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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CURRENT LIGHTING SOLUTIONS, LLC d/b/a GE CURRENT,
Petitioner,

v.

JIAXING SUPER LIGHTING ELECTRIC APPLIANCE CO., LTD.,
Patent Owner.

IPR2023-00270
Patent 9,723,662 B2

Before BRIAN J. McNAMARA, NEIL T. POWELL, and
JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

DIRBA, *Administrative Patent Judge*.

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

On December 19, 2022, Current Lighting Solutions, LLC d/b/a GE Current (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1, 2, 5–7, 9, 10, 15–18, 21, 23, 24, 29, and 31–43 of U.S. Patent No. 9,723,662 B2 (Ex. 1001, “the ’662 patent”). Paper 1 (“Pet.”). Jiaxing Super Lighting Electric Appliance Co., Ltd. (“Patent Owner”) timely filed a Preliminary Response (Paper 11, “Prelim. Resp.”).¹ With our authorization (*see* Paper 12), Petitioner filed a Preliminary Reply (Paper 13, “Prelim. Reply”), and Patent Owner filed a Preliminary Sur-Reply (Paper 14, “Prelim. Sur-Reply”).

An *inter partes* review may not be instituted unless “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

Having reviewed the parties’ papers and the evidence of record, we determine that Petitioner has shown a reasonable likelihood it will prevail in establishing the unpatentability of at least one challenged claim, and we are not persuaded to discretionarily deny institution. Accordingly, we institute an *inter partes* review.

I. BACKGROUND

A. *Related Matters*

The parties indicate that the ’662 patent has been asserted in two district court lawsuits: *Jiaxing Super Lighting Electric Appliance Co., Ltd. v. Current Lighting Solutions, LLC d/b/a GE Current*, Case No. 6:22-cv-00534 (W.D. Tex.) (“the *Current* Litigation”) and *Jiaxing Super Lighting*

¹ Paper 11 was filed under seal, and Paper 10 is the corresponding public version.

Electric Appliance Co., Ltd. v. MaxLite, Inc., Case No. 2:19-cv-04047 (C.D. Cal.) (“the *MaxLite* Litigation”). Pet. 1; Paper 3 (Patent Owner Mandatory Notices), 2.

In addition, the parties state that a petition challenging the ’662 patent was previously filed in IPR2020-00181 (“the 181 IPR”). Pet. 2; Paper 3, 2. The Board denied institution of the 181 IPR. *MaxLite, Inc. v. Jiaxing Super Lighting Electric Appliance Co., Ltd.*, IPR2020-00181, Paper 7 (PTAB May 26, 2020).²

B. The Petition’s Asserted Grounds

Petitioner asserts the following grounds of unpatentability (Pet. 4):

Claims Challenged	35 U.S.C. ³ §	Reference(s)/Basis
1, 2, 5–7, 9, 10, 15–18, 21, 23, 24, 29, 31, 32, 34–39, 41, 42	103	Zhang ⁴
1, 9, 15, 23, 31–33, 38–43	103	Tao ⁵
1, 9, 15, 23, 31–33, 38–43	103	Tao, Langovsky ⁶

Petitioner relies on the testimony of Dr. R. Jacob Baker (Ex. 1002).

² We discuss the 181 IPR in more detail below (*see infra* §§ III.B, III.C) when evaluating two of Patent Owner’s arguments for discretionary denial.

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. Because the ’662 patent claims priority to applications filed after that date, we refer to the current version of Section 103.

⁴ US 10,045,406 B2, issued August 7, 2018 (Ex. 1004).

⁵ US 2016/0174307 A1, published June 16, 2016 (Ex. 1005).

⁶ US 8,330,381 B2, issued December 11, 2012 (Ex. 1006).

C. The '662 Patent

The '662 patent is titled “Power Source Module for LED Lamp,” and the application that led to this patent was filed on September 7, 2016, claiming the priority to applications filed as early as October 17, 2014. Ex. 1001, codes (22), (30), (54), (63).

The '662 patent describes “a power source module for a light emitting diode (LED) lamp” that “enabl[es] the LED lamp [to be] installed on the traditional fluorescent lamp base.” Ex. 1001, 1:17–21. Figure 1 (below) is a block diagram of an exemplary power source module.

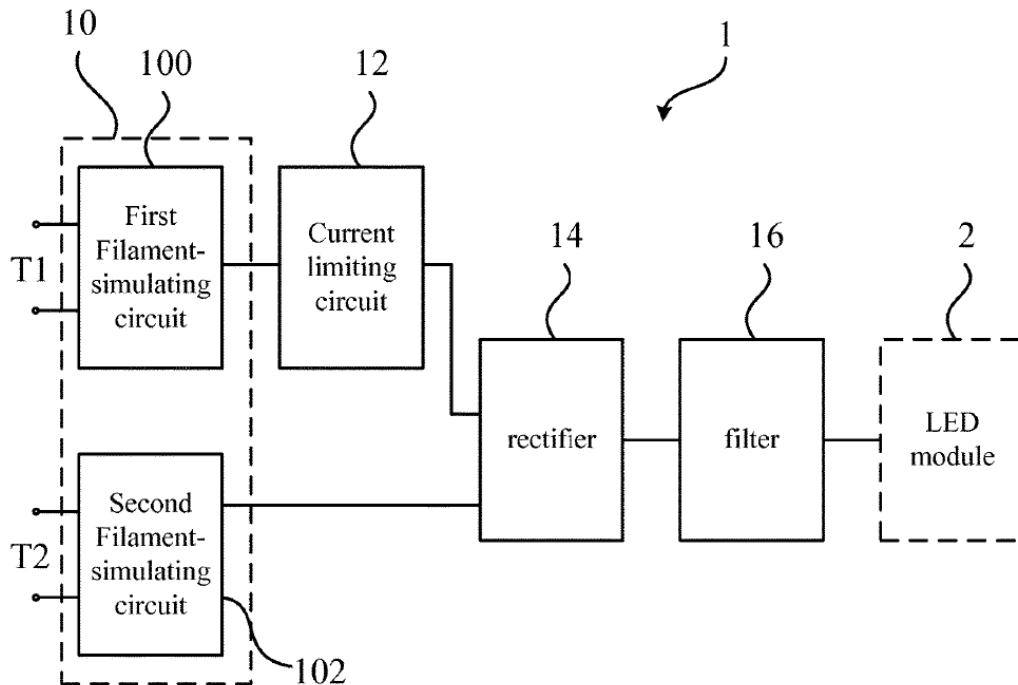


FIG. 1

Figure 1 (reproduced above) shows power source module 1, which includes filament-simulating unit 10 (which includes filament simulating circuits 100, 102), current limiting circuit 12, rectifier 14, and filter 16, as well as LED module 2. *Id.* at 3:7–16.

Power source module 1 may be located inside the casing of an LED lamp, and it connects LED module 2 (which includes at least one LED) to two bi-pin terminals T1, T2 (which detachably connect the LED lamp to a traditional fluorescent lamp base). Ex. 1001, 3:9–13, 3:18–24. “The first filament-simulating circuit 100 and the second filament-simulating circuit 102 are able to receive current(s) via the bi-pin terminals T1, T2 . . . from an external power source.” *Id.* at 3:32–35. Current limiting circuit 12 limits the current “from the first bi-pin terminal T1 to be in a suitable range for driving the LED module 2.” *Id.* at 3:41–45. Rectifier 14 rectifies the alternating current received from the external power source to provide a direct current (*id.* at 3:45–51), and filter 16 filters the rectified current and outputs the filtered and rectified current to LED module 2 (*id.* at 3:51–54).

The Specification also notes that a fluorescent lamp base may include a ballast that “execute[s] a pre-heat process to the filaments of the traditional fluorescent lamp for pre-heating the filaments.” Ex. 1001, 3:55–57; *see also id.* at 1:25–38 (explaining that a fluorescent lamp base may heat the filaments and raise the voltage in order to ignite the lamp). Consequently, “filament-simulating unit 10 can simulate a filament of the traditional fluorescent lamp, so as to prevent the ballast from erroneously judging that the filaments are open-circuited or short-circuited during the preheating process of the ballast.” *Id.* at 3:57–61.

D. Challenged Claims

Petitioner challenges claims 1, 2, 5–7, 9, 10, 15–18, 21, 23, 24, 29, and 31–43 of the ’662 patent. Of these, claims 1, 17, 21, 23, 41, and 42 are independent. Claim 1 is illustrative, and it recites:

1 [p] A power source module for an LED lamp,
comprising:

[a] a filament-simulating circuit electrically connected to a first bi-pin terminal and a second bi-pin terminal of the LED lamp, each of the first bi-pin terminal and the second bi-pin terminal configured to allow a current to flow from one pin to the other pin via the filament simulating circuit during a pre-heat process executed by a ballast;

[b] a current limiting circuit electrically connected to the filament-simulating circuit and configured to limit a current from the filament-simulating circuit;

[c] a first rectifier electrically connected to the current limiting circuit and configured to rectify the current from the current limiting circuit; and

[d] a filter electrically connected between the first rectifier and at least one LED of the LED lamp and configured to smooth the current from the first rectifier.

Ex. 1001, 6:26–42 (reference letters added).

II. PATENTABILITY ANALYSIS

A. *Legal Standards*

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to the patent owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

The legal question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the

prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.⁷ *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966). One seeking to establish obviousness based on more than one reference must articulate sufficient reasoning with rational underpinnings to combine teachings. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

B. Level of Ordinary Skill in the Art

Petitioner asserts that the level of ordinary skill in the art corresponds to “a Bachelor’s degree in electrical engineering, or an equivalent field, as well as 1-2 years of academic or industry experience in LED lighting design.” Pet. 10 (citing Ex. 1002 ¶¶ 32–33). Petitioner also asserts that an ordinary artisan would have had “knowledge of LEDs and related technology for driving LEDs” and “would have been familiar with the field of technology” related to fluorescent lamps and their pre-heat process. *Id.* (citing *id.* at 10–12; Ex. 1002 ¶¶ 32–33).

At this stage, Patent Owner does not address the level of ordinary skill. *See* Prelim. Resp.

For purposes of this Decision, we adopt Petitioner’s proposed level of skill, as articulated above. We are satisfied that it comports with the level of skill necessary to understand and implement the teachings of the ’662 patent. *See also* Ex. 1002 ¶¶ 32–33. To the extent the level of ordinary skill in the art is in dispute or makes a material difference in the obviousness analysis, the parties should brief their respective positions in this regard during trial.

⁷ The current record does not include allegations or evidence of objective indicia of nonobviousness.

C. Claim Construction

We interpret claim terms using “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). Under the principles set forth by our reviewing court, the “words of a claim ‘are generally given their ordinary and customary meaning,’” as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

Petitioner addresses the construction of two claim terms. Pet. 14–18. First, Petitioner contends that “electrically connected” (which appears in every independent claim) should be construed as “connected through wires or other intervening electrical components” and should not be limited to direct connections. *Id.* at 14–16 (citing *id.* at 13–14 (summarizing ’662 patent’s disclosure); Ex. 1001, 2:24–28, 2:50–51, Figs. 2, 3; Ex. 1002 ¶¶ 34–37; Ex. 1013, 41/53, 46/53). Second, Petitioner contends that “current limiting circuit” (which appears in every independent claim except for claim 17) “is broad enough to encompass a circuit that provides an impedance.” *Id.* at 16–18 (citing Ex. 1001, 4:46–49, 5:5–15, Fig. 3; Ex. 1002 ¶¶ 38–41; Ex. 1015, 7:51–52; Ex. 1016, 18-19/61).

At this stage, Patent Owner takes no position regarding the construction of either of these terms. *See* Prelim. Resp.

It is not necessary to expressly construe any claim terms or phrases for purposes of this Decision. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci.*

& *Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). Although Petitioner's proposed constructions appear to be consistent with the plain and ordinary meaning of these terms, neither term is disputed by Patent Owner at this stage. However, if Patent Owner believes the Petition is premised on an understanding of a claim term or phrase that is erroneous in a way material to this proceeding, then Patent Owner must specifically identify the claim construction dispute, articulate its contrary understanding, and support its position with argument and evidence.

D. Obviousness Ground Based on Zhang

Petitioner contends that the subject matter of claims 1, 2, 5–7, 9, 10, 15–18, 21, 23, 24, 29, 31, 32, 34–39, 41, and 42 would have been obvious over Zhang. Pet. 19–52. Patent Owner argues that an ordinary artisan would not have been motivated to combine Zhang's embodiments as proposed (Prelim. Resp. 4–14) and Petitioner fails to show the combination discloses element 1[a] (*id.* at 14–16).

We have considered the parties' arguments and the evidence presented at this stage, and for the reasons explained below, we determine that Petitioner has demonstrated a reasonable likelihood that it will prevail in showing that the subject matter of these claims would have been obvious over Zhang.

1. Zhang (Ex. 1004)

Zhang discloses “a lighting apparatus including a solid-state lighting circuit [e.g., LEDs] and first and second ballast connection ports configured to be coupled to a ballast.” Ex. 1004, 1:63–65; *see id.* at 1:46–59 (addressing “LED-based replacements for fluorescent lamps”).

Figure 18A (reproduced below) is a schematic diagram showing an embodiment of Zhang's lighting apparatus that may be included in a fluorescent tube replacement lamp. Ex. 1004, 9:4–5, 10:19–20.

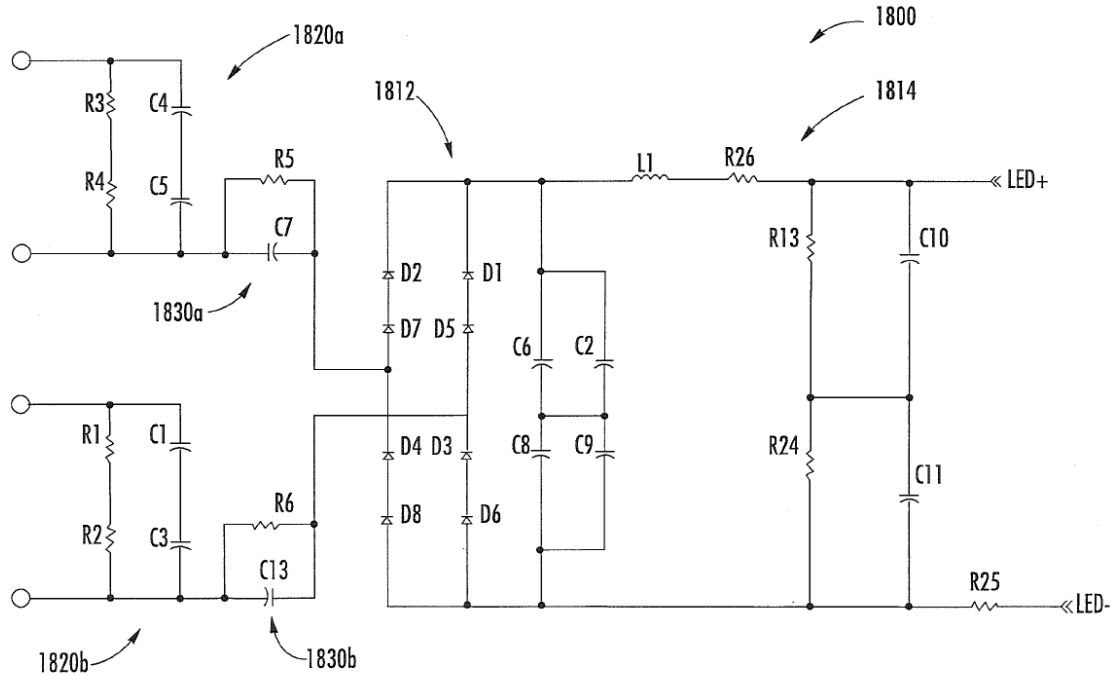


FIG. 18A

As shown above, Figure 18A of Zhang depicts lighting apparatus 1800, which includes first and second filament-imitating impedances 1820a, 1820b, first and second blocking impedances 1830a, 1830b, rectifier circuit 1812, matching circuit 1814, and connections to LED segments (“LED+” and “LED-”). *Id.* at 9:5–8, Fig. 18A; *see also id.* at Fig. 18B (depicting the LED segments themselves).

Zhang also states some ballasts test the filament in a lamp “by measuring a ‘cold’ impedance of the filament before energizing, and then testing the filament impedance after the filament has been energized and heated up.” Ex. 1004, 8:9–13. “If the change in impedance between the two temperatures fails to meet a predetermined criteria, the ballast may prevent operation.” *Id.* at 8:13–15. Zhang teaches that some embodiments include a

filament-imitating impedance that is temperature varying (*id.* at 8:8–9), as shown in Figure 14 (reproduced below).

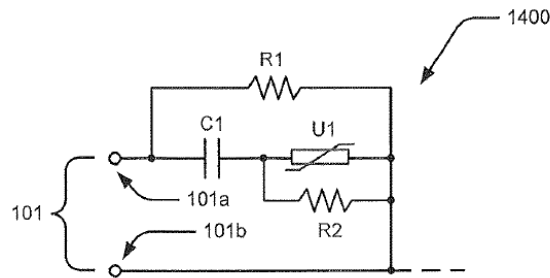
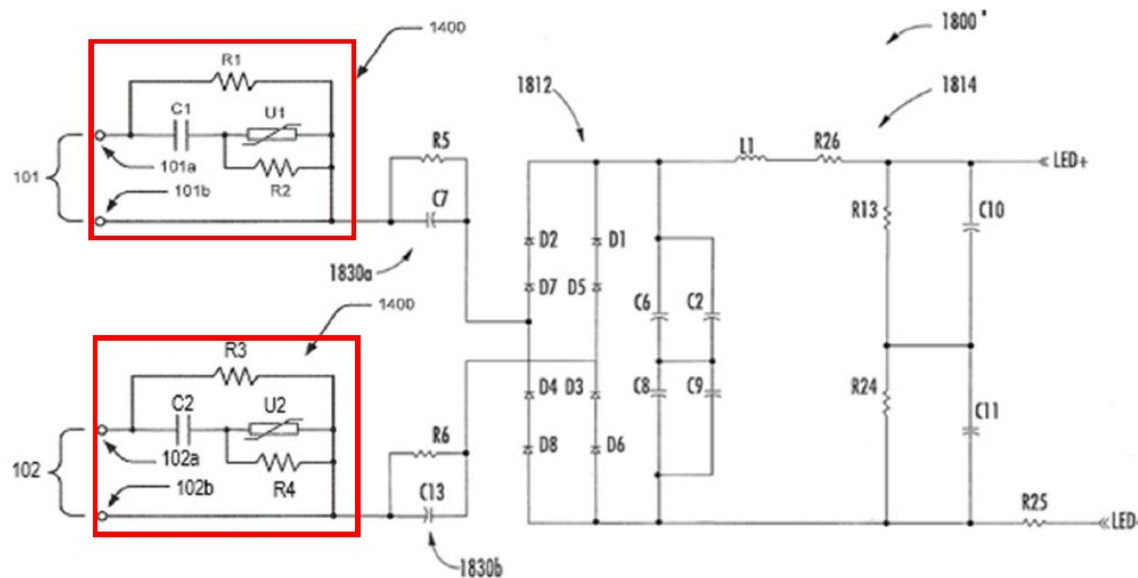


FIG. 14

As shown above, Figure 14 of Zhang depicts a temperature-varying filament-imitating impedance 1400, which “includ[es] a capacitor C1 and resistor R1 along the lines described above [in connection with other embodiments], along with a parallel combination of an additional resistor R2 and a positive temperature coefficient (PTC) resistor U1 coupled in series with the capacitor C1.” *Id.* at 8:16–20. Zhang states that “PTC resistor U1 has a resistance that increases as current flows through the PTC resistor U1 and heats it up,” which “can be used to accommodate such a test and prevent shutdown due to failing the test.” *Id.* at 8:20–24.

2. Proposed Modification of Zhang

Petitioner proposes to modify Zhang’s lighting apparatus 1800 (depicted in Figure 18A) by replacing its first and second filament-imitating impedances 1820a and 1820b with Figure 14’s temperature-varying filament-imitating impedance 1400. Pet. 20–22 (citing Ex. 1002 ¶ 44; Ex. 1004, 3:53–55, 9:4–8, Figs. 14, 18A). Petitioner provides an illustration of the modified apparatus 1800’, which is shown below.



Petitioner’s illustration of modified apparatus 1800’ (above) includes temperature-varying filament-imitating impedance 1400, first and second blocking impedances 1830a, 1830b, rectifier circuit 1812, matching circuit 1814, and connections to LED segments (“LED+” and “LED-”).

Petitioner contends that an ordinary artisan would have been motivated to combine Zhang’s embodiments in this way given Zhang’s description of the purpose and benefits of a temperature-varying filament-imitating impedance. Pet. 22–23 (citing Ex. 1004, 8:8–24; Ex. 1025, 7:4–7; Ex. 1002 ¶ 45). Petitioner further contends that an ordinary artisan would have understood that this modification would increase “the compatibility of modified apparatus 1800’ with additional ballast types.” *Id.* at 22 (citing Ex. 1002 ¶ 45).

Patent Owner disagrees that an ordinary artisan would have been motivated to combine Zhang’s embodiments in the manner proposed by Petitioner. Prelim. Resp. 4–14. First, Patent Owner argues that “the modified lighting apparatus is unsatisfactory for Zhang’s intended purpose which is to provide redundancy.” Prelim. Resp. 4–8 (citing Ex. 1004, 9:19–

24, 9:10–13, 9:33–36, 9:52–56). Second, Patent Owner argues that “Zhang teaches how to implement the temperature-varying filament imitating impedance of FIG. 14 in two specific circuits [shown in Figures 15 and 16] and in no other embodiments.” *Id.* at 8–11 (citing Ex. 1004, 8:16–26, 8:37–38, Figs. 15, 16). Third, Patent Owner argues that Petitioner’s proposed apparatus 1800’ “would generate more heat” than the implementations of the temperature-varying filament-imitating impedance shown in Zhang’s Figures 15 and 16. *Id.* at 11–14.

Having reviewed the record and the parties’ arguments, we determine that Petitioner establishes a reasonable likelihood that an ordinary artisan would have been motivated to combine Zhang’s embodiments in the manner proposed. In particular, we are preliminarily persuaded by Petitioner’s rationale to combine Zhang’s embodiments, which appears to be supported by the cited evidence. *See* Ex. 1004, 8:8–24; Ex. 1002 ¶¶ 43–45. For example, Zhang describes the benefits of its temperature-varying filament-imitating impedance. Ex. 1004, 8:8–24.

Patent Owner’s contrary arguments are unavailing at this stage. We disagree with Patent Owner’s assumption that Zhang’s “intended purpose” is to provide circuit component redundancy (*see* Prelim. Resp. 4–8)—rather, Zhang seeks to provides a solid-state (e.g., LED) lamp that can be used as a replacement for a fluorescent lamp (*see, e.g.,* Ex. 1004, 1:46–65, 10:19–20). Stated differently, although we agree that Zhang’s filament-imitating impedance circuits 1820a, 1820b provide component redundancy and that Zhang touts the benefits of the redundancy provided by the embodiment shown in Figure 18A (*see* Prelim. Resp. 6–8 (quoting Ex. 1004, 9:19–21)), this redundancy is merely one of the benefits provided by the Figure 18A embodiment. Patent Owner does not contend that the elimination of this

benefit undercuts Petitioner’s rationale, and it does not sufficiently explain why elimination of this benefit would materially diminish an ordinary artisan’s motivation to achieve the stated benefits of Zhang’s temperature-varying filament-imitating impedance.

Also, Patent Owner’s argument that Zhang implements Figure 14’s temperature-varying filament-imitating impedance 1400 “in two specific circuits and no other embodiments” (Prelim. Resp. 8–11) is inapposite. Petitioner does not allege that Zhang discloses the claims. Patent Owner asks us to infer that an ordinary artisan would not be motivated to make the proposed combination simply because Zhang already provides different embodiments implementing Figure 14 (in Figures 15 and 16), but we disagree that such an inference is justified.

Finally, Patent Owner’s argument that Petitioner’s proposal “would generate more heat” (*see* Prelim. Resp. 11–14) does not indicate that Petitioner fails to make a sufficient showing for purposes of institution. The arguments presented in the Preliminary Response are not supported by evidence,⁸ and Patent Owner does not sufficiently explain why the additional heat would have diminished an ordinary artisan’s motivation to make the proposed combination. At trial, with the benefit of a full record, we will evaluate any disadvantages alleged by Patent Owner and their impacts on an ordinary artisan’s motivation.

In sum, Petitioner sufficiently shows that an ordinary artisan would have been motivated to modify Zhang’s lighting apparatus 1800 (depicted in

⁸ Patent Owner’s unsupported attorney arguments are afforded little weight. *See In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) (explaining that attorney arguments that are unsupported by factual evidence are entitled to little probative value).

Figure 18A) by replacing its first and second filament-imitating impedances 1820a and 1820b with Figure 14's temperature-varying filament-imitating impedance 1400.

3. *Independent Claim 1*

1[p] “A power source module for an LED lamp, comprising”

Petitioner contends that, to the extent the preamble is limiting, Zhang renders it obvious because an ordinary artisan would have recognized that modified apparatus 1800' includes a power source module for an LED lamp. Pet. 24–25 (citing Ex. 1004, 5:1–5, 9:64–67, 10:19–20, Figs. 18A, 18B; Ex. 1002 ¶¶ 56–58; Ex. 1001, 3:29–31 (equating a power source module with “power source circuit” or “power supply circuit”)).

At this stage, Petitioner has made a sufficient showing that Zhang renders the claim's preamble obvious.⁹ Patent Owner's Preliminary Response does not allege any deficiencies in this portion of the Petition.

1[a] “a filament-simulating circuit electrically connected to a first bi-pin terminal and a second bi-pin terminal of the LED lamp, each of the first bi-pin terminal and the second bi-pin terminal configured to allow a current to flow from one pin to the other pin via the filament-simulating circuit during a pre-heat process executed by a ballast”

Petitioner contends that top and bottom filament-imitating impedances 1400 (in modified apparatus 1800') teach the claimed “filament-simulating circuit.” Pet. 25–26 (citing Ex. 1004, 8:16–20, Figs. 14 & 18A; Ex. 1002 ¶ 59). Petitioner submits that each filament-imitating impedance 1400 is

⁹ We need not determine whether the preamble is limiting because Petitioner has sufficiently shown that the modification of Zhang meets this aspect of the claim. *See Vivid Techs.*, 200 F.3d at 803.

electrically connected to a corresponding ballast connection port 101, 102 (each of which has a bi-pin terminal). *Id.* at 26–27 (citing Ex. 1004, 5:1–7; Ex. 1002 ¶¶ 59–60).

In addition, Petitioner contends that “[f]irst port 101 is configured to allow a current to flow from one pin 101a to the other pin 101b via the top filament-imitating impedance 1400 during a pre-heat process executed by a ballast,” and that the same is true of port 102. Pet. 27–28. In support, Petitioner quotes Zhang’s discussion of “filament tests in which a filament is tested by measuring a ‘cold’ impedance of the filament before energizing, and then testing the filament impedance after the filament has been energized and heated up,” and Petitioner asserts that an ordinary artisan “would have recognized that the described filament tests disclose a pre-heat process executed by a ballast.” *Id.* at 27 (quoting Ex. 1004, 8:9–13; citing Ex. 1002 ¶ 61). Petitioner also states that an ordinary artisan “would have recognized that measuring impedances and energizing and heating up a filament . . . requires a current to flow from one pin 101a to the other pin 101b and also from one pin 102a to the other pin 102b.” *Id.* at 27–28 (citing Ex. 1002 ¶ 61; Ex. 1042, 5:29–34).

Patent Owner contends that Petitioner fails to sufficiently show that Zhang discloses a filament-simulating circuit that allows current to flow from one pin to the other. Prelim. Resp. 14–16. According to Patent Owner, “neither [the] disclosure [quoted by Petitioner] nor any other in Zhang states that current flows from one pin to the other during this process.” *Id.* at 15. Moreover, Patent Owner argues that Petitioner’s explanation is conclusory, as is the cited portion of Dr. Baker’s testimony, and that Petitioner fails to demonstrate a motivation to combine Zhang with Exhibit 1042. *Id.* Patent Owner also argues that Petitioner incorrectly asserts that “the only path from

one pin 101a to the other pin 101b . . . is through the top filament-imitating impedance 1400,” where current could flow to first blocking impedance 1830. *Id.* at 15–16 (emphasis added).

Having considered the parties’ arguments and the evidence of record, we determine that Petitioner has sufficiently shown that Zhang’s modified apparatus 1800’ teaches or suggests element 1[a]. Petitioner points to top and bottom filament-imitating impedances 1400 in modified apparatus 1800’ (Pet. 25–26), and we are preliminarily persuaded that this circuit is “a filament-simulating circuit,” as required by the claim. In addition, we are preliminarily persuaded that Zhang teaches (or at least suggests) that this circuit is electrically connected to the first and second bi-pin terminals of the LED lamp, as the claim also requires. *See* Pet. 26 (illustrating modified apparatus 1800’); Ex. 1004, 4:65–5:9 (describing bi-pin terminals), Figs. 14, 18; *see also* Ex. 1002 ¶¶ 59–60.

Moreover, at this stage and on this record, we are preliminarily persuaded that Zhang teaches (or at least suggests) that these bi-pin terminals are each “configured to allow a current to flow from one pin to the other pin via the filament-simulating circuit during a pre-heat process executed by a ballast,” as the claim also requires. For these aspects of the claim, Petitioner points to Zhang’s “filament tests” (Pet. 27–28), which Zhang describes as follows:

Some ballasts perform filament tests in which a filament is tested by measuring a “cold” impedance of the filament before energizing, and then testing the filament impedance after the filament has been energized and heated up. If the change in impedance between the two temperatures fails to meet a predetermined criteria, the ballast may prevent operation.

Ex. 1004, 8:10–15. From this, we understand Zhang to teach that, during a filament test, a ballast measures the impedance of the filament, “energize[s] and heat[s] up” the filament, and then measures the impedance of the filament again. *Id.* We are preliminarily persuaded that this teaches the claimed “pre-heat process executed by a ballast.” *See id.*; Ex. 1002 ¶ 61 (testifying that an ordinary artisan “would have understood that the described filament tests disclose a pre-heat process executed by a ballast”).

In addition, at this stage, Petitioner sufficiently shows that Zhang’s filament test involves current flow across the filament (i.e., from one of the bi-pin terminals to the other).¹⁰ *See* Pet. 27–28. We preliminarily agree with Petitioner’s assertion that an ordinary artisan would have understood that measuring a filament’s impedance requires current to flow across the filament, and we are preliminarily persuaded that an ordinary artisan would understand that “energiz[ing]” a filament involves running current through it. *See id.* In addition, Petitioner identifies evidence that supports its assertion that heating the filament would also require current flow. *See id.*; Ex. 1042, 5:29–34 (stating that current is used to heat the filament); *see also* Ex. 1005 ¶¶ 2, 45 (explaining that a ballast provides a heating current to preheat a lamp before ignition).

Patent Owner’s contrary arguments (*see* Prelim. Resp. 14–16) are unavailing at this stage. Although Zhang does not expressly address current flow during the filament test (*see id.* at 14–15), we are preliminarily persuaded that an ordinary artisan would have understood Zhang’s filament

¹⁰ Patent Owner appears to argue that current from this test could also flow to first blocking impedance 1830 (*see* Prelim. Resp. 15–16), but this misses the mark. No claim limitation prohibits current from flowing to other components during the pre-heat process.

test to inherently include current flow across the filament.¹¹ Moreover, we are preliminarily persuaded that an ordinary artisan would have understood Zhang’s filament test to involve current flow from one pin of the bi-pin terminal to the other, and a “reference need not disclose the elements in the very same terms used by the patent.” *Adasa Inc. v. Avery Dennison Corp.*, 55 F.4th 900, 910 (Fed. Cir. 2022) (citing *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (“[T]he reference need not satisfy an *ipsissimis verbis* test.”)).

We also disagree with Patent Owner’s arguments that Petitioner’s assertions are insufficiently explained. *See id.* at 15. Although the Petition’s analysis on this point is concise (*see* Pet. 27–28), we are persuaded that it is sufficient given the nature of the assertions at issue (e.g., that the impedance of a circuit is measured with current flow across it). Also, despite Patent Owner’s critique of the reliance on Exhibit 1042 (*see* Prelim. Resp. 15), we discern no impropriety in Petitioner’s citation to documentary evidence to support its assertions regarding the knowledge and understanding of an ordinary artisan. Patent Owner’s arguments on this element do not indicate that Petitioner fails to make a showing sufficient for institution and are best addressed at trial with the benefit of a full record.

1[b] “a current limiting circuit electrically connected to the filament-simulating circuit and configured to limit a current from the filament-simulating circuit”

Petitioner contends that first blocking impedance 1830a and second blocking impedance 1830b each teach the claimed “current limiting circuit.”

¹¹ To the degree Patent Owner disagrees with our understanding, we encourage Patent Owner to provide evidence to support its contrary understanding.

Pet. 28–29 (citing Ex. 1004, Figs. 14, 18A; Ex. 1002 ¶ 62). Petitioner submits that these circuits are electrically connected to filament-imitating impedance 1400. *Id.* at 29 (citing Ex. 1004, 9:25–33; Ex. 1002 ¶ 62). Petitioner further submits that blocking impedance 1830a, 1830b each include a capacitor and resistor connected in parallel, which forms a high pass RC filter, and an ordinary artisan would have recognized that this limits the current from filament-imitating impedance 1400. *Id.* at 29–30 (citing Ex. 1004, 9:37–41; Ex. 1002 ¶ 63; Ex. 1026, 2:40–42; Ex. 1027 ¶ 104).

At this stage, Petitioner has made a sufficient showing that Zhang’s modified apparatus 1800’ teaches element 1[b]. Patent Owner’s Preliminary Response does not allege any deficiencies in this portion of the Petition.

1[c] “a first rectifier electrically connected to the current limiting circuit and configured to rectify the current from the current limiting circuit”

Petitioner contends that rectifier circuit 1812 (i.e., diodes D1–D8) teaches the claimed “first rectifier” because an ordinary artisan would understand that it rectifies the current flowing from blocking impedances 1830a, 1830b. Pet. 30–32 (citing Ex. 1004, 9:8–10, 9:25–33; Ex. 1002 ¶¶ 64–65; Ex. 1017, Fig. 1A, Ex. 1023, 7:25–30).

At this stage, Petitioner has made a sufficient showing that Zhang’s modified apparatus 1800’ teaches element 1[c]. Patent Owner’s Preliminary Response does not allege any deficiencies in this portion of the Petition.

1[d] “a filter electrically connected between the first rectifier and at least one LED of the LED lamp and configured to smooth the current from the first rectifier”

Petitioner contends that matching circuit 1814 (i.e., capacitors C2, C6, C8, C9 and inductor L1) teaches the claimed “filter” electrically connected

between rectifier circuit 1812 and LED segments 1816a, 1816b. Pet. 32–33, 35 (citing Ex. 1004, 9:49–52, Figs. 14, 18A; Ex. 1002 ¶¶ 66, 68). According to Petitioner, an ordinary artisan would have understood that matching circuit 1814 filters and smooths the output of rectifier circuit 1812 given the placement of its capacitors and inductor. *Id.* at 33–34 (citing Ex. 1002 ¶¶ 66–67; Ex. 1038 ¶ 6, Fig. 8; Ex. 1004, 9:64–67).

At this stage, Petitioner has made a sufficient showing that Zhang’s modified apparatus 1800’ teaches element 1[d]. Patent Owner’s Preliminary Response does not allege any deficiencies in this portion of the Petition.

Conclusion

For the reasons provided above, Petitioner has shown sufficiently (for purposes of institution) that an ordinary artisan would have been motivated to modify Zhang and the modification teaches each limitation of independent claim 1. We have considered Patent Owner’s arguments, but those arguments are unavailing at this stage for the reasons explained above. Accordingly, we determine that Petitioner has shown a reasonable likelihood that it would prevail in establishing that the subject matter of claim 1 would have been obvious over Zhang.

4. Other Challenged Claims

Petitioner also contends that the subject matter of independent claims 17, 21, 23, 41, and 42 and dependent claims 2, 5–7, 9, 10, 15, 16, 18, 24, 29, 31, 32, and 34–39 would have been obvious over Zhang. *See* Pet. 35–52. Petitioner substantiates its contentions with analysis that addresses each claim limitation and identifies supporting evidence, relying on its analysis of claim 1 as appropriate. *See id.*

Other than the arguments discussed in connection with claim 1, Patent Owner does not dispute Petitioner's arguments, analysis, or evidence for these claims. *See* Prelim. Resp.

Having considered the parties' arguments and evidence, on this record, we determine that Petitioner has shown a reasonable likelihood that it would prevail in establishing that the subject matter of claims 2, 5–7, 9, 10, 15–18, 21, 23, 24, 29, 31, 32, 34–39, 41, and 42 would have been obvious over Zhang.

E. Obviousness Ground Based on Tao Alone

Petitioner contends that the subject matter of claims 1, 9, 15, 23, 31–33, and 38–43 would have been obvious over Tao. Pet. 52–82. Patent Owner argues that Petitioner fails to make a sufficient showing Tao teaches or suggests element 1[b] or element 1[d]. Prelim. Resp. 16–21.

We have considered the parties' arguments and the evidence presented at this stage, and for the reasons explained below, we determine that Petitioner has demonstrated a reasonable likelihood that it will prevail in showing that the subject matter of these claims would have been obvious over Tao.

1. Tao (Ex. 1005)

Tao describes “a connection circuit” for a light apparatus that allows an LED lamp to replace a fluorescent lamp. Ex. 1005 ¶¶ 13, 41; *see also id.* ¶¶ 1–2. Tao contemplates that its light apparatus 60 may be connected to a programmed start high frequency ballast, which “provides a heating current to preheat the light apparatus 60 before ignition of the high voltage.” *Id.* ¶ 45; *see id.* ¶ 46.

Figure 1 is a schematic block diagram of Tao's connection circuitry (Ex. 1005 ¶¶ 30, 35), and Figure 4 is an embodiment of the connection circuitry shown in Figure 1 (*id.* ¶¶ 33, 51). These figures are shown below.

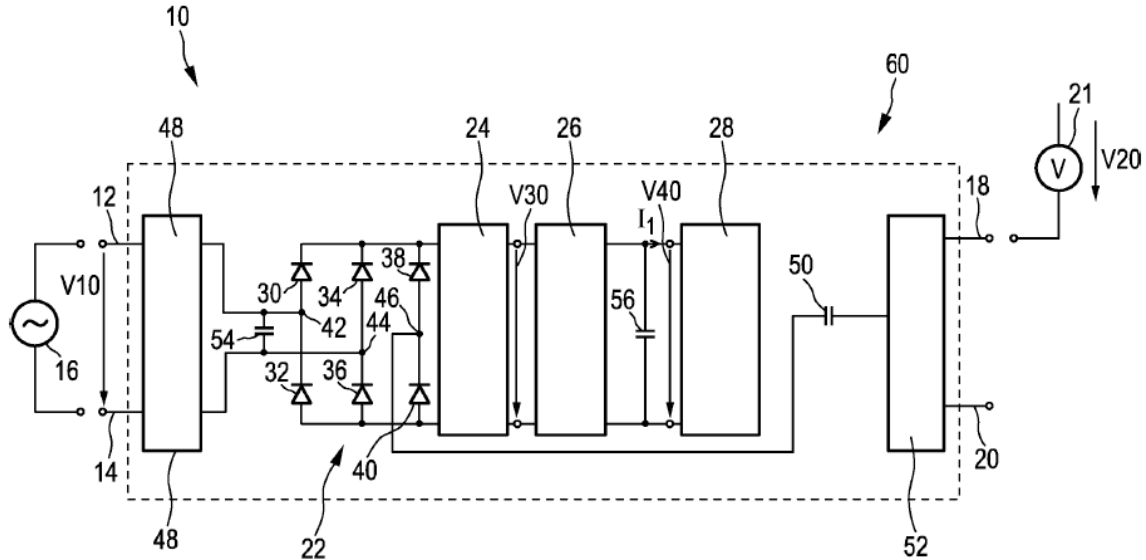


FIG. 1

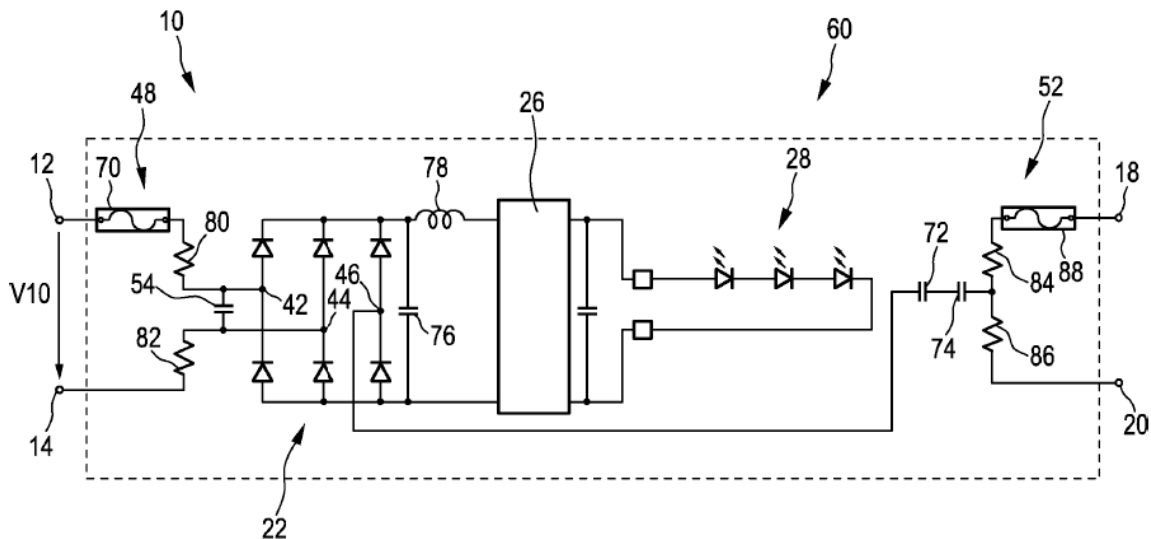


FIG. 4

In each of Figures 1 and 4 (above), Tao's connection circuitry 10 for light apparatus 60 includes: input circuitry 48, which connects to input terminals 12, 14; input circuitry 52, which connects to input terminals 18, 20; rectifier unit 22, which includes six diodes; a filter device, which is either block 24 or

capacitor 76 and inductance 78; driver stage 26; load 28; a capacitor (56) in parallel with driver stage 26 and load 28; and one or more filter capacitor(s) (either 72 and 74 or 50). *Id.* ¶¶ 35–41, 49, 51–53, Figs. 1, 4.

Each input circuit 48, 52 includes resistors with a “resistance value similar to the filament resistance of the fluorescent lamp” that is to be replaced by light apparatus 60. Ex. 1005 ¶¶ 37, 52–53. “[R]ectifier unit 22 . . . rectific[ies] the alternating input voltages V10, V20 received from the first input terminals 12, 14 and from the second input terminals 18, 20.” *Id.* ¶ 35. It “is a complex rectifier comprising three parallel rectifying paths,” each comprising two diodes. *Id.* ¶ 36. “The electromagnetic interference filter device 24 comprises a capacitor 76 and an inductance 78 for reducing emission of electromagnetic interference from the driver.” *Id.* ¶ 49. “The driver stage 26 is connected via a filter capacitor 56 to the load 28 to filter the output voltage V40 and to reduce a ripple of the load current I_1 ” (*id.* ¶ 40), and “load 28 is preferably a lighting unit 28 comprising . . . one or more LEDs” (*id.* ¶ 41). Filter capacitor 50 is a high pass filter that has a large impedance at mains frequency “such that the mains voltage V10 cannot pass through the filter capacitor 50 to the second input terminals 18, 20.” *Id.* ¶ 37.

Figure 5 (below) “shows a preferred embodiment of the driver stage 26 for driving the load 28.” Ex. 1005 ¶ 55.

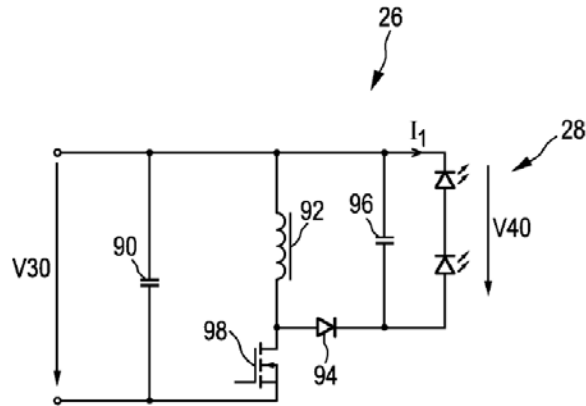


FIG. 5

As shown above, driver stage 26 includes input capacitor 90, inductance 92, diode 94, output capacitor 96, and controllable switch 98 for providing an output voltage V40 and output current I_1 for driving load 28, which is an LED unit. *Id.* Switching mode power supply drive 26 is designed “to maintain a constant LED current.” *Id.* ¶ 56.

2. Independent Claim 1

1[p] “A power source module for an LED lamp, comprising”

Petitioner contends that, to the extent the preamble is limiting, Tao discloses it because Tao’s light apparatus 60 is an LED lamp and includes a power source module. Pet. 54–55 (citing Ex. 1005 ¶¶ 2, 9, 35, 37–41, 48, 49, Fig. 4; Ex. 1002 ¶¶ 119–120; Ex. 1001, 3:29–31 (equating a power source module with “power source circuit” or “power supply circuit”)).

At this stage, Petitioner has made a sufficient showing that Tao discloses the claim's preamble.¹² Patent Owner's Preliminary Response does not allege any deficiencies in this portion of the Petition.

1[a] “a filament-simulating circuit electrically connected to a first bi-pin terminal and a second bi-pin terminal of the LED lamp, each of the first bi-pin terminal and the second bi-pin terminal configured to allow a current to flow from one pin to the other pin via the filament-simulating circuit during a pre-heat process executed by a ballast”

Petitioner contends that input circuitry 48 and 52 teach the claimed “filament-simulating circuit.” Pet. 55–56 (citing Ex. 1005 ¶¶ 20, 52–53, Fig. 4; Ex. 1002 ¶ 121). Petitioner submits that input circuitry 48 and 52 are electrically connected to the first and second bi-pin terminals of the LED lamp. *Id.* at 56–57 (citing *id.* at 10–11 (providing background on fluorescent lamps); Ex. 1005 ¶¶ 17, 37–38, 41; Ex. 1002 ¶ 122). In addition, Petitioner points to Tao's description of a pre-heat process executed by a ballast, and Petitioner contends that an ordinary artisan “would have understood that a current flows from input terminal 12 to 14 and from input terminal 18 to 20 via input circuitry 48 and 52 during [this] process.” *Id.* at 57 (citing Ex. 1005 ¶¶ 2, 45; Ex. 1002 ¶ 123; Ex. 1042, 5:29–34).

At this stage, Petitioner has made a sufficient showing that Tao teaches element 1[a]. Patent Owner's Preliminary Response does not allege any deficiencies in this portion of the Petition.

¹² As a result, we need not determine whether the preamble is limiting. See *Vivid Techs.*, 200 F.3d at 803.

1[b] “a current limiting circuit electrically connected to the filament-simulating circuit and configured to limit a current from the filament-simulating circuit”

Petitioner points to Tao’s filter capacitors 72 and 74 for the claimed “current limiting circuit” and submits that these capacitors are electrically connected to both input circuitry 52 and input circuitry 48. Pet. 58 (citing Ex. 1005 ¶ 53, Fig. 4; Ex. 1002 ¶¶ 124–125); *see also id.* at 14–16, 59 (addressing construction of the term “electrically connected”). Petitioner contends that capacitors 72 and 74 limit the current from input circuitry 52 (generated by connected ballast 62 or 68), and in support, Petitioner points to Tao’s description of capacitor 50 in Figure 1 and states that an ordinary artisan “would have understood that the impedance necessarily provided by filter capacitors 72 and 74 would limit the current from input circuitry 52 generated by a connected ballast.” *Id.* at 60–61 (citing Ex. 1005 ¶¶ 37, 48, Figs. 1, 2b, 2c; Ex. 1002 ¶¶ 127–129; Ex. 1037 ¶ 242); *see also id.* at 16–18 (addressing construction of “current limiting circuit”). Petitioner further asserts that capacitors 72 and 74 limit the current from input circuitry 48 (generated by mains 16). *Id.* at 62 (citing Ex. 1005 ¶¶ 17, 37; Ex. 1002 ¶ 130).

Patent Owner contends that Petitioner fails to sufficiently show Tao’s filter capacitors 72 and 74 limit current. Prelim. Resp. 16–19. According to Patent Owner, Tao provides no description of these capacitors (other than stating that they are redundant) and fails to identify their function, operation, or capacitance values. *Id.* at 17. Patent Owner also argues that Petitioner relies upon capacitor 50 “from another embodiment related to [Figure] 1” without sufficient justification. *Id.* at 17–18.

Having considered the parties' arguments and the evidence of record, we determine that Petitioner has sufficiently shown that Tao teaches (or at least suggests) element 1[b]. We are persuaded that Tao's filter capacitors 72, 74 are electrically connected to both input circuitry 52 and input circuitry 48. *See* Ex. 1005 ¶ 53, Fig. 4. We are also preliminarily persuaded that filter capacitors 72, 74 limit a current from input circuitry 48. *See* Ex. 1005 ¶¶ 17, 37 (explaining that capacitor 50 disconnects terminals 18, 20 from mains voltage V10 at terminals 12, 14). Further, we are preliminarily persuaded that filter capacitors 72, 74 limit a current from input circuitry 52, notwithstanding Patent Owner's contrary arguments, for two independent reasons.

First, we agree that a capacitor necessarily has impedance, and this impedance necessarily limits the current flowing through the capacitor. *See, e.g.,* Ex. 1015, 7:51–52 (“Impedance is a more general parameter that describes a circuit's ability to resist the flow of electrical current.”). For this reason, even though Petitioner's explanation is concise (*see* Pet. 61), we agree with Petitioner's contention that capacitors 72, 74 necessarily provide impedance and limit the current flowing between input circuitry 52 and the remainder of Tao's circuit.¹³ *See* Ex. 1002 ¶ 129.

Second, Petitioner sufficiently shows (for purposes of institution) that an ordinary artisan would have been motivated by the description of Tao's capacitor 50 to implement capacitors 72 and 74 such that their total capacitance was 0.5nF to 10 nF (which, at 45 kHz, would provide an

¹³ We note that the Preliminary Response did not address this assertion. To the degree Patent Owner disagrees with our understanding, Patent Owner should explain its contrary position at trial.

impedance in the range of 354 Ω to 7,074 Ω). *See* Pet. 60–61; Ex. 1002 ¶¶ 128–129.

Patent Owner’s contrary arguments (*see* Prelim. Resp. 16–19) are unavailing at this stage and are best addressed at trial with a full record. Although Tao does not specifically address the functions of filter capacitors 72 and 74 (*see id.* at 16–17), we preliminarily agree with Petitioner’s assertions that these capacitors necessarily limit a current from input circuitry 52, as we explained above.¹⁴ Moreover, we are preliminarily persuaded that an ordinary artisan would understand filter capacitors 72 and 74 to have the same function as filter capacitor 50, and thus would understand capacitors 72 and 74 to limit current from input circuitry 52 as well as input circuitry 48. *See* Pet. 60–62. A “reference need not disclose the elements in the very same terms used by the patent.” *Adasa*, 55 F.4th at 910 (citing *In re Gleave*, 560 F.3d at 1334 (“[T]he reference need not satisfy an *ipsissimis verbis* test.”)).

Also, contrary to Patent Owner’s argument (*see* Prelim. Resp. 17–18), we discern no impropriety in Petitioner’s reliance on Tao’s description of filter capacitor 50. Tao states that Figure 4 is “a further embodiment of the connection circuitry 10 and the light apparatus 60 shown in [Figure] 1.” Ex. 1005 ¶ 51; *also compare id.* at Fig. 4, *with id.* at Fig. 1 (showing substantially the same circuit except that filter device 24, driver stage 26,

¹⁴ To the degree Patent Owner disagrees with our understanding, we encourage Patent Owner to provide evidence to support its contrary understanding. Also, we note that (at this stage) Patent Owner does not contest Petitioner’s assertion that the claimed “current limiting circuit” encompasses a circuit that provides an impedance. *See* Pet. 16–18 (explaining that an ordinary artisan would have understood that an impedance limits a current); Prelim. Resp.

load 28, input circuitry 48, and input circuitry 52 are depicted as black boxes). As a result, we agree with Petitioner that Tao's description of capacitor 50 in Figure 1 would have informed the ordinary artisan's understanding of the commensurate component in Figure 4 (i.e., capacitors 72 and 74). *See* Pet. 60–61; *see also id.* at 63 (asserting that Tao's Figure 4 is an implementation of Figure 1)).

1[c] “a first rectifier electrically connected to the current limiting circuit and configured to rectify the current from the current limiting circuit”

Petitioner contends that Tao's third rectifier path (which consists of the two diodes directly connected to node 46 in Figure 4) teaches the claimed “first rectifier” and is electrically connected to capacitors 72 and 74. Pet. 62–63 (citing Ex. 1005 ¶ 53, Fig. 4; Ex. 1002 ¶ 131); *see also id.* at 64–65 (citing Ex. 1002 ¶ 135; Ex. 1001, 5:16–20). According to Petitioner, Figure 4 is an embodiment of Figure 1, and in connection with that figure, Tao states that this component is a rectifier. *Id.* at 63–64 (citing Ex. 1005 ¶¶ 33, 36, 51–54, Fig. 1; Ex. 1002 ¶¶ 132–133). Petitioner further contends that an ordinary artisan would have understood that this rectifier rectifies the alternating current output by the ballast. *Id.* at 64 (citing Ex. 1002 ¶ 134).

At this stage, Petitioner has made a sufficient showing that Tao teaches element 1[c]. Patent Owner's Preliminary Response does not allege any deficiencies in this portion of the Petition.

1[d] “a filter electrically connected between the first rectifier and at least one LED of the LED lamp and configured to smooth the current from the first rectifier”

Petitioner presents three alternative contentions for the claimed “filter” of element 1[d]. Pet. 65–71. For each of these alternatives,

Petitioner contends that the identified components are connected between the third rectifier path and Tao's lighting unit 28, which teaches the claimed "at least one LED." *Id.* at 66, 69–71 (citing Ex. 1005 ¶ 41, Figs. 4, 5; Ex. 1002 ¶¶ 138, 142, 146).

For the first alternative, Petitioner asserts that Tao's capacitor 76 and inductance 78 teach the claimed "filter." Pet. 65–68. In support, Petitioner submits that these components smooth the third rectifier's output because of the location of these components relative to the third rectifier (i.e., capacitor 76 is connected in parallel to the output of the rectifier and inductance 78 is connected in series to the output of the rectifier). *Id.* at 66–67 (citing Ex. 1002 ¶ 139; Ex. 1038 ¶ 6, Fig. 8). Petitioner also asserts, in the alternative, that an ordinary artisan would have been motivated to configure capacitor 76 and inductance 78 as a filter for smoothing the current because an ordinary artisan would have understood that there was a need to reduce variations in the voltage applied to driver stage 26. *Id.* at 67–68 (citing Ex. 1005 ¶ 55; Ex. 1002 ¶ 140; Ex. 1039 ¶ 44; Ex. 1043, 6:8–27).

For the second alternative, Petitioner asserts that input capacitor 90 teaches the claimed "filter." Pet. 68–70. Petitioner explains that input capacitor 90 is shown in Figure 5, which illustrates "a preferred embodiment of the driver stage 26" shown in Figure 4. *Id.* at 69 (citing Ex. 1005 ¶ 55, Fig. 5; Ex. 1002 ¶ 141). Petitioner contends that "input capacitor 90 is connected in parallel to the output of a rectifier and is thus configured to filter and smooth the rectifier's output," and in the alternative, it would have been obvious to configure it in this manner, as explained in connection with the first alternative. *Id.* at 69–70 (citing Ex. 1002 ¶¶ 143–144; Ex. 1021, 4:66–5:2).

Finally, for the third alternative, Petitioner asserts that the capacitor connected in parallel with driver stage 26 teaches the claimed “filter.” Pet. 70–71. We understand Petitioner to contend that this component is the same as filter capacitor 56,¹⁵ which Tao describes in connection with Figure 1. *See id.* at 54; *see also* Ex. 1005 ¶¶ 40 (describing filter capacitor 56), 51 (stating that Figure 4 is an embodiment of the circuit shown in Figure 1), Figs. 1, 4. Petitioner asserts that an ordinary artisan would have understood filter capacitor 56 to be configured to smooth the current indirectly received from the third rectifier. Pet. 71 (citing Ex. 1005 ¶ 40; Ex. 1002 ¶ 147).

Patent Owner contends that Petitioner fails to sufficiently show that Tao’s capacitor 90 is configured to smooth the current from the first rectifier, as required by element 1[d]. Prelim. Resp. 19–21. Patent Owner states that “Tao provides no description to explain the operation of capacitor 90,” and it contends that Petitioner fails to sufficiently “explain how a description of removing ripple voltage would allegedly smooth current.” *Id.* at 19–20 (emphasis omitted).

Having considered the parties’ arguments and the evidence of record, we determine that Petitioner has sufficiently shown that Tao teaches (or at least suggests) element 1[d]. At this stage, Patent Owner does not address Petitioner’s first or third alternatives (*see* Prelim. Resp. 19–21), and we determine that Petitioner’s contentions for these alternatives are sufficient for purposes of institution.

Moreover, we are preliminarily persuaded that Petitioner has shown a reasonable likelihood of success on its second alternative. In particular, we

¹⁵ The Petition once refers to “filter capacitor 76” (Pet. 70), but this appears to be a typographical error intended to reference “filter capacitor 56.” *See* Ex. 1002 ¶ 145; *see also* Pet. 70–71 (discussing this mapping).

preliminarily find that Tao’s input capacitor 90 is connected between the third rectifier path and driver stage 28 (*see* Ex. 1005 ¶ 55, Figs. 4, 5), and we are preliminarily persuaded that an ordinary artisan would have understood that input capacitor 90 smooths the current from the third rectifier path. Dr. Baker testifies that an ordinary artisan would have understood input capacitor 90 in this manner because it “is connected in parallel to the output of a rectifier” (Ex. 1002 ¶ 143), which is consistent with our understanding of the effect that capacitor 90 would have on the circuit depicted in Figures 4 and 5. Indeed, Tao’s capacitor 56 is connected in parallel with load 28, and Tao states that it filters the voltage applied to that load and reduces ripples in the current applied to it. Ex. 1005 ¶ 40, Fig. 1.

Patent Owner’s contrary arguments (*see* Prelim. Resp. 19–21) are unavailing at this stage. Although Tao does not expressly discuss the purpose (or effect) of capacitor 90 (*see id.* at 19), we are preliminarily persuaded that an ordinary artisan would have understood that it smooths voltage and thus current. As for Patent Owner’s critique of Exhibit 1021 (*see* Prelim. Resp. 20), we do not rely on that exhibit at this stage because it does not appear to sufficiently support Petitioner’s contentions in this case.¹⁶ Ultimately, Patent Owner’s arguments on this element do not indicate that Petitioner fails to make a showing sufficient for institution and are best addressed at trial with the benefit of a full record.

¹⁶ The exhibit is a patent unrelated to Tao, and Petitioner cites to claim language that requires a filter capacitor connected in parallel with a diode bridge and configured to remove ripple voltages. Ex. 1021, 4:66–5:2. We do not understand the alleged connection between this claim language and Tao. The claim language does not, for example, indicate that a capacitor connected in parallel with a diode bridge would necessarily remove ripple voltages in the circuit (or would be understood in that manner).

Conclusion

For the reasons provided above, Petitioner has shown sufficiently (for purposes of institution) that Tao teaches, suggests, or renders obvious each limitation of independent claim 1. We have considered Patent Owner's arguments, but those arguments are unavailing at this stage for the reasons explained above. Accordingly, we determine that Petitioner has shown a reasonable likelihood that it would prevail in establishing that the subject matter of claim 1 would have been obvious over Tao.

3. Other Challenged Claims

Petitioner also contends that the subject matter of independent claims 23, 41, and 42 and dependent claims 9, 15, 31–33, 38–40, and 43 would have been obvious over Tao. *See* Pet. 71–82. Petitioner substantiates its contentions with analysis that addresses each claim limitation and identifies supporting evidence, relying on its analysis of claim 1 as appropriate. *See id.*

Other than the arguments discussed in connection with claim 1, Patent Owner does not dispute Petitioner's arguments, analysis, or evidence for these claims. *See* Prelim. Resp.

Having considered the parties' arguments and evidence, on this record, we determine that Petitioner has shown a reasonable likelihood that it would prevail in establishing that the subject matter of claims 9, 15, 23, 31–33, and 38–43 would have been obvious over Tao.

F. Obviousness Ground Based on Tao and Langovsky

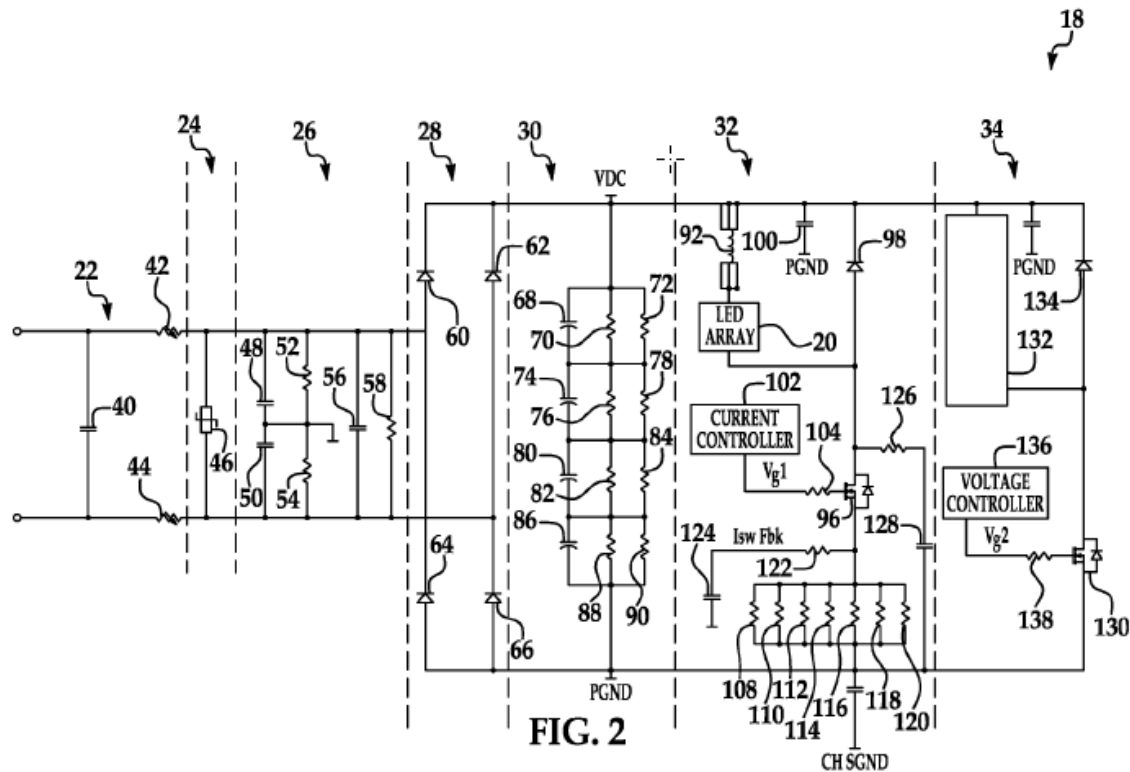
Petitioner contends that the subject matter of claims 1, 9, 15, 23, 31–33, and 38–43 would have been obvious over Tao and Langovsky. Pet. 82–

92. Patent Owner argues that Petitioner’s challenge fails because a person of ordinary skill in the art would not have been motivated to combine Tao and Langovsky as proposed by Petitioner. Prelim. Resp. 21–26.

As explained above (*supra* § II.E), we have determined that Petitioner has shown a reasonable likelihood that it will prevail in establishing that these claims would have been obvious over Tao alone. Nevertheless, we address the issue disputed by Patent Owner to provide guidance to the parties for the upcoming trial.

1. Langovsky (Ex. 1006)

Langovsky describes “an illumination device including LEDs for connection to an existing fluorescent lamp fixture including a conventional ballast.” Ex. 1006, Abstr., 1:47–50. In particular, Langovsky describes a power converter that is configured to receive the power output by the ballast and convert it into power suitable for the LED array. *Id.* at 2:39–41, 3:26–38, Fig. 1. Figure 2 (reproduced below) is a circuit schematic of Langovsky’s power converter. *Id.* at 2:42–43.

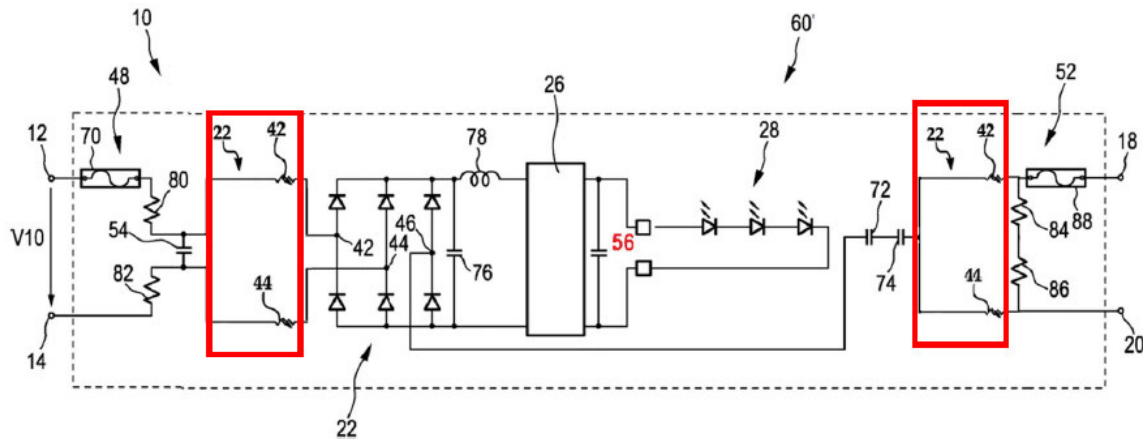


As shown above in Figure 2, Langovsky's power converter 18 includes inrush protection circuit 22, surge suppressor circuit 24, noise filter circuit 26, rectifier circuit 28, main filter circuit 30, current regulator circuit 32, and shunt voltage regulator circuit 34. *Id.* at 3:31–35, Figs. 1–2.

Inrush protection circuit 22 includes inrush current limiters 42 and 44. Ex. 1006, 3:51–62, Fig. 2. Langovsky explains that high inrush current can pass from the ballast's output to the components of power converter 18 when power is first applied. *Id.* at 3:13–19, 3:63–65. “High inrush currents may be moderated by placing inrush current limiters 42 and 44 in series with the current flow,” and Langovsky contemplates that these components can be negative temperature coefficient resistors. *Id.* at 3:65–4:6.

2. Proposed Combination of Tao and Langovsky

Petitioner contends that it would have been obvious to combine Tao and Langovsky by adding Langovsky's inrush protection circuit 22 to Tao's connection circuit 10. Pet. 84–87. Petitioner depicts its proposal in an illustration (reproduced below). *Id.* at 87.



As shown above, Petitioner's proposed combination adds Langovsky's inrush current limiters 42 and 44 to Tao's Figure 4 embodiment in two separate places: (1) between input circuitry 48 and rectifier unit 22 and (2) between input circuitry 52 and capacitors 72, 74.

Petitioner contends that an ordinary artisan would have been motivated to make this combination. Pet. 84–86; *see also id.* at 87 (citing Ex. 1005 ¶¶ 37–38, Fig. 4; Ex. 1006, 3:49–50, Fig. 2; Ex. 1002 ¶¶ 54–55). According to Petitioner, an ordinary artisan would have understood a “power supply module may ‘include energy storage components that draw large currents,’ ‘referred to as inrush currents,’ ‘when power is first applied to them,’” and Tao's capacitors 56, 72, 74, 76, 90, 96 “will cause an inrush current when power is first applied and the capacitors are charged.” *Id.* at 84 (quoting Ex. 1040, 4:54–57; citing Ex. 1002 ¶ 50; Ex. 1005 ¶ 55; Ex. 1032 ¶ 61; Ex. 1035 ¶ 14). Petitioner submits that an ordinary artisan would have

recognized that this inrush current may damage the ballast or components of Tao's light apparatus 60. *Id.* at 84–85 (citing Ex. 1002 ¶¶ 50–52; Ex. 1029 ¶ 33; Ex. 1030 ¶ 37, Fig. 6A; Ex. 1033, 5:33–35; Ex. 1032 ¶ 61). According to Petitioner, “Tao does not teach protection against current spikes due to inrush currents,” and based on the teachings of Langovsky and other references, an ordinary artisan would have been motivated to add an inrush protection circuit, such as Langovsky's inrush protection circuit 22, to Tao's connection circuit 10. *Id.* at 85–86 (citing Ex. 1002 ¶¶ 52–53; Ex. 1005 ¶¶ 37, 48; Ex. 1006, 1:50–58, 3:63–67, 4:23–25; Ex. 1030 ¶ 29; Ex. 1033, 5:26–30; Ex. 1034 ¶ 35; Ex. 1036, Abstr.).¹⁷

Patent Owner responds that an ordinary artisan would not have been motivated to combine Tao and Langovsky in this way. Prelim. Resp. 21–26. First, Patent Owner argues that Petitioner's modification renders Tao “unsatisfactory for its intended purpose which is to provide a LED light apparatus with a resistance that is similar to a filament resistance of a fluorescent lamp,” as Petitioner's modification changes the input resistance of Tao's apparatus and makes it dependent on temperature. *Id.* at 22–25 (emphasis omitted) (citing Ex. 1005 ¶¶ 52–53, Fig. 4; Ex. 1006, 3:29–31, 3:49–52, 3:67–4:6). Second, Patent Owner argues that “Tao's circuit already includes an element to protect against high current”—namely, fuses 70 and 88—and Tao's approach to the problem of high current is “mutually exclusive/different” than Langovsky's. *Id.* at 25–26 (citing Ex. 1005 ¶¶ 48, 51, Fig. 4). Patent Owner also argues that these references “teach away from each other.” *Id.* at 25.

¹⁷ In this section, the Petition includes the wrong pin cite for three of its exhibit quotes. We have corrected these apparent typographical errors.

We determine that Patent Owner fails to sufficiently explain or substantiate its assumption that Tao, as modified, would no longer provide a resistance similar to a fluorescent lamp. *See* Prelim. Resp. 22–25. Both Tao and Langovsky seek to create an LED lamp that can be used in a fluorescent housing, and it is unclear why an ordinary artisan’s combination of aspects of these two references would result in an LED lamp that no longer serves that purpose. Petitioner need not show Langovsky can be bodily incorporated into Tao, and an ordinary artisan presumably would have been capable of modifying the necessary portions of Tao’s existing circuit (such as, for example, the resistance values of resistors 80 and 82) to accommodate the addition of Langovsky’s resistors 42 and 44. *See MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1294 (Fed. Cir. 2015) (“[T]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference” (quoting *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)); *Lear Siegler, Inc. v. Aeroquip Corp.*, 733 F.2d 881, 889 (Fed. Cir. 1984) (The ordinary artisan is not “compelled to adopt every single aspect of [a reference’s] teaching without the exercise of independent judgment.”). To the extent Patent Owner seeks to maintain this argument at trial, we encourage Patent Owner to further explain it.

Next, we disagree with Patent Owner’s argument that the references teach away from each other. *See* Prelim. Resp. 25. Even if these references describe different solutions to a problem, this alone does not constitute a teaching away. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (“[M]ere disclosure of alternative designs does not teach away.”). Patent Owner identifies (and we perceive) nothing in either reference that criticizes, discredits, or otherwise discourages the claimed solution. *See* Prelim.

Resp. 25; *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) (“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.”).

We determine that Patent Owner’s final argument is best evaluated at trial with the benefit of a full record. Patent Owner argues that an ordinary artisan would not have been motivated to add Langovsky’s different and “mutually exclusive” approach to Tao because Tao already protects against high current with fuses 70 and 88. *See* Prelim. Resp. 25–26. This argument may have merit. Petitioner’s motivation to combine appears to be premised on an assumption that Tao’s connection circuit 10 does not protect against current spikes (*see* Pet. 85–86); however, as Patent Owner notes, Tao provides fuses 70 and 88 “in order to protect the connection circuit against high currents” (Ex. 1005 ¶ 48). As a result, we question whether Petitioner’s assumption is supported by the record. Moreover, we question whether Petitioner provides a sufficient rationale to combine Tao and Langovsky if we determine that this assumption is unsubstantiated. At this stage, we do not make any findings in this regard, and we expect the parties to address this ground at trial.

III. ANALYSIS OF DISCRETIONARY CONSIDERATIONS

The Board has discretion to decline institution of an *inter partes* review even if Petitioner demonstrates a reasonable likelihood of success. *See* 35 U.S.C. §§ 314(a), 325(d); *see also* 37 C.F.R. §§ 42.4(a) (the Board institutes trial on behalf of the Director), 42.108(a) (stating “the Board *may* authorize the review to proceed” (emphasis added)); *Harmonic Inc. v. Avid*

Tech, Inc., 815 F.3d 1356, 1367 (Fed. Cir. 2016) (explaining that “the PTO is permitted, but never compelled, to institute an IPR proceeding”).

Patent Owner contends that we should exercise our discretion to deny institution and, in support, provides three independent reasons. *See* Prelim. Resp. 26–38; Prelim. Sur-Reply. Petitioner disagrees that discretionary denial is appropriate. *See* Pet. 4–9, 92–93; Prelim. Reply.

Having considered the parties’ arguments and the evidence of record, we are not persuaded to discretionarily deny institution. We explain our reasoning below.

A. 35 U.S.C. § 314(a)—Fintiv

Patent Owner contends that we should exercise our discretion to deny institution given the status of the co-pending *Current* Litigation. Prelim. Resp. 28–34. The Board has held that the advanced state of a parallel district court action is a factor that may weigh in favor of denying a petition under § 314(a). *See NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential); PTAB Consolidated Trial Practice Guide 58 & n.2 (Nov. 2019) (“TPG”), *available at* <https://www.uspto.gov/TrialPracticeGuide>. We consider the following factors to assess “whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding”:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;

4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits.

Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 at 5–6 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”). In evaluating these factors, we “take[] a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.* at 6.

On June 21, 2022, the Director of the USPTO issued several clarifications concerning the application of the *Fintiv* factors. *See Interim Procedure For Discretionary Denials In AIA Post-Grant Proceedings With Parallel District Court Litigation*, issued June 21, 2022.¹⁸ The Director's memo states that,

[c]onsistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB.

Id. at 3 (citing *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A)); *see also id.* at 7–8.

Petitioner has offered to submit a *Sotera* stipulation in the *Current* Litigation. *See* Prelim. Reply 3; Ex. 1047. In addition, on July 17, 2023, the parties filed a Joint Motion to Stay All Deadlines and Notice of Settlement

¹⁸ Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

in the *Current* Litigation. *See Current* Litigation, Docket No. 96. The district court granted the motion, stayed the litigation for thirty days, and cancelled a Markman hearing scheduled for July 19, 2023. *Id.* The parties have not moved to terminate this pending *inter partes* review. In view of the circumstances, we decline to exercise discretion to deny institution.

B. 35 U.S.C. § 314(a)—General Plastic

Patent Owner contends that we should deny institution because this is the second petition challenging the '662 patent. Prelim. Resp. 34–38; *see also* Prelim. Sur-reply 1–2. Patent Owner notes that, in November 2019, MaxLite, Inc. (“MaxLite”) filed a petition challenging the '662 patent in the 181 IPR. Prelim. Resp. 36. The Board denied institution of the 181 IPR. Ex. 1008 (institution decision from 181 IPR). According to Patent Owner, CH Lighting Technology Co., Ltd. (“CH”) was a real party in interest in the 181 IPR, and Shaoxing Ruising Lighting Co., Ltd. (“Ruising”) had a financial interest in the co-pending district court litigation between Patent Owner and MaxLite. Prelim. Resp. 36 (citing Ex. 1007, 73; Ex. 2006; Ex. 2007). Patent Owner further contends that there is a “significant relationship” between Petitioner and “an RPI in the MaxLite IPR.” *Id.* at 36–37 (discussing CH and Ruising); Prelim Sur-reply 1 (limiting allegations to CH). From this, Patent Owner argues that the Board should apply the *General Plastic* factors, and that those factors favor discretionarily denying institution. Prelim. Resp. 34–38.

The *General Plastic* factors are non-exhaustive factors considered by the Board when serial petitions have been filed challenging the same patent. *General Plastic Indus. Co. v. Canon Kabushiki Kaisha*, IPR2016-01357,

Paper 19 at 15–16 (PTAB Sept. 6, 2017) (precedential) (“*General Plastic*”).

These factors are:

1. whether the same petitioner previously filed a petition directed to the same claims of the same patent;
2. whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known of it;
3. whether at the time of filing of the second petition the petitioner already received the patent owner’s preliminary response to the first petition or received the Board’s decision on whether to institute review in the first petition;
4. the length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition;
5. whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent;
6. the finite resources of the Board; and
7. the requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review.

Id. at 16. In addition, “when different petitioners challenge the same patent, we consider any relationship between those petitioners when weighing the *General Plastic* factors.” *Valve Corp. v. Elec. Scripting Prods., Inc.*, IPR2019-00062, Paper 11 at 9 (PTAB Apr. 2, 2019) (precedential). In particular, the Board has determined that, even though a prior petition was filed by a different entity, the first *General Plastic* factor weighs against institution when “there is a significant relationship between [the instant petitioner] and [the prior petitioner] with respect to Patent Owner’s assertion of the [challenged] patent.” *Id.* at 10.

Having reviewed the parties' arguments and the evidence in the record, we determine that the first *General Plastic* factor does not favor discretionarily denying institution. The petition in the 181 IPR was filed by MaxLite, and this is Petitioner's first petition challenging the '662 patent. Petitioner represents that there is no significant relationship between Petitioner and MaxLite, as these entities are direct competitors that were separately sued by Patent Owner. Pet. 5; Prelim. Reply 1. On this record, we agree.

Patent Owner does not argue that Petitioner has any relationship with the prior petitioner (*see* Prelim. Sur-reply 1), but instead argues that there is "a significant relationship" between Petitioner and a *real party in interest* from the 181 IPR. Prelim. Resp. 36–37 (identifying CH and Ruising); Prelim. Sur-reply 1 (limiting argument to CH).¹⁹ This argument is unavailing at least because Patent Owner fails to establish its predicate.

First, Patent Owner does not establish that either CH or Ruising were real parties in interest in the 181 IPR. Patent Owner points to only three facts in support of its contrary position: (1) MaxLite identified CH as "*potentially* a real part-in-interest" in the 181 IPR petition (Ex. 1007, 73 (emphasis added)), (2) MaxLite stated that CH and Ruising "may have a

¹⁹ In its Preliminary Sur-reply, Patent Owner also argues that there is "a significant relationship with MaxLite and CH" because Petitioner "us[ed] their failed petition as a roadmap for Petitioner's own petition." Prelim. Sur-reply 2 (citing *Ericsson Inc. v. Uniloc 2017, LLC*, IPR2019-01550, Paper 8 at 12 (Mar. 17, 2020)). This is an untimely argument because it was not raised in Patent Owner's Preliminary Response and because it is not fairly responsive to Petitioner's Preliminary Reply. *See* 37 C.F.R. § 42.23(b) ("A sur-reply may only respond to arguments raised in the corresponding reply . . ."). However, even if this argument had been presented timely, we would not have found it to be persuasive.

pecuniary interest in the outcome of [the *MaxLite* Litigation]” (Ex. 2006 (*cited in* Prelim. Resp. 36)), and (3) MaxLite, CH, and Ruising hired the same outside counsel for matters involving similar technology (*see* Prelim. Resp. 37). However, these bare facts do not support Patent Owner’s conclusion, and Patent Owner fails to explain why these facts show that CH or Ruising was a real party in interest in the 181 IPR.

Second, Patent Owner does not establish that there is “a significant relationship” between Petitioner and either CH or Ruising that relates in any way to Patent Owner’s assertion of the ’662 patent. Patent Owner points to

[REDACTED]
[REDACTED].²⁰ Patent Owner argues that [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] (Prelim. Resp. 37 (citing [REDACTED])), but Patent Owner fails to identify any connection between Petitioner’s [REDACTED] relationship with [REDACTED] and Patent Owner’s assertion of the ’662 patent.

As for the remaining factors, we determine that these factors also do not favor discretionarily denying institution. We agree with Patent Owner that Petitioner had the benefit of the Board’s decision denying institution in the 181 IPR, and that the Petition does not suffer from the deficiencies identified by the Board in the 181 IPR. *See* Prelim. Resp. 37–38. In particular, in the 181 IPR, MaxLite argued that Zhang anticipated claims of

²⁰ [REDACTED]

the '662 patent (Ex. 1008, 6), but as the Board explained, MaxLite relied upon different embodiments of Zhang without sufficiently explaining that these were “compatible embodiments such that they teach the limitations of claim 1 arranged in the same way as the '662 patent without the need to pick and choose disparate disclosures” (*id.* at 11–12). Here, Petitioner does not follow MaxLite’s lead. Petitioner argues obviousness, not anticipation, of the challenged claims. Specifically, Petitioner argues that Zhang renders obvious the challenged claims, and Petitioner explains why a person of ordinary skill in the art would have been motivated to combine the relevant disclosures of Zhang. *See supra* § II.D.2. Moreover, we agree with Petitioner that it did not unfairly delay its Petition to gain a strategic advantage by learning from the 181 IPR. Indeed, the record demonstrates the '662 patent was asserted against Petitioner over two years after institution was denied in the 181 IPR. *See* Prelim. Reply 2. As a result, we are persuaded that there is an adequate explanation for the time elapsed between the filings of the 181 IPR petition and the instant Petition. *Cf. General Plastic*, Paper 19 at 18 (explaining that factors 2, 4, and 5 “allow[] us to assess and weigh whether a petitioner should have or could have raised the new challenges earlier”).

For these reasons, we decline to exercise our discretion to deny the Petition.

C. 35 U.S.C. § 325(d)—Advanced Bionics

Patent Owner also contends that we should deny institution because Zhang was asserted in the 181 IPR and Petitioner has not shown that the Board materially erred in its consideration of this reference. Prelim.

Resp. 26–28; *see* 35 U.S.C. § 325(d). Petitioner disagrees that discretionary denial is appropriate. Pet. 7–9.

The Board uses a two-part framework in determining whether to exercise its discretion under § 325(d): (1) determining whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of the first part of the framework is satisfied, determining whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential). In applying this framework, we consider several non-exclusive factors, including:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;
- (e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and
- (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to Section III.C.5,

first paragraph). Factors (a), (b), and (d) relate to the first part of the *Advanced Bionics* framework (i.e., whether the art or arguments presented in the Petition are the same or substantially the same as those previously presented to the Office), and factors (c), (e), and (f) relate to the second part (i.e., “whether the petitioner has demonstrated a material error by the Office” in its prior consideration of the prior art or arguments). *Advanced Bionics*, Paper 6 at 10. “[T]his framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.” *Id.* at 9.

We first consider whether “whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office.” *Advanced Bionics*, Paper 6 at 8. Patent Owner argues that Zhang is the same reference previously presented to the Board in the 181 IPR (Prelim. Resp. 27), and on this point, there is no dispute (*see* Pet. 8). Accordingly, we agree that the first part of the framework in *Advanced Bionics* is satisfied as to Zhang.

As for the second part of the *Advanced Bionics* framework, Petitioner notes that the argument presented in the Petition regarding Zhang is materially different than that considered in the 181 IPR. Pet. 8–9. Specifically, in the 181 IPR, the petitioner argued that Zhang anticipates claims of the ’662 patent, where the Petition instead contends that it would have been obvious to combine Zhang’s embodiments to yield the claimed subject matter. *Id.* Patent Owner agrees that the 181 IPR petition “presented Zhang as an anticipatory reference and never discussed any motivation for combining features of different embodiments.” Prelim. Resp. 27. But Patent Owner argues, based on this, Petitioner cannot show that the Board

committed any material error in its prior consideration of Zhang, explaining that the Board does not err by failing to consider an argument that was not presented in a petition. *Id.* at 27–28.

On the particular facts presented here, we are persuaded by Petitioner’s arguments. It is undisputed that the arguments presented in this Petition are materially different than those presented in the 181 IPR petition (*see* Pet. 8–9; Prelim. Resp. 27–28), and that the Board was limited to the arguments presented in that prior petition. *See, e.g., Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1356 (Fed. Cir. 2018) (“It would . . . not be proper for the Board to deviate from the grounds in the petition and raise its own obviousness theory . . .”). As a result, the contentions presented in the instant Petition regarding Zhang were not previously considered by the Office.

We have considered the extent to which Zhang was previously evaluated in view of Petitioner’s additional arguments and evidence, pursuant to *Becton, Dickinson* factors (c) and (f), and we are persuaded that considering the merits of Petitioner’s arguments regarding Zhang is appropriate under the circumstances presented here. The framework provided by *Advanced Bionics* and *Becton, Dickinson* “reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.” *Advanced Bionics*, Paper 6 at 9. In this unique situation, there is no applicable evaluation by the Office to which we could defer, as the Board did not have the opportunity to evaluate obviousness over Zhang in the 181 IPR. As a result, we do not find that Petitioner was required to explain why the Board erred in its institution decision in the 181 IPR.

Moreover, the Petition asserts two grounds that either rely on Tao alone, or with Langovsky, and it does not appear that either of these references are the same or substantially the same as art previously presented to the Office. Patent Owner mentions neither of these references in its analysis (*see* Prelim. Resp. 26–28), and so we do not understand Patent Owner to argue that either of these references are the same as or cumulative of art previously presented. Further, we note that the grounds for which Petitioner relies on Tao alone, or with Langovsky, address thirteen of the twenty-eight claims at issue in the Petition (*see* Pet. 4), and as explained above, we are persuaded that Petitioner has shown a reasonable likelihood of prevailing as to these claims. Accordingly, we determine that the first part of the *Advanced Bionics* framework is not satisfied as to Tao or Langovsky.

For these reasons, we decline to exercise our discretion to deny institution.

IV. CONCLUSION

As explained above, we determine that Petitioner has established a reasonable likelihood of prevailing in its challenge to at least one claim of the '662 patent. In addition, we are not persuaded to exercise our discretion to deny institution. Thus, we institute an *inter partes* review of all challenged claims on all asserted grounds.

The factual findings and conclusions of law in this Decision are preliminary and based on the current record. They are made for the sole purpose of determining whether Petitioner meets the threshold for initiating review. Our final decision as to the patentability of challenged claims will be based on the full record developed during trial, including any response

timely filed by Patent Owner. Any arguments not raised by Patent Owner in such a response may be deemed waived.

V. ORDER

It is:

ORDERED that an *inter partes* review is instituted on all of the challenged claims, i.e., claims 1, 2, 5–7, 9, 10, 15–18, 21, 23, 24, 29, and 31–43 of the '662 patent, on all corresponding grounds of unpatentability as specified in the Petition and identified in the Table in Section I.B. of this Decision; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '662 patent shall commence on the entry date of this Decision, and notice is hereby given of the institution of a trial.

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