

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

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**EVERSTAR MERCHANDISE CO. LTD.,**  
*Appellant*

**v.**

**WILLIS ELECTRIC CO., LTD.,**  
*Appellee*

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2023-1686

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Appeal from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in No. PGR2019-  
00056.

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Decided: May 27, 2025

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Before DYK, REYNA, and STARK, *Circuit Judges*.

REYNA, *Circuit Judge*.

Everstar Merchandise Co. Ltd. appeals the Patent Trial and Appeal Board’s final decision in a post grant review. The Board determined that Everstar failed to show that a person of ordinary skill in the art would have been motivated to combine the teachings of Kumada and Debladis ’120 and thus Everstar failed to prove by a preponderance of the evidence that claims 1–33 of U.S. Patent No. 10,222,037 are unpatentable. We hold that the Board legally erred in its motivation to combine analysis, and that substantial evidence only supports the conclusion that a person of ordinary skill in the art would have been motivated to combine Kumada and Debladis ’120. Accordingly, we reverse-in-part, vacate-in-part, and remand.

## BACKGROUND

### I. ’037 Patent

Appellee Willis Electric Co., Ltd. (“Willis”) owns U.S. Patent No. 10,222,037 (“’037 patent”), entitled “Decorative Lighting With Reinforced Wiring.” ’037 patent, Title. The ’037 patent teaches a reinforced wire for decorative lighting that includes a reinforcing strand comprising a polymer material and a plurality of conductor strands, as well as an outer insulating layer. *Id.* at Abstract. The ’037 patent teaches that its invention provides superior tensile strength and elongation properties over prior art decorative lighting. *Id.* at 6:6–12.

Claims 1–33 are at issue on appeal. Claims 1, 21, and 33 are independent claims, and claims 2–20 and 22–32 are dependent claims. The parties treat claim 1 as representative of the issue on appeal. Claim 1 recites:

1. A strength-enhanced, net-like decorative lighting structure, comprising:

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a power plug configured to connect to an external source of power;

a first power wire and a second power wire, each of the first and second power wires connected to the power plug; and

a plurality of light sets in electrical connection with the power plug via the first power wire and the second power wire, each light set defining an electrical circuit, the plurality of light sets including a first light set defining a first electrical circuit and a second light set defining a second electrical circuit, each of the plurality of light sets including:

a plurality of lamp assemblies, each lamp assembly including a lamp element; and

a plurality of internally reinforced intermediate wires electrically connecting the lamp assemblies, *each of the plurality of internally reinforced intermediate wires including a plurality of conductors, one or more reinforcing strands*, and an outer insulating layer surrounding the plurality of conductors and the one or more reinforcing strands; and

one or more non-wire support cords mechanically connected to the first light set,

wherein the plurality of light sets in combination with the one or more non-wire support cords define a rectangular-shaped, net-like decorative lighting structure.

*Id.* at 42:47–43:7 (emphasis added).

## II. Prior Art

There are two prior art references at issue on appeal: Kumada<sup>1</sup> and Debladis '120.<sup>2</sup> Kumada is entitled “Economical Net or Mesh Light Set.” J.A. 1451, Title. Kumada discloses a net light with a plurality of series-connected light strings, each light string including a plurality of lamp sockets and a plurality of intermediate lengths of wire connecting the lamp sockets, and at least one non-electrical rope fastened to the lamp sockets, thereby forming a net or mesh. J.A. 1451, Abstract. Kumada teaches that its design is economical because “[w]ire costs are perhaps the most significant element in the cost of a net light,” and its non-electrical ropes do not contain wire (also referred to as “expensive copper”), rendering “both the light set and its method of manufacture economical.” J.A. 1461, 2:50–51; J.A. 1466, 11:3–16.

Debladis '120 is entitled “Electrical Control Cable.” J.A. 1509, Title. Debladis '120 discloses a cable that has a plurality of strands made of conductive material such as copper surrounding a central core made of a multifilament polymer, and an outer sheath made of insulating material. J.A. 1513, 3:15–26. Debladis '120 teaches that “copper is becoming ever more expensive, and it is important to find new cable structures that minimize the quantity of copper used.” J.A. 1512, 1:52–54. To that end, one of the stated goals of Debladis '120 is to “reduce significantly the quantity of copper that is used.” J.A. 1512, 1:62–64.

## III. Procedural History

Appellant Everstar Merchandise Co. Ltd. (“Everstar”) petitioned for post grant review of the '037 patent, challenging claims 1–33. J.A. 173. The Patent Trial and Appeal Board (“Board”) granted institution in 2020, J.A. 427,

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<sup>1</sup> U.S. Patent No. 6,367,951, J.A. 1451–67.

<sup>2</sup> U.S. Patent No. 8,692,120, J.A. 1509–13.

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and in 2021 issued a final written decision ruling that Everstar failed to show by a preponderance of the evidence that the challenged claims are unpatentable. *Everstar Merch. Co. Ltd. v. Willis Elec. Co., Ltd.*, No. PGR2019-00056, 2021 WL 653034 (P.T.A.B. Feb. 18, 2021). The Board determined that Everstar had not shown a person of ordinary skill in the art (“POSA”) would have been motivated to combine the teachings of Kumada and Debladis ’120. *Id.* at \*7–13. The Board ruled that Everstar failed to show that increased strength and durability were a sufficient motivation to combine the references and refused to consider Everstar’s argument that reduced cost was a sufficient motivation because the Board viewed this asserted motivation as a new argument not presented in Everstar’s petition. *Id.* at \*9–13.

Everstar appealed the Board’s final written decision to this court. On appeal, we vacated and remanded the Board’s decision. *Everstar Merch. Co. Ltd. v. Willis Elec. Co., Ltd.*, No. 2021-1882, 2022 WL 1089909 (Fed. Cir. Apr. 12, 2022) (*Everstar I*). Specifically, this court ruled that “the Board abused its discretion when it refused to consider whether cost reduction would have motivated a skilled artisan to combine the asserted prior art” and instructed the Board on remand to consider whether a POSA would be motivated to combine Kumada with Debladis ’120 in order to reduce cost. *Id.* at \*1, \*4.

On remand, the Board ruled that Everstar had not shown a POSA would have been motivated to combine the teachings of Kumada and Debladis ’120. J.A. 1–49. The Board determined that Everstar failed to prove that a POSA would be motivated to combine Kumada and Debladis ’120 based on (1) increased strength and durability, (2) reduced cost as a “complementary motivation” to

increased strength and durability, or (3) reduced cost alone. J.A. 26–36.<sup>3</sup>

Everstar appeals the Board’s ruling that it failed to show a POSA would be motivated to combine Kumada and Debladis ’120 based on reduced cost alone. Appellant Br. 20 n.8. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

#### STANDARD OF REVIEW

This court reviews the Board’s compliance with governing legal standards de novo and its factual findings for substantial evidence. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (citations omitted). Substantial evidence is “such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938). Obviousness is a question of law based on underlying findings of fact, which include the “scope and content of the prior art, differences between the prior art and the claims at issue, the level of ordinary skill in the pertinent art, and any objective indicia of non-obviousness.” *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)). “The presence or absence of a motivation to combine references in an obviousness determination is a pure question of fact.” *Par Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1196 (Fed. Cir. 2014) (citation omitted).

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<sup>3</sup> The Board’s conclusion that Everstar failed to show that claim 1 was unpatentable was predicated exclusively on its determination that Everstar failed to establish a motivation to combine. Willis conceded that the “combined teachings of Kumada and Debladis ’120 disclose each limitation of claim 1.” J.A. 17.

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## DISCUSSION

Everstar argues that the Board applied the wrong legal standard to prove a motivation to combine by requiring Everstar to quantify resulting material properties of its proposed combination. Appellant Br. 28–29. Everstar further argues that substantial evidence can lead to only one reasonable conclusion on the factual record of this case: A POSA would have been motivated to combine Kumada and Debladis '120 based on reduced cost. *Id.* at 30. We agree with both arguments.

### I

In its brief analysis of reduced cost, the Board stated that proving Everstar's proposed motivation would “at least require evidence comparing the amount of copper used in Kumada's system with the amount of copper used in [Everstar]'s proposed modified system.” J.A. 34. With this requirement in mind, the Board considered Everstar's arguments and evidence about why a POSA would understand Everstar's proposed combination to reduce the amount of copper in Kumada and thus reduce Kumada's cost. J.A. 34–36. As discussed in greater detail below, Everstar provided substantial evidence that its proposed combination would reduce the amount of copper in Kumada, and Willis conceded this point on appeal. *See infra* Discussion Section II. Nonetheless, the Board deemed Everstar's arguments and evidence “deficien[t]” due to the “lack of information comparing the amount of copper” between various systems, including because Kumada does not discuss the amount of copper in the wires of its system. J.A. 35. The Board concluded that Everstar failed to show that a POSA would be motivated to combine Kumada and Debladis '120 based on reduced cost. J.A. 36.

To the extent that the Board required Everstar to precisely quantify the amount of copper reduction provided by its proposed combination of Kumada and Debladis '120, this was legally incorrect. An obviousness analysis,

including whether a motivation to combine exists, is “expansive and flexible.” *KSR*, 550 U.S. at 415. One way our precedent frames the motivation to combine analysis is that a patent challenger need only “show that there was a known problem” in the art, that the prior art at issue “helped address that issue,” and that combining the teachings of the prior art references at issue was not beyond the skill of an ordinary artisan. *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1381 (Fed. Cir. 2023). Once a patent challenger has made these showings, “[n]othing more is required to show a motivation to combine under *KSR*.” *Id.* As such, we have not previously required any general rule that a patent challenger must quantify the precise amount of benefit achieved by their proposed combination of prior art. Notably, the Board did not cite any precedent to support the quantification requirement it appears to have imposed on Everstar. Nor do the claims at issue here require any certain quantity or reduction in quantity of copper. *Axonics, Inc. v. Medtronic, Inc.*, 73 F.4th 950, 957 (Fed. Cir. 2023) (“The proper inquiry is whether the relevant artisan would be motivated to make the combination to arrive at the claims’ actual limitations.”). We reject any precise quantification requirement as overly rigid and inconsistent with well-established precedent.

## II

Under the correct legal standard and on this factual record, substantial evidence supports only one conclusion as to whether reduced cost would motivate a POSA to combine Kumada and Debladis ’120. Accordingly, there is no need for this court to vacate and remand this issue to the Board. *See Corning v. Fast Felt Corp.*, 873 F.3d 896, 901–02 (Fed. Cir. 2017).

Before the Board, Everstar argued that Kumada and Debladis ’120 both sought to reduce cost by reducing the amount of copper in their systems. J.A. 660; J.A. 664;



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J.A. 671. Kumada and Debladis '120 support this rationale, as does Willis's characterizations of Kumada and Debladis '120 before the Board. J.A. 1461, 2:50–51; J.A. 1466, 11:3–16; J.A. 1512, 1:52–54, 1:62–64; J.A. 385–86 (Willis stating that Kumada relates to forming a “more economical” net light; Debladis '120 provides a solution with a “reduced number of copper strands”). Everstar also argued that a POSA would understand that using Debladis '120 with Kumada's net light would “allow for the use of a single conductor 22 AWG wire” rather than “a twisted conductor 22 AWG wire or a single conductor 18 AWG wire,” which both contain more copper than a single conductor 22 AWG wire. J.A. 673. Everstar provided expert testimony from several experts in support of the foregoing argument. *See, e.g.*, J.A. 2417–18 (Dr. Fantone identifying reduced cost resulting from reducing the amount of copper as a motivation and citing Kumada and Debladis '120); J.A. 2422 (same); J.A. 2437–38 (Mr. Proper identifying reduced cost as a commercial advantage); J.A. 2462–64 (Mr. Wong identifying reduced cost resulting from reducing the amount of copper as a motivation). Willis acknowledges on appeal that much of Everstar's evidence as to whether a POSA would be motivated to combine Kumada and Debladis '120 based on reduced cost alone is “not directly rebutted.” Appellee Br. 45 n.1.

Despite this argument and evidence, the Board ruled that Everstar had failed to show that “the proposed modification or combination of Debladis '120 and Kumada would reduce the amount of copper in Kumada's system.” J.A. 34. Setting aside the legal error identified above, Willis's counsel conceded at oral argument that the proposed combination of Debladis '120 and Kumada *would in fact* reduce the amount of copper in Kumada alone. Oral

Arg. 19:06–21:05.<sup>4</sup> Thus, Willis concedes that the Board’s primary reason to reject Everstar’s motivation to combine argument based on reduced cost is factually unsupported.

Willis argues that the Board’s decision is nonetheless supported by substantial evidence because one of Everstar’s experts, Dr. Fantone, testified that reinforced wires cost more than unreinforced wires. According to Willis, this testimony shows that Everstar’s proposed combination would not reduce costs. We disagree for two reasons.

First, Willis misrepresents Dr. Fantone’s testimony. Dr. Fantone did not testify that he expects that the proposed combination of Debladis ’120 and Kumada would cost more than Kumada itself. Instead, Dr. Fantone’s testimony addressed whether a POSA would be motivated by Everstar’s increased strength rationale, which is not at issue on appeal. With that in mind, Dr. Fantone’s testimony is best understood as stating that a POSA would be motivated to reinforce a wire to increase its strength because, all else being equal (such as equal amounts of copper), a reinforced wire costs more than an unreinforced wire and a POSA would not increase cost unless they achieved another benefit. This is consistent with the context of Dr. Fantone’s testimony:

A. Well, *the issue of strength* in claim 1 of the ’037 patent, they talk about using internally reinforced intermediate wires, so there must have been a reason to reinforce those wires.

Q. And what would that reason be?

A. They wanted to *strengthen* the wires.

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<sup>4</sup> Available at [https://oralarguments.cafc.uscourts.gov/default.aspx?fl=23-1686\\_04092025.mp3](https://oralarguments.cafc.uscourts.gov/default.aspx?fl=23-1686_04092025.mp3).

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Q. Sure. But does that mean that the wires are insufficient for their intended function?

A. Well, they must have gotten something out of it because I would expect that reinforced wires cost more than unreinforced wires. And, I mean, there's a reason why the inventor did that.

J.A. 3045 (51:7–18) (emphasis added); *see* J.A. 2422.

Second, Willis's argument is at most that a cheaper option may exist, i.e., an unreinforced wire. Our precedent does not require that a patent challenger show that their proposed combination is “the *best* option, only that it be a *suitable* option.” *Par Pharm.*, 773 F.3d at 1197–98 (citation omitted). Thus, even if a cheaper option may exist, that alone does not preclude a POSA from being motivated to combine Debladis '120 and Kumada to reduce cost.

In sum, substantial evidence only supports the conclusion that a POSA would have been motivated to combine the teachings of Kumada and Debladis '120. The factual record and Willis's concession on appeal conclusively establish that the cost of copper was a known problem in the art, Debladis '120 (and Kumada) helped address that issue, and Willis has not disputed that combining the teachings of Kumada and Debladis '120 was within the skill of an ordinary artisan. Nothing more is required to establish a motivation to combine. *Intel*, 61 F.4th at 1381. Given that Willis has conceded that the combination of Kumada and Debladis '120 disclose all the limitations in claim 1, J.A. 17, we reverse the Board's patentability determination as to that claim and vacate the Board's judgment as to the remaining claims of the '037 patent.<sup>5</sup>

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<sup>5</sup> Willis suggests that its proffered secondary considerations support the Board's finding of nonobviousness as to claim 1. Appellee Br. 54. The cited evidence consists

CONCLUSION

We have considered the parties' remaining arguments and find them unpersuasive. For the reasons stated, we reverse the Board's judgment that Everstar failed to establish the unpatentability of claim 1, vacate the Board's judgment that Everstar failed to prove by a preponderance of the evidence that the remaining claims of the '037 are unpatentable, and remand for further proceedings consistent with this opinion.

**REVERSED-IN-PART, VACATED-IN-PART,  
AND REMANDED**

COSTS

Costs against Willis.

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only of a temporal connection between the introduction of Willis's invention and the UL 588 standards, and deposition testimony of a single witness who seemingly disclaimed any connection between the two. *See* J.A. 2360. This is not sufficient to rescue a claim as to secondary considerations.