution within a building. This is in sharp contrast to solar components which are intended for outdoor use and subject to sometimes extreme environmental conditions. And, while Shao indicates that its design is moisture resistant (EX1004-5), the moisture encountered by an indoor device, like Shao, is radically different from the moisture or water exposure that outdoor devices, like those described by the '254 patent, would be designed to endure.

71. Shao relates to branch cabling for power distribution; more specifically, AC power distribution within a building. On the other hand, the '254 patent is in the field of solar energy installations. Because Shao and the '254 patent are in drastically different fields of endeavor, Shao is not analogous art.

B. The '254 patent and the Shao reference are directed to different problems.

72. The '254 patent states the problem being solved: “there is a need for a device that renders a combiner box unnecessary.” EX1001, 1:55–56. The '254

patent is focused on how to get power from solar panel arrays all the way over to an inverter without using a combiner box. EX1001, 2:9–17. The Shao patent focuses on enabling single-branch joints by combining them into a double-branch AC power distribution system between floors of a building. EX1008, 4. Shao is attempting to reduce the number of joints in its wiring apparatus in order to create a more compact structure that fits tighter within a building and, more specifically, between two floors of a building. *Id.* Two different problems.

73. Shao is in a different field of endeavor as compared to the '254 patent; indeed Shao has nothing to do with the field of the '254 patent (solar power installations). In addition, Shao is not reasonably pertinent to the problem solved by the '254 patent (elimination of a combiner box). Therefore, Shao is not analogous art and would therefore not be available to a POSA at the time of the invention of the '254 patent.

IX. DECLARATION

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

DATED: August 23, 2024



Joshua Weiner