

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AFFORDABLE WIRE MANAGEMENT, LLC,
Petitioner,

v.

CAMBRIA COUNTY ASSOCIATION FOR
THE BLIND AND HANDICAPPED, INC.,
Patent Owner.

IPR2024-00178
Patent 11,349,291

PATENT OWNER'S SUR-REPLY

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Exhibit	Description
2001	Declaration of Edward C. Kern, Jr., Ph.D.
2002	U.S. Patent No. 5,740,994 (“Laughlin”)
2003	Defendant Affordable Wire Management, LLC’s Initial Invalidity Contentions
2004	Transcript of Deposition of Omid Beik, Ph.D., July 9, 2024
2005	Wind and Solar Systems: Design, Analysis and Operation, Third Edition
2006	Declaration of Allen Garrett Smith
2007	CAB Cable Rings & Saddles for Solar Panel Wiring (2013)
2008	SunPower Field Process Change Review 1 Development Review
2009	Intersolar Award Finalist – Photovoltaics (2014)
2010	Email dated April 7, 2015
2011	Email dated April 10, 2015
2012	Email dated July 2, 2015
2013	Email dated September 15, 2015
2014	Email dated September 21, 2015
2015	Email dated October 2, 2015
2016	PV Magazine “The Array Changers: 50 Key Components Making PV Shine”
2017	Email dated January 18, 2016
2018	SolarPro Magazine (July/August 2016)
2019	Email dated May 20, 2016
2020	RP Construction Services Press Release (July 26, 2018)
2021	NECA Show Stopper Award (2018)
2022	Electrical Contractors Magazine (January 2019)
2023	Top Solar Component Products (2019)
2024	Top Solar Components and Equipment (2021)
2025	PV Magazine Award (2021)
2026	Leadership in Solar Energy Award (2022)
2027	Leadership in Solar Energy Award (2023)
2028	Declaration of Mitchel F. Bowman
2029	CV of Mitchel F. Bowman
2030	SunEdison, CAB Prototyping at SolarTac
2031	Email dated November 14, 2014
2032	Email dated August 17, 2015
2033	Declaration of William F. Brooks, PE

2034	CV of William F. Brooks, PE
2035	Solar Market Insight Report, 2023 Year in Review
2036	National Renewable Energy Laboratory, Spring 2014 Solar Industry Update
2037	Brooks, Engineering, Cable Management in Solar PV Arrays: A Review of Requirements in the 2017 and 2020 Editions of the National Electrical Code and how CAB Solar Hangers Meet These Requirements (November 25, 2020)
2038	Declaration of Edward C. Kern, Jr., Ph.D.
2039	CV of Edward C. Kern, Jr., Ph.D.
2040	[RESERVED]
2041	CAB Solar Cable Management Installation Guide (January 28, 2022)
2042	Solar Project Quote Request/CAB Quote #1
2043	Intertek, Authorization to Mark
2044	Declaration of Jonathan D. Putnam, Ph.D.
2045	CV of Jonathan D. Putnam, Ph.D.
2046	Solar Sales Figures Spreadsheet #1
2047	Comparison of Solar Cable Management Systems
2048	Compare CAB Solar vs. Trenching or Cable Tray
2049	Cost Comparison of CAB Standard vs Integrated Cable Management System
2050	Solar Project Quote Request/CAB Quote #2
2051	Solar Project Quote Request/CAB Quote #3
2052	Solar Project Quote Request/CAB Quote #4
2053	Solar Project Quote Request/CAB Quote #5
2054	Solar Project Quote Request/CAB Quote #6
2055	National Electric Code (2014)
2056	Solar Sales Figures Spreadsheet #2
2057	Solar Project Drawings
2058	Declaration of Denise L. Studinary
2059	Declaration of Joseph William Novak, PE, MSE, MBA, S.P.
2060	Solar Pro Magazine (February/March 2013)
2061	Declaration of Trevin C. Schmidt in Support of <i>Pro Hac Vice</i> Motion
2062	Shoals BLA Powerpoint
2063	Transcript of Deposition of Joshua Weiner., November 12 2024
2064	Transcript of Deposition of Minh P. Doan, November 15, 2024
2065	SolarPro Magazine (July/August 2016) (Served as Supplemental EX2018)

I. THE PREAMBLE IS LIMITING

The preamble of claims 1, 6, and 24, reciting “**a** plurality of electrical cables *extending from a plurality of solar panels*,” provides antecedent basis for the claim term “**the** plurality of electrical cables” in the body. EX1001, 10:24-25, 33-34. AWM’s expert conceded that a POSITA would understand that “**the** plurality of electrical cables” are the electrical cables extending from a plurality of solar panels. EX2004, 65:21-66:7, 67:11-22, 72:14-20. Notwithstanding these concessions, and ignoring the specification, AWM argues that the preamble merely provides “reference points” for the claimed electrical cables, citing *Eaton Corp. v. Rockwell Int’l Corp.*, 323 F.3d 1332, 1342 (Fed. Cir. 2003). Paper 54, 3.

Eaton, however, explicitly rejected the “reference point” argument that AWM asserts. *Id.* at 1340-41. The ‘291 preamble provides the structural limitation of the claimed system. It is not just a system for organizing **any** kind of electrical cables, but a system that specifically organizes electrical cables *extending from solar panels*. The preamble also provides structural limitation for the claimed hangers, i.e., the hangers’ multiple cable-carrying surfaces must be structured specifically to support those electrical cables. The ‘291 inventor “chose to use both the preamble and the body of the claim to define his invention.” *Id.* at 1342. This is not a case where the bodies of the claims alone recite the entire

structure. *Cochlear Bone Anchored Sols. v. Oticon Med. AB*, 958 F.3d 1348, 1355 (Fed. Cir. 2020).

AWM paradoxically argues that “[e]ven if limiting, the preambles recite only an intended use,” citing *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). There, however, it was undisputed that the prior art references disclosed all of the structural limitations of the claim, and there was no issue whether the preamble was limiting. *Id.* The court determined only that the prior art reference need not disclose the *function* of the structure to anticipate the claim. *Id.*

II. “ORGANIZING” MEANS “SEPARATING” IN LIGHT OF SPECIFICATION

AWM’s construction for “*organizing* a plurality of electrical cables extending from a plurality of solar panels” ignores the specification, and is refuted by AWM’s expert. AWM relies on ordinary dictionary definitions and laypersons’ “common knowledge” that “organizing” is broader than “separating.” Paper 54, 4. But what is relevant is what “organizing” means to a POSITA in light of the specification, and the specification clearly discloses the need to separate the electrical cables in the solar array. *See* EX1001, 1:32-56. Dr. Beik freely conceded that separation of cables extending from solar panels is what the ’291 Patent is all about, and a POSITA would understand that “organizing” those cables means “separating” them. EX2004, 62:2-4, 86:6-14.

Indeed, AWM premised its motivation to combine argument on this need to separate cables to prevent cross-induction. Paper 1, 38, 46; EX1002, ¶¶78, 96, 98-99. At AWM's behest, the Board focused its analysis on this need to separate. Paper 17, 10, 25, 31-34.

AWM attempts to support its claim construction with Dr. Kern's deposition testimony, but ignores his unequivocal testimony that a POSITA would understand the claim requires separating the electrical cables. *See* EX1047, 103:8-10, 103:13-16, 104:3-6, 104:10-11, 107:10-15. As Dr. Kern concluded, "[o]rganization begins when you separate things into groups." *Id.*, 107:14-15; *see also* EX2038, ¶¶88-93.

Finally, AWM points to photographs of CAB's hangers in Dr. Kern's declaration that show DC cables bundled together in a single cable-carrying surface. Paper 54, 5. For CAB's system to practice the '291 invention, it is only necessary that each of the hangers' cable-carrying surfaces *be structured to* support at least one electrical cable extending from solar panels. It is irrelevant whether the end-user underutilizes the claimed hanger. EX1047, 189:13-19.

III. CAENEY DOES NOT DISCLOSE THE CLAIMED MESSENGER WIRE

While continuing to argue that *Caveney* broadly recites structures that are not limited to pre-existing building structures, in light of the Board's Institution Decision, AWM now offers a new argument, that ladder racks are not pre-existing building structures, and are just like a messenger wire. AWM again resorts to

distorting Dr. Kern's deposition testimony. Dr. Kern simply clarified that a ladder rack is not a structure that supports the building itself, like an I-beam or joist, but is a pre-existing structure in that a contractor would have included it in the building before performing any wiring work. EX1047, 119:3-14. It cannot be disputed that *Caveney* includes ladder racks among the pre-existing building structures to which *Caveney*'s hangers attach. EX1003, 2:65-3:2; EX2038, ¶97. A messenger wire is not like any of the structures disclosed by *Caveney*, and AWM still offers no reason why a POSITA would replace *Caveney*'s pre-existing building structures with a messenger wire.

Relying on Dr. Beik, AWM also offers new arguments that (1) in place of the ladder rack, a messenger wire could be threaded through apertures 46 and 48 of *Caveney*'s hangers, or (2) *Caveney*'s hangers could be attached to a messenger wire instead of *Caveney*'s ladder rack, extending the threaded rod through apertures 46 and 48 to secure the hanger to the messenger wire. EX2004, 117:13-20, 119:18-21, 121:17-25.¹

¹ Dr. Beik abandoned his original argument that *Caveney*'s threaded rod is a structure that, like a messenger wire, has a circular cross-section (EX1002, ¶60), and conceded that a threaded rod is a fastener. EX2004, 117:4-8. To be clear, AWM never argued in its Petition that a POSITA would suspend *Caveney*'s

AWM still nowhere explains why it would have been obvious to modify *Caveney*'s disclosure to thread a messenger wire through apertures 46 and 48 and dispense with the ladder rack. Nor does AWM explain why it would have been obvious to suspend *Caveney*'s hanger from a messenger wire instead of a ladder rack, or to extend a threaded rod, intended to fasten to a ladder rack, to secure the hanger to the messenger wire. The only motivation Dr. Beik could offer as to why a POSITA would make such a modification was that, if the *Caveney* hanger exists, why not use it. EX2004, 122:9-19. But *Caveney* does use its hanger. Dr. Beik merely proposes using the hanger differently from what *Caveney* discloses, without explaining why a POSITA would do that. Dr. Beik clearly attempts to achieve the claimed invention through classic hindsight. *See TQ Delta LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1360-61 (Fed. Cir. 2019); *Chemours Co. FC, LLC v. Daikin Indus., Ltd.*, 4 F.4th 1370, 1377 (Fed. Cir. 2021) (the Board needed competent proof of motivation to modify).

IV. AWM DOES NOT ESTABLISH A MOTIVATION TO COMBINE CAVENEY AND ALMY

The Board correctly understood AWM's Petition to assert that a POSITA would have been motivated to replace *Almy*'s wire loops with *Caveney*'s hanger *in*

hangers from a messenger wire in place of, or without, a threaded rod, as AWM now suggests. Paper 54, 7.

order to separate cables to prevent cross-linking. Paper 17, 25. Now, AWM says nothing about cross-linking, and instead, asserts the need to improve wire organization in solar plants *because of the increased use of trackers* and *changes to the NEC*. Paper 54, 10-11. AWM did not argue anything about the increased use of trackers or NEC changes in its grounds, and there is no reply declaration from Dr. Beik to support these arguments in reply.² *Intelligent Bio-Systems, Inc. v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1369-70 (Fed. Cir. 2016) (Board may properly refuse to consider new arguments in reply).

Regardless, AWM fails to articulate why a POSITA would have combined *Caveney* and *Almy* simply because the “increased use of trackers increased the cables in solar plants *around the priority date.*” Paper 54, 10-11 (emphasis added). Blatantly mischaracterizing the record, AWM asserts that the NEC “counseled POSITAs to use hanger-based systems to suspend conductors in solar installations.” Paper 54, 11. None of the references cited by AWM remotely

² In support of these arguments, AWM improperly incorporates by reference numerous paragraphs from the declaration of its new expert, Joshua Weiner. Paper 54, 10. Those incorporated paragraphs, however, say nothing about motivation to combine, and Mr. Weiner confirmed that he has offered no opinions regarding motivation to combine. EX2063, 11:9-14; 30:22-31:8; EX1038, ¶12.

support this assertion. Mr. Novak, who was well-versed in the NEC, confirmed that no one had used, or proposed using, a messenger-wire-supported cable management system in solar installations prior to the introduction of CAB's system. EX2059, ¶41.

Moreover, AWM has still not articulated why a POSITA would have modified *Caveney's* hangers so as to be able to use them to replace *Almy's* wire loops. *Caveney's* hangers are designed to be attached to fixed rigid building structures, which do not teach a messenger wire. Paper 17, 26-27. The *Caveney/Almy* combination suffers from the same hindsight bias as *Caveney* itself.

Finally, AWM articulates no reason why a POSITA would have replaced *Almy's* wire loops with *Caveney's* hangers ***to prevent cross-induction***. Paper 31, 36-37. It is undisputed that there is no cross-induction issue between DC cables. EX2038, ¶¶153-154; EX2004, 153:22-154:16. The *Caveney/Almy* combination does not address the cross-induction issue that is at the very core of AWM's motivation to combine argument.

**V. AWM DOES NOT ESTABLISH A MOTIVATION TO COMBINE
CARR AND *ALMY***

**A. AWM Fails To Support A Motivation To Replace *Almy's* Wire
Loops With *Carr's* Hanger To Prevent Cross-Induction**

AWM argued in its Petition, and the Board understood, that a POSITA would have ***replaced*** *Almy's* wire loops with *Carr's* hangers to ***space apart***

conductors in order to prevent cross-induction between the conductors. Paper 1, 46-47; Paper 17, 31. Now, as with the *Caveney/Almy* combination, AWM argues as a motivation to combine *Carr/Almy*, the need to improve wire organization in solar plants because of the increased use of trackers and changes to the NEC. Again, AWM said nothing about these purported motivations in its Petition. Compare Paper 1, 45-47, Paper 54, 12-13. AWM asserts these “motivations” now after CAB demonstrated in its Patent Owner Response that *there is no need to separate Almy's DC cables to prevent cross-induction.* Paper 31, 38-46; EX2038, ¶¶153-154; EX2004, 153:22-154:16.

AWM insists that its proposed combination is not a “bodily incorporation,” but *replacing* *Almy's* wire loops with *Carr's* hanger is precisely what AWM and Dr. Beik argued. Paper 1, 47; EX1002, ¶99. AWM must establish why a POSITA would have been motivated to combine *these particular references*, replacing *Almy's* wire loops with *Carr's* hanger to separate *Almy's* DC cables.

It is not enough for AWM to assert, without more, that “a POSITA would have looked to existing hangers that provided the ability to reduce cross-induction and ensure NEC compliance,” or that “improving *Almy's* wire-based wire way with *Carr's* multi-saddle hanger would have been a natural (and obvious) step.” Paper 54, 12-13. A motivation to combine *particular references* is not established by simply identifying a problem and a motivation to solve that problem.

Innogenetics, N.V. v. Abbott Labs., 512 F.3d 1363, 1373 (Fed. Cir. 2008). Indeed, AWM simply identifies the problem, and motivation to solve that problem, identified and solved by the '291 Patent, impermissibly using the '291 Patent as a roadmap. *TQ Delta LLC*, 942 F.3d at 1361.

AWM must articulate specific reasons why a POSITA would use *Carr*'s hanger to solve a cross-induction problem that does not exist in *Almy*. AWM's conclusory assertions are a classic example of the "pitfalls of hindsight that belie a determination of obviousness." *Innogenetics*, 512 F.3d at 1373.

B. AWM Fails To Support A Motivation to Combine *Carr/Almy* To Provide A More Robust Hanger

Arguing that replacing *Almy*'s wire loops with *Carr*'s hanger would provide a more robust hanger, AWM inaptly relies on *Carr*'s disclosure that compares *Carr*'s hanger to ***prior art hangers*** that support telecommunications cables, rather than *Almy*'s wire loops that bundle solar DC cables. *Carr*'s hanger made of laminated steel to help prevent deformation of the hanger may be an improvement over *Carr*'s prior art hangers, but *Carr* provides no basis for concluding that its hanger is stronger than *Almy*'s wire loops.

AWM seizes on Dr. Kern's testimony that "simple and cheap" does not indicate the strength of the hanger. Paper 54, 14. The strength of *Carr*'s hanger, however, is only significant relative to the strength of *Almy*'s wire loops. And Dr. Kern's testimony that a POSITA could change the dimensions of *Carr*'s hanger to

change its strength still says nothing about the strength of *Carr*'s hanger relative to *Almy*'s wire loops. EX1047, 196:14-19. Moreover, AWM offers no reason why a POSITA *would* change the dimensions of *Carr*'s hanger to make it stronger than *Almy*'s wire loops.

Finally, Dr. Kern's testimony that neither *Carr* nor *Almy* revealed any dimensions of their respective hanger and wire loops (EX1047, 196:7-13) does not undermine his testimony that a POSITA would understand telecommunications cables are much lighter than DC cables, and that a POSITA would have realized *Almy*'s wire loops are more robust than *Carr*'s hanger. EX2038, ¶172. Even if there is insufficient information from *Carr* and *Almy* to determine the relative strength of *Carr*'s hanger and *Almy*'s wire loops, it is AWM's burden to establish that *Carr*'s hanger is more robust than *Almy*'s wire loops.

VI. AWM FAILS TO REBUT CAB'S SIGNIFICANT EVIDENCE OF SECONDARY CONSIDERATIONS.

As AWM acknowledges, CAB has submitted a "significant amount of evidence regarding secondary considerations." Paper 54, 1. Rather than implicitly acknowledging the weakness of CAB's nonobviousness position, evidence of secondary considerations is often "the most probative and cogent evidence of nonobviousness." *Liqwd, Inc. v. L'Oreal USA, Inc.*, 941 F.3d 1133, 1136-37 (Fed. Cir. 2019).

Unsurprisingly, AWM provides no reply declaration from Dr. Beik to refute CAB's secondary considerations evidence, since Dr. Beik had predetermined that no amount of secondary considerations evidence would change his opinions that the challenged claims are obvious. EX1002, ¶173; EX2004, 182:2-14, 183:21-184:2. Evidence of secondary considerations, however, is essential to safeguard against hindsight bias and ***must be considered*** before reaching an obviousness conclusion. *Liqwd, Inc.*, 941 F.3d at 1136-37; *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354-55 (Fed. Cir. 2013).

AWM's new expert, Joshua Weiner, also fails to rebut CAB's significant evidence. Mr. Weiner simply attempts to refute the assertions that CAB's above-ground-messenger-wire-supported cable management system was the first of its kind. EX1038, ¶¶14-15, 21-26. He even stated that he saw systems that looked "similar" to the CAB system. EX2063, 20:9-11. However, Mr. Weiner could not say that he ever saw a CAB system in a PV installation (*id.*, 139:18-20), and could not even recognize CAB's system clearly depicted in a photograph. *Id.*, 143:13-144:11; EX2062, 5. He could only describe CAB's cable hangers as "red things." EX2063, 144:1-145:16. Mr. Weiner's assertion that he had seen systems similar to CAB's is certainly rendered suspect when he does not even know what CAB's system looks like.

Mr. Weiner based his opinion that there was nothing novel about CAB's system on his R&D group's mock-up in the 2011-2012 timeframe of a "messenger-like *metal rod*" to which single-carrier "hangers" were *welded*. EX1038, ¶¶25-26. Mr. Weiner's mock-up is nothing like CAB's system. It was never implemented in an actual installation and is nothing more than "a few different iterations" of cable tray products. EX2063, 99:7-13, 102:13-19, 103:4-7; EX1038, ¶25.

AWM's other new expert, Minh Doan, limits her opinions to criticisms of Dr. Putnam's commercial success analysis. She would impose on Dr. Putnam more than what is required to establish commercial success.

A. CAB Is Entitled To A Presumption Of Nexus

Record evidence refutes AWM's puzzling assertion that CAB does not sell a "Standard System." CAB's January 2022 Installation Guide labels CAB's "Standard System" distinctly from its "Integrated Grounding System" and identifies the various components of the Standard System. EX2041, 2-4. Further, it is nonsensical to suggest that CAB does not sell a Standard System because it may occasionally include with its Standard System components that are not part of that system.

AWM attacks Dr. Kern for not confirming that the identified exemplary Standard System components were actually representative of all other Standard System components. There was no need for Dr. Kern to have performed such an

exhaustive analysis, comparing part numbers to bills of materials and purchase orders, or confirming that each one of the hundreds of combinations of dozens of components that make up the Standard System practice the invention. AWM cannot cite any case to support such an unduly burdensome requirement, and indeed, imposing such a strict requirement is improper. *Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013).

Dr. Kern adequately described CAB's multi-carrier hangers, structured to support electrical cables extending from solar panels in each surface, and suspended from a messenger wire. EX2038, ¶194. He included in his analysis of CAB's system photographs and other information from CAB's Installation Guide. *See id.*, ¶¶195-196, A1-A14. This alone is enough to show that CAB's Standard System practices, and is coextensive with, the claimed invention.

In addition, contrary to AWM's assertion, CAB did provide evidence that the various part numbers identified in EX2046 and EX2056 practice the challenged claims. CAB submitted the declaration of its VP Finance and records custodian, who attested that these exhibits, compiled from CAB's financial records maintained in the regular course of business, detail sales of components of CAB's Standard System. EX2058, ¶¶2-8. This unrefuted testimony rebuts any notion that Dr. Kern merely relied on "opinions of CAB's counsel." Paper 54, 17.

Moreover, the “different characteristics” of CAB’s messenger wire and cable hanger products relate to these components’ differing wire sizes and composition and differing number of cable-carrying surfaces. EX2046, 4-12. These “different characteristics” are irrelevant to coextensiveness.

Whether CAB’s individual system components, such as hangers, are associated with multiple patents identified on the marking page of its website is equally irrelevant. Paper 54, 18. The relevant question is whether CAB’s Standard System as a whole practices and is coextensive with the claimed invention so as to create a presumption of nexus. No individual component practices the ‘291 invention. Only the Standard System that is a combination of the claimed individual components embodies and practices the ‘291 invention.

The inclusion in CAB’s Standard System of unclaimed end-pier kits, mid-pier kits and L-brackets does not defeat coextensiveness. There is no suggestion that these components are critical unclaimed features that materially impact the functionality of the claimed system.

AWM also disingenuously argues that the Standard System is not coextensive with the challenged claims because the Standard System shown in the photograph in CAB’s Installation Guide includes grounding jumpers. Paper 54, 19. Dr. Kern made clear that the equipment grounding conductor (EGC) and grounding jumpers shown in the photograph are not part of CAB’s Standard

System and are separately purchased and installed by CAB's customers. EX2038, A3 n.1. Further, contrary to AWM's mischaracterization of Allen Smith's testimony, Mr. Smith confirmed that while *solar installations* that utilize CAB's Standard System require a separate grounding conductor and grounding jumpers, CAB's Standard System does not include any such grounding components. EX2006, ¶6; EX1028, 100:10-21.

AWM also complains that Dr. Kern fails to identify which one of two part numbers is associated with the hanger shown in the photograph in his declaration. Paper 54, 19. Whether the hanger is part number [REDACTED] or [REDACTED] has no bearing on whether the system shown in the photograph practices the claimed invention.

Finally, AWM argues that CAB has failed to show nexus because the electrical cables in the solar array shown in the photograph in Dr. Kern's declaration are unconnected to solar panels. Paper 54, 20. To the contrary, Dr. Kern stated repeatedly that the electrical cables shown in the photograph *are* extending from a plurality of solar panels. *See* EX1047, 185:11-14, 18-22, 187:1-188:5. Regardless, the photograph shows that the carrying surfaces of the cable hangers are *structured to support* electrical cables extending from solar panels. It is not necessary that the photograph show that the cables are actually connected to the solar panels.

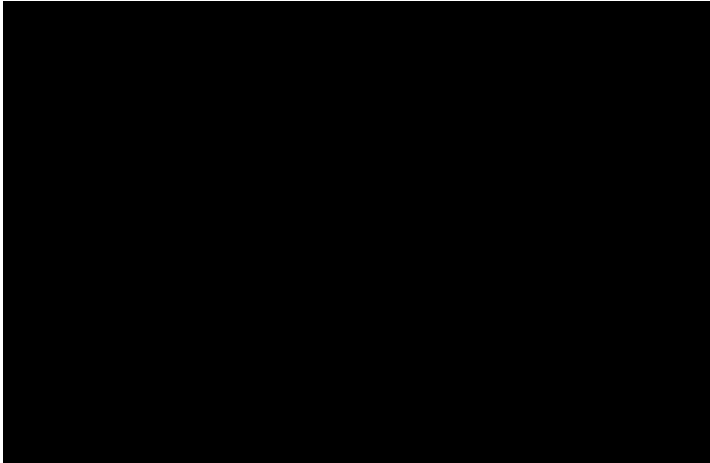
B. AWM Does Not Refute Cab's Evidence Of Secondary Considerations

1. Copying

AWM does not dispute that CAB provided samples of its hangers, under a non-disclosure agreement, to First Solar in March 2015. EX2006, ¶¶48-53; EX2013, EX2014, EX2015. AWM only rests on its assertion that no analysis of the similarities between the hangers provided by CAB to First Solar and the hanger shown in the First Solar drawing is possible. Paper 54, 23.

Allen Smith testified that the hanger depicted in the First Solar drawing was “essentially identical” to the two-carrier hanger that he shared with First Solar in March 2015. EX2006, ¶51. Mr. Smith's testimony is corroborated by the contemporaneous email that he sent to First Solar in September 2015. EX2014.

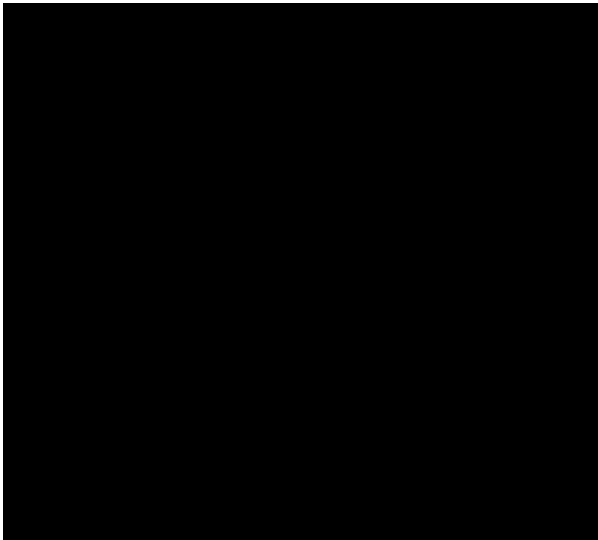
Additionally, CAB first developed its two-carrier hanger in June 2014. EX2006, ¶37. Bill Brooks later included a photo of that hanger in his September 2014 whitepaper. EX1032, 13. A CAB datasheet from 2017, as well as CAB's January 2022 Installation Guide, shows CAB's two-carrier hangers at those times. As can be seen, over that entire timespan, CAB's two-carrier hanger has remained substantially the same.



(EX2030, 8)
CAB Two-Carrier Hanger,
June 2014



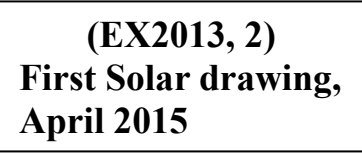
(EX1032, 13)
CAB Two-Carrier Hanger,
September 2014



(EX2050, 2)
CAB Two-Carrier Hanger,
2017



(EX2041, 5)
CAB Two-Carrier Hanger,
January 2022



2. Industry Praise

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the application process for the award, whereby CAB explained the advantages of the system for the solar industry. EX1028, 127:10-18.

AWM argues that the PV Magazine article recognizing CAB's system as one of the top-50 PV array-changing technologies fails to specify the hangers in CAB's above-ground cable management system. Paper 54, 28. The article includes a photograph that clearly shows CAB's multi-carrier hangers suspended from a messenger wire and supporting PV cables:



EX2016, 6.

AWM characterizes the Solar Pro article that features CAB's above-ground cable management as "self-serving statements." Paper 54, 29. But it was Solar Pro Magazine who chose to feature CAB's above-ground cable management system as an example of best practices for EBOS optimization. EX2065, 56-57, 60.³

³ EX2065 is the full Solar Pro Article served as Supplemental EX2018 on AWM on August 14, 2024, in response to AWM's objections. Paper 34.

Despite AWM's arguments to the contrary (Paper 54, 29), it is clear that Mr. Bowman specifically praised CAB's messenger-wire-supported system as the only one of its kind in the solar industry. EX2028, ¶31.

Finally, Mr. Novak testified that he recommended CAB's above-ground-messenger-wire-supported cable management system for the Oak Ridge National Laboratories project in light of the nuclear waste contamination at that site that made it unsuitable for trenching. EX2059, ¶54. Then, given the success of CAB's system on the Oak Ridge project, he recommended its use on a subsequent project as an improvement over cable trays. *Id.*, ¶55. This testimony is clearly tethered to the claimed invention.

3. Industry Skepticism

AWM frivolously characterizes CAB's skepticism evidence as showing "routine testing, routine engineering discussions, and rapid adoption" of CAB's system. Paper 54, 31. Mr. Bowman was clear that he and engineers at SunEdison "were skeptical about the installability, practicality, reliability, and cost of using" CAB's system. EX2028, ¶34. It took *nearly two years* from the time CAB first proposed its idea of an above-ground cable management system to SunEdison before SunEdison adopted CAB's system over trenching and cable trays. EX2028, ¶¶31-47; EX1049, 68:6-10. During that time, there was rigorous testing and analysis of every aspect of CAB's system by CAB, SunEdison, and others in the

industry. *Id.*; EX2006, ¶¶25-28, 32, 34. This analysis entailed continuous back-and-forth discussions addressing a multitude of ongoing concerns. *Id.*; *see also* EX2059, ¶¶42-43, 46-48. This is clear evidence of skepticism that is directly related to CAB's novel system.

AWM argues that Mr. Brooks' immediate agreement to prepare a whitepaper "with no skepticism" is evidence of lack of industry skepticism. Paper 54, 32. The whole purpose of Mr. Brooks' whitepaper was to overcome industry skepticism. EX2006, ¶¶22-23, 39; EX2028, ¶¶42-43; EX2033, ¶49.

4. Long-Felt Need

CAB relied on more than the 2013 Solar Pro (EX2011) to show long-felt need. CAB also relied on testimony from Mr. Bowman and Dr. Kern to corroborate the industry's need for improved cable management dating as far back as 2000. Paper 31, 62-64; EX2038, ¶11, 200; EX2028, ¶11, 26-30. AWM does not refute this testimony.

AWM would use the publication date of the Solar Pro article as the starting point of the industry need. The article explicitly refers to industry professionals facing "persistent challenges" to PV cable management and describes numerous examples of conductors in PV installations being exposed to harsh environmental factors. EX1011, 1-3. The context of the article makes clear that these "persistent

challenges” had existed well before the article’s publication date, which was already more than one-and-a-half years before the ‘291 invention date.

Mr. Weiner’s testimony does not help AWM’s position. Even he dates the rapid development in the PV industry that resulted in these cable management challenges to 2010. Paper 54, 30-31.

5. Commercial Success

a. Dr. Putnam Used a Proper Industry Benchmark

At the outset, to support its single sentence in reply that Dr. Putnam failed to evaluate CAB’s sales “against a relevant metric or profits,” AWM simply cites wholesale to twenty-seven paragraphs, spanning twenty pages of Ms. Doan’s declaration. Paper 54, 24. This constitutes blatant and improper wholesale incorporation by reference. CAB can only respond based on its reasonable efforts to dig through Ms. Doan’s lengthy declaration to decipher what AWM is arguing.

Commercial success is usually shown by significant sales in a relevant market. *Chemours Co. FC, LLC*, 4 F.4th at 1378. AWM does not dispute that CAB has enjoyed significant sales over an eight-year period, and that the growth rate of those sales has dwarfed by more than ■ the growth rate of net new PV capacity in utility-scale installations. While purporting to criticize net new PV capacity as an inappropriate benchmark, Ms. Doan would simply unravel Dr. Putnam’s commercial success analysis because he failed to consider a kitchen-

sink-full of possibilities, other than the claimed invention, that might account for CAB's excess sales over that benchmark. *See Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1394 (Fed. Cir. 1988) (proof of the negative of all imaginable contributing factors not required to demonstrate commercial success).

One such possibility, according to Ms. Doan, is the increased cable management needs resulting from the increased use of trackers since around 2014. EX1055, ¶¶51-52. Ms. Doan's explanation as to how increased cable management needs could account for the excess of CAB's sales over net new PV capacity is vague, at best. Ms. Doan acknowledged that she did not have an understanding as to how the increased use of trackers would increase cable management, or how much of an increase in cable management would be required in a tracker system compared to a fixed-tilt system. EX2064 50:6-21. But it only seems logical that an increase in the use of trackers in new PV installations would correspond to an increase in net new PV capacity.

In any event, by Ms. Doan's own analysis, tracker systems were already accounting for 70% of net new utility-scale PV capacity in 2015. EX1055, 117, Exhibit 6.2; EX2064, 70:1-3. By 2023, tracker systems accounted for 96% of net new PV capacity, an increase of 26%. The amount of megawatts of new capacity generated by trackers increased from 2,011 in 2015 to 17,213 in 2023, a growth factor of 8.6X. EX1055, 117, Exhibit 6.2; EX2064, 72:22-73:11. During that

time, CAB's sales increased by a growth factor of [REDACTED] EX2044, ¶47, Fig. 2.

Moreover, for every year from 2015 to 2023, CAB's sales growth substantially outpaced the growth in net new PV capacity generated by tracking systems by as much as [REDACTED] EX1055, 107, Exhibit 2, 117, Exhibit 6.2; *see also* EX2064, 70:16-72:21.

For the increased use of trackers to account for the difference between CAB's [REDACTED] growth factor and the 8.6X growth factor in new PV capacity generated by trackers, each 1X growth in new PV capacity attributable to tracker systems would need to result in over [REDACTED] growth in the amount of cabling required for a fixed-tilt system. Ms. Doan offered no evidence that the increased use of trackers could result in such an exponential increase in the amount of cabling. Ultimately, Ms. Doan conceded that the increased cable management resulting from the increased use of trackers was only a "*potential*" reason for why CAB's sales would outpace the net new PV capacity benchmark used by Dr. Putnam. EX2064, 48:6-12.

Other possibilities identified by Ms. Doan include instances when CAB may have realized revenues on a given project in a year prior to when that project was actually completed. EX1055, ¶54. Any such "lead time" effect, however, evens out over time whenever CAB's revenues for any given year are compared to net new PV capacity for projects originating in a prior year.

Ms. Doan also identified a single instance, gleaned from a press release, in which CAB's products may have been purchased to retrofit already existing installations. EX1055, ¶54 n.156. Ms. Doan did not offer any explanation or analysis as to how that lone instance could have impacted the substantial excess of CAB's sales growth rate over net new PV capacity.

Ms. Doan also speculated that an increase in CAB's prices may have contributed to the excess in CAB's sales growth. *Id.*, ¶53. However, any ability of CAB to increase its prices, and its customers' willingness to pay those prices, only further evidences the commercial success of CAB's system.

The only alternative to net new PV capacity that Ms. Doan suggested as an appropriate benchmark is market share. EX1055, ¶10; EX2064, 36:4-8. Market share data, however, is not required to show commercial success. *Chemours Co. FC, LLC*, 4 F.4th at 1378. Regardless, Ms. Doan conceded that, in the utility PV cable management market between 2015 and 2023, CAB was both gaining market share and taking away market share from competing cable management methods such as trenching and cable trays. EX2064, 58:10-60:17.

CAB's evidence that its cable management system has become the industry standard further supports the widespread adoption, and commercial success, of CAB's system. EX2028, ¶¶16, 48, 55; EX2006, ¶62; *see Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA Inc.*, 699 F.3d. 1340, 1350 (Fed.

Cir. 2012) (evidence that a product has become the industry standard supports conclusion of commercial success).

AWM makes a single reference to the word “profits” in its reply, and improperly incorporates by reference twenty-seven paragraphs of Ms. Doan’s declaration without any explanation. To whatever extent AWM is relying on any profitability analysis, AWM does not cite to any cases that profitability is necessary to demonstrate commercial success. Moreover, Dr. Putnam determined that, under all the circumstances, CAB *is* profitable, without the need to analyze internal company documents detailing production costs, costs of goods, and costs of labor. EX1048, 121:13-125:1.

b. Dr. Putnam Did Not Include Non-Practicing Sales

AWM’s complaint that Dr. Putnam included components such as J-hooks, rings, and 1-carrier hangers, as part of his analysis is unfounded. Paper 54, 25-26; EX1055, ¶57. AWM and Ms. Doan rely on EX2056, which allocates 2018 sales between CAB’s Standard and Integrated Grounding systems. Dr. Putnam, however, did not rely on EX2056 for his sales data analysis, but instead, relied only on EX2046, a detailed analysis of CAB’s solar sales from 2014 to 2023. EX1048, 45:21-46:7; EX2044, Appendix 2.2, 51. Dr. Putnam explicitly *excluded* J-hooks, rings, and 1-carrier hangers from his analysis. EX2044, Appendix 2.2, 51.

Any argument that Dr. Putnam included non-practicing sales in his analysis based on CAB's website marking page is unfounded. Dr. Putnam included in his analysis only the sales of CAB's Standard System that practices the claimed invention. The fact that the Standard System includes components not identified under the '291 Patent on CAB's marking page is irrelevant to whether the Standard System that includes all of those components practices the claimed invention.

c. Dr. Putnam Adequately Attributes Commercial Success to the '291 Patent

No technical expert is needed to determine that CAB's Integrated Grounding System includes the features and advantages of the Standard System. The Integrated Grounding System adds the advantage of using the messenger wire not only as a support structure, but also as an EGC. EX2041, 2; *compare* EX1031, ¶296 *with* EX2038, ¶181. CAB's sales from 2018 to 2023, therefore, are still attributable to both patents, and Ms. Doan improperly ends her analysis of the '291 invention's contribution to CAB's excess sales in 2017. EX1055, ¶63.

Accordingly, Dr. Putnam's attribution of a 50% division of CAB's sales to each of the patents is appropriate.⁴ As Dr. Putnam explained, CAB's Standard and

⁴ AWM again improperly incorporates by reference wholesale portions of Ms. Doan's declaration, this time spanning twenty-six paragraphs over seventeen pages.

Integrated Grounding systems are “economic complements.” EX2044, ¶¶57-60.

Given how large CAB's excess sales are over industry benchmark, statistical precision is unnecessary to determine that there is a nexus between each of the patented inventions and [REDACTED] of dollars of CAB's excess sales.

EX2044, ¶62; EX1048, 186:19-188:1.

VII. CONCLUSION

For the foregoing reasons, Petitioner has not met its burden to demonstrate that the challenged claims are unpatentable as obvious.

Respectfully submitted,

Dated: November 25, 2024

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CERTIFICATE OF COMPLIANCE WITH WORD COUNT LIMITATION

Patent Owner certifies that its Sur-Reply complies with the word count limitations of 37 C.F.R. §42.24(a)(1)(i). Based on Microsoft Word's "Word Count" feature, Patent Owner's Sur-Reply contains 5,595 words, excluding the cover page, signature block, and the parts of the Patent Owner's Sur-Reply exempted by 37 C.F.R. § 42.24(c)(4).

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CERTIFICATE OF SERVICE

I certify that on this 25th day of November, 2024, a true and correct copy of the foregoing **PATENT OWNER'S SUR-REPLY** was served by electronic mail on Petitioner's lead and backup counsel at the following email addresses:

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