

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WANGS ALLIANCE CORPORATION d/b/a WAC LIGHTING CO.
Petitioner

v.

PHILIPS LIGHTING NORTH AMERICA CORPORATION
Patent Owner

Case No. IPR2015-01293
Patent No. 7,352,138

NOTICE OF APPEAL

via E2E
Patent Trial and Appeal Board

via EXPRESS MAIL[®]
Director of the United States Patent and Trademark Office
c/o Office of the General Counsel, 10B20
Madison Building East
600 Dulany Street
Alexandria, VA 22314

via CM/ECF
United States Court of Appeals for the Federal Circuit

Pursuant to 35 U.S.C. §§ 141, 142, and 319, and 37 C.F.R. §§ 90.2 and 90.3, Petitioner Wangs Alliance Corporation d/b/a WAC Lighting Co. (“Appellants”) hereby provides notice that it appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision entered November 23, 2016 (Paper 46) and from all underlying orders, decisions, rulings, and opinions regarding U.S. Patent No. 7,352,138 (“the ’138 patent”) in Inter Partes Review No. IPR2015-01293.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), the issues on appeal include, but are not limited to: the Board’s claim constructions; the Board’s determination that Petitioner has not demonstrated by a preponderance of the evidence that (1) claims 1, 2, 9, 10, 11, 20, 31, 33, and 34 of the ’138 patent are unpatentable under 35 U.S.C. § 102 as anticipated by U.S. Patent No. 5,661,645 (“Hochstein”), (2) claims 1, 2, 9, 10, 11, 20, 31, 33, and 34 are unpatentable as obvious under 35 U.S.C. § 103(a) over U.S. Patent No. 6,225,759 (“Bogdan”) and Hochstein, and (3) claims 1, 2, 9, 10, 11, 20, 21, 31, 33, and 34 are unpatentable as obvious under 35 U.S.C. § 103(a) over Hochstein and U.S. Patent No. 5,818,705 (“Faulk”); and any finding or determination supporting or relating to these issues, as well as all other issues decided adversely to Appellants, in any order, decision, ruling, or opinion by the Patent Trial and Appeal Board in this Inter Partes Review. Pursuant to 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a), this Notice is being filed with the Director of

the United States Patent and Trademark Office, and a copy of this Notice is being concurrently filed with the Patent Trial and Appeal Board. In addition, a copy of this Notice along with the required docketing fees are being filed with the Clerk's Office for the United States Court of Appeals for the Federal Circuit via CM/ECF.

Date: January 25, 2017

Respectfully submitted,

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**CERTIFICATE OF SERVICE ON PATENT
OWNER UNDER 37 C.F.R. §§ 42.6(e)(4) and 42.205(b)**

Pursuant to 37 C.F.R. §§ 42.6(e)(4) and 42.205(b), the undersigned certifies that on January 25, 2017, a complete and entire copy of NOTICE OF APPEAL was filed with the Patent Trial and Appeal Board through the Board's electronic system and that a true and correct copy of the foregoing NOTICE OF APPEAL was delivered via EXPRESS MAIL[®] to the Director of the United States Patent Trademark Office, at the following address:

Director of the United States and Trademark Office
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Madison Building East
600 Dulany Street
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I also hereby certify that on this 25th day of January, 2017, a true and correct copy of the foregoing "**NOTICE OF APPEAL,**" and the filing fee, were filed with the Clerk's Office of the United States Court of Appeals for the Federal Circuit, via CM/ECF.

I also hereby certify that a true and correct copy of the foregoing “**NOTICE OF APPEAL**” was served by electronic mail on this 25th day of January, 2017 on counsel of record for the Patent Owner as follows:

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WANGS ALLIANCE CORPORATION d/b/a WAC LIGHTING CO.,
Petitioner,

v.

PHILIPS LIGHTING NORTH AMERICA CORPORATION,
Patent Owner.

Case IPR2015-01293
Patent 7,352,138 B2

Before GLENN J. PERRY, TREVOR M. JEFFERSON, and
MIRIAM L. QUINN, *Administrative Patent Judges*.

JEFFERSON, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
37 C.F.R. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

On November 25, 2015, we instituted *inter partes* review of claims 1, 2, 9, 10, 11, 20, 21, 31, 33, and 34 of U.S. Patent No. 7,352,138 B2 (Ex. 1001, “the ’138 patent”). Paper 8 (“Dec.”). Patent Owner, Philips Lighting North America Corporation, filed a Request for Rehearing (Paper 10, “Req. Reh’g”), and a Patent Owner Response (Paper 20, “PO Resp.”) in response to Petition (Paper 2, “Pet.”) filed by Wangs Alliance Corporation d/b/a WAC Lighting Co. (“Petitioner”). Petitioner filed a Reply. Paper 26 (“Pet. Reply”). Petitioner filed a Motion to Exclude. Paper 34 (“Pet. Mot. Exclude”). Patent Owner filed an opposition to Petitioner’s Motion to Exclude (Paper 37, “PO Opp. Exclude”) and Petitioner filed a reply (Paper 40, “Pet. Reply Exclude”). A transcript of an oral hearing held on September 20, 2016 (Paper 44, “Tr.”) has been entered into the record.

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. §318(a). We base our decision on the preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

Having reviewed the full record, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that the challenged claims are unpatentable for the reasons set forth below.

A. *Related Proceedings*

Petitioner reports the following pending litigation matter related to the ’138 Patent: *Koninklijke Philips N.V. et al. v. Wangs Alliance Corporation*, Case No. 14-cv-12298-DJC (D. Mass.). Pet. 1.

Petitioner notes that Patent Owner is suing the Petitioner and/or other parties under one or more of U.S. Patent Nos. 6,013,988; 6,147,458;

6,586,890 B2; 6,250,774 B1; 6,561,690 B2; 6,788,011 B2; 7,038,399 B2; 6,094,014; and 7,262,559 B2, all of which generally relate to light emitting diodes (“LEDs”). *Id.*

B. The '138 Patent

The '138 patent discloses a method and apparatus for providing power to LED-based light sources, not normally dimmable, from power circuits that provide other than standard line voltage, such as a dimmer circuit intended to dim an incandescent light. Power sources, such as dimmers for conventional lighting, provide other than standard line voltages. Ex. 1001, at [57]. The claimed invention allows LED-based sources to be substituted for conventional light sources, such as incandescent lights, in environments using A.C. dimming devices or controls. *Id.*

Figure 1, below, shows an example operation of conventional A.C. dimming devices. *Id.* at 8:38–39.

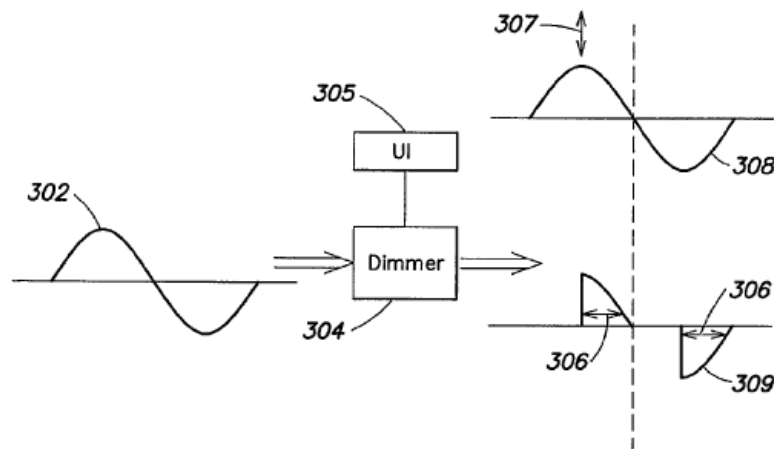


FIG. 1
(PRIOR ART)

IPR2015-01293

Patent 7,352,138 B2

Figure 1 shows an example of A.C. dimmer known in the prior art. *Id.* at 8:38–39. Figure 1 “shows . . . voltage waveform 302 (e.g., representing a standard line voltage) that may provide power to one or more conventional light sources.” Figure 1 also shows A.C. dimmer 304 responsive to user interface 305 alters the A.C. signals, such that dimmer 304 is configured to output waveform 308, in which the amplitude 307 of the dimmer output signal may be adjusted via the user interface 305.” *Id.* at 2:26– 37. The Specification also states that “dimmer 304 is configured to output the waveform 309, in which the duty cycle 306 of the waveform 309 may be adjusted via the user interface 305.” *Id.* Thus, the output of a dimmer may be power related while not being exactly the same as standard AC line voltage.

Figure 3, below, shows one embodiment of the invention using an LED-based light source. *Id.* at 8:48–50

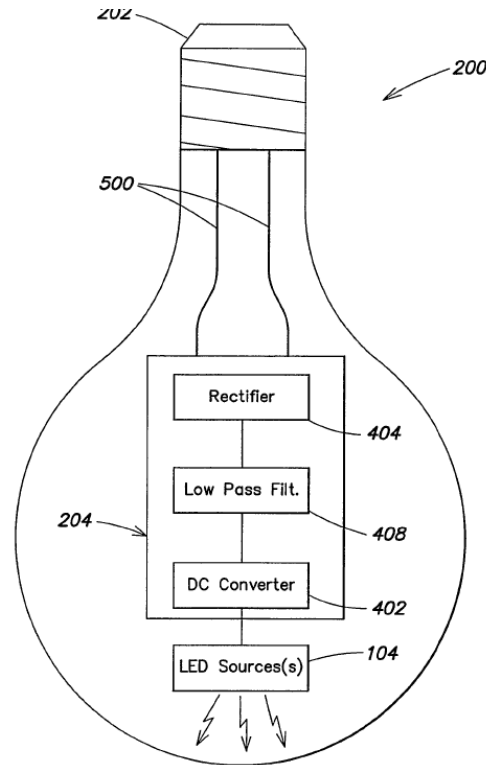


FIG. 3

Figure 3 illustrates an LED-based lighting unit 200 “depicted generally to resemble a conventional incandescent light bulb having a screw-type base connector 202 to engage mechanically and electrically with a conventional light socket.” *Id.* at 12:35–40. Lighting unit 200 includes LED-based light source 104 and controller 204 configured to receive A.C. signal 500 via connector 202 and provide operating power to LED-based light source 104. Controller 204 includes components to ensure proper operation of the lighting unit for A.C. signals 500 that are provided by a dimmer circuit, such as those that output duty cycle-controlled (i.e., angle modulated) A.C. signals. *Id.* at 12:53–64. Controller 204 includes rectifier 404, low pass filter 408, and DC converter 402. *Id.* at 12:64–67.

C. Illustrative Claims

Claims 1, 2, 9, 10, and 33 are illustrative and reproduced below (Ex. 1001, 24:62–28:26):

1. An illumination apparatus, comprising:
at least one LED; and
at least one controller coupled to the at least one LED and configured to receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage, the at least one controller further configured to provide power to the at least one LED based on the power-related signal.
2. The apparatus of claim 1, wherein the A.C. power source is an (A.C.) dimmer circuit.
9. The apparatus of claim 2, wherein the A.C. dimmer circuit is controlled by a user interface to vary the power-related signal, and wherein the at least one controller is configured to variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface.
10. The apparatus of claim 9, wherein the operation of the user interface varies a duty cycle of the power-related signal, and wherein the at least one controller is configured to variably control the at least one parameter of the light based at least on the variable duty cycle of the power-related signal.
33. An illumination method, comprising an act of:
A) providing power to at least one LED based on a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage.

D. Grounds of Unpatentability Instituted

We instituted *inter partes* review on following grounds of unpatentability (Dec. 19–20):

Reference[s]	Basis	Claims Challenged
Hochstein ¹	35 U.S.C. § 102	1, 2, 9, 10, 11, 20, 31, 33, and 34
Bogdan ² and Hochstein	35 U.S.C. § 103	1, 2, 9, 10, 11, 20, 31, 33, and 34
Hochstein and Faulk ³	35 U.S.C. § 103	1, 2, 9, 10, 11, 20, 21, 31, 33, and 34

II. ANALYSIS

A. Claim Interpretation

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable interpretation in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard as the claim interpretation standard to be applied in *inter partes* reviews). Under this standard, we interpret claim terms using “the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in

¹ U.S. Patent No. 5,661,645 to Hochstein issued Aug. 26, 19097 (Ex. 1003, “Hochstein”).

² U.S. Patent No. 6,225,759 B1 to Bogdan, et al., issued May 1, 2001 (Ex. 1004, “Chang”).

³ U.S. Patent No. 5,818,705 to Faulk, issued Oct. 6, 1998 (Ex. 1005, “Faulk”).

the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). We presume that claim terms have their ordinary and customary meaning. *See Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016) ("Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history."); *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) ("The ordinary and customary meaning is the meaning that the term would have to a person of ordinary skill in the art in question." (internal quotation marks omitted)). Any special definition for a claim term must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

1. *"alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage" and "A.C. dimmer circuit"*

The claim phrase "alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage" appears in independent claims 1 and 33. We determined that the claim phrase "alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage" did not require further construction and that "other than a standard A.C. line voltage" under the broadest reasonable interpretation excludes only standard A.C. line voltages, and is not limited to A.C. signals. Dec. 9–10.

Patent Owner argues that the broadest reasonable interpretation requires that there be a plurality of "signals" as the term is plural, requiring

“two or more signals.” PO Resp. 7. Patent Owner further argues that “standard A.C.” means a sinusoidal signal with a standard frequency and amplitude. *Id.* (citing Ex. 2004 ¶ 26). Patent Owner argues that the plain and ordinary meaning of signals is two or more and that the specification discloses varying signals other than a standard A.C. line voltage. *Id.* (citing Ex. 1001, Fig. 1, 2:24–37, 13:16–23 (describing types of A.C. dimming signals); Ex. 2004 ¶ 27). Patent Owner also contends that Petitioner conceded that standard A.C. line voltage is a non-varying sine wave by reference to the example waveform 302 in Figure 1 of the ’138 patent. PO Resp. 9 (citing Pet. 6; Ex. 1001, Fig. 1, 2:26–29). Referring the examples in the specification, Patent Owner contends that the two examples provided are both standard sinusoidal waves with standard amplitudes. *Id.* (citing Ex. 1001, 2:29–37; Fig. 1).

Petitioner did not argue for an express construction of this phrase in the Petition, but in reply argues that Patent Owner’s construction is inconsistent with the Specification and the use of the term “signals” from the context of the claims. Pet. Reply 3. Petitioner asserts that the plain language of the claims, in combination with the Board’s clarification that this term is not limited to A.C. signals and only excludes “standard A.C. line voltage,” is sufficient to understand their scope. *Id.* Furthermore, claim 1, Petitioner avers, only refers to a single “power-related signal” and not a plurality of signals. *Id.* at 4. The claim phrase “signals other than a standard A.C. line voltage” defines the source of signals the claimed circuit is configured to receive as the “power-related signal.” *Id.* (citing Ex. 1019 ¶¶ 3–4). Thus, Petitioner argues the “power-related signal” is characterized

in the claim as belonging to a group, namely “signals other than a standard A.C. line voltage.” *Id.*

Upon review of the record, we are persuaded by Patent Owner’s contentions related to plural “signals other than a standard A.C. line voltage.” To find otherwise, fails to give the term due patentable weight. The apparatus of claim 1 and method of claim 33 are directed to the power-related signal, singular, provided to the controller of claim 1 and the LED of claim 33. This power-related signal is from the “(A.C.) power source that provides signals other than a standard A.C. line voltage. Petitioner’s interpretation would broaden the claims to cover an A.C. power source that is only capable of producing a single non-standard A.C. signal. Although the plain reading of the claims invokes the negative limitation to define a class of signals from which power is drawn, the plain reading also indicates that there must be at least two such signals from which the power-related signal is drawn. Under Petitioner’s interpretation, however, the claims would encompass A.C. power sources that provide a *single* non-standard A.C. signal, contrary to the plain language of the claim. Accordingly, we determine that the claims require the A.C. power source to provide two or more signals.

We agree that Petitioner has stated that signal 302 represents a standard A.C. line voltage. PO Resp. 9; Pet. 6; Ex. 1001, Fig. 1, 2:26–29 (“FIG. 1 shows an example of an A.C. voltage waveform 302 (e.g., representing a standard line voltage)”). We also agree that the ’138 specification gives two examples of a standard A.C. in the United States and elsewhere, “120 Volts RMS at 60 Hz” and “220 Volts RMS at 50 Hz”. Ex. 1001, 1:58–61; Ex. 2004 ¶ 26. Based on the full record, we agree that the

broadest reasonable interpretation of “standard A.C.” encompasses A.C. waves at a standard frequency and amplitude but is not limited to sinusoidal waves. Patent Owner cites the figures and description in the specification but fails to provide sufficient evidence that a person of ordinary skill in the art would limit standard A.C. line voltage solely to the sinusoidal examples in the specification under the broadest reasonable interpretation.

We do agree, in part, with Patent Owner’s argument. We find that the plain meaning of the claim phrase “signals other than a standard A.C. line voltage” recited in claim 1 requires a *non-standard* A.C. signal. Although our prior Decision stated that the signal was not limited to A.C. (Dec. 9–10), we clarify on the full record that the signal provided excludes “standard A.C. line voltage,” but instead encompasses all manner of “*non-standard* A.C. line voltage.” Thus, the claim’s recitation excluding a “*standard* A.C. line voltage” does not eliminate the requirement that the power source provide an A.C. signal.

Our finding is consistent with the specification which provides examples of “standard A.C. line voltage” signals excluded by claims 1 and 33. Ex. 1001, 1:58–61. It also is supported by the purpose of the invention which states that:

The present invention is directed generally to methods and apparatus for providing power to devices on A.C. power circuits. More particularly, methods and apparatus according to various embodiments of the present invention facilitate the use of LED-based light sources on A.C. power circuits that provide either a standard line voltage or signals other than standard line voltages.

Ex. 1001, 2:58–64; Ex. 2004 ¶ 38. Although the purpose of the invention is not controlling, we determine that a person of ordinary skill in the art would

understand that “signals other than a standard A.C. line voltage” in the recited claims refers to “non-standard A.C. voltage” signals to the exclusion of “standard A.C. line voltage” in light of the ’138 specification. The point of the invention is to provide a way for an LED-based light to respond to the non-standard AC voltages that come from a dimmer circuit intended for standard lighting, which deforms in some manner the standard AC voltage.

Although our Decision on Institution stated that the claim phrase “alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage” did not require further construction and is not limited to A.C. signals (Dec. 9–10), based on the fully developed record we determine that an “alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage” requires a “non-standard A.C. signal.”

Our determination that the A.C. power source provide a non-standard A.C. signal is reinforced by the dependent claims 2, 9, and 34, which places an additional limitation on the power source, specifically that the source be an “(A.C.) dimmer circuit.” Petitioner did not offer a construction of this term in the Petition. Patent Owner contends that “(A.C.) dimmer circuit” be construed to mean “a circuit that provides an alternating current (A.C.) dimming signal.” PO Resp. 10. Patent Owner argues that the plain and ordinary meaning of “A.C. dimmer circuit” requires that the source output an A.C. signal. *Id.* at 11–12. Patent Owner also argues that the ’138 specification consistently refers to the A.C. dimming signal from the dimmer circuit as an A.C. signal. *Id.* at 12–13 (citing Ex. 1001 at 1:61–67 (“A conventional A.C. dimmer typically receives the A.C. line voltage as an input, and provides an A.C. signal output having one or more variable

parameters that have the effect of adjusting the average voltage of the output signal (and hence the capability of the A.C. output signal to deliver power’), 10:51–52 (“A.C. signal provided by a dimmer circuit”), 11:35–37 (“configured to monitor the A.C. signal provided by the dimmer circuit”), 12:30–32 (“circuitry configured to appropriately condition A.C. signals provided by a dimmer circuit”), 12:59–63 (“A.C. signals 500 that are provided by a dimmer circuit and, more specifically, by a dimmer circuit that outputs duty cycle controlled (i.e., angle modulated) A.C. signals”), 13:2–3 (dimmer “provides the A.C. signal 500”), 13:14–15 (“the dimmer circuit outputs an A.C. signal”), 14:8–9 (“a dimmer that controls the A.C. signal provided by the dimmer circuit”), 17:4–5 (“an A.C. signal provided by a dimmer circuit’’)).

With respect to the A.C. dimmer circuit, Petitioner responds that Patent Owner improperly limits the claims to examples in the specification, which are merely exemplary, and do not define the term. Petitioner contends that the specification broadly states that A.C. dimmer circuits are “configured to control power delivered to one or more light sources.” Ex. 1001, 2:5–24. Petitioner argues that Patent Owner reads the term “A.C. signals” into the claim phrase “*signals* other than a standard A.C. line voltage” and improperly reads limitations from the specification. Petitioner further argues that “[u]nder the broadest reasonable interpretation of the claim term, an A.C. input is enough to make a dimmer circuit an ‘A.C. dimmer circuit.’” Pet. 10. Accordingly, Petitioner argues that the proper construction of “A.C. dimmer circuit” is a “circuit for dimming a light source that receives an A.C. signal and controls power delivered to the light source.” Pet. Reply 5 (citing Ex. 1019 ¶ 6).

On the issue of whether the claims require A.C. output from the “A.C.” dimmer circuit, we find Patent Owner’s arguments persuasive. Reading the claims in light of the specification, an ordinarily skilled artisan would understand “A.C. dimmer circuit” to mean “a circuit that provides an A.C. dimming signal.” Based on the specification and intrinsic evidence, Petitioner has not shown that the A.C. dimmer circuit construction broadly means only receipt of an A.C. signal and the provision of power to a light source. Pet. Reply 5. Although Patent Owner’s declarant, Dr. Zane, admits that “A.C. dimmer circuit” is not a term of art (Ex. 1017, 99:24–100:11), we do not agree that A.C. dimmer circuit would be understood by a person of ordinary skill in the art to only describe the type of signal received by the circuitry. We also are not persuaded by Petitioner’s declarant, Mr. Tingler, who testified that an “A.C. dimmer circuit” is a dimmer circuit that is supplied with an A.C. signal. Ex. 1019, ¶¶ 5–6. The testimony does not show that a skilled artisan would understand the recited dimmer circuit, given the ’138 specification that addresses A.C. sources and signals, need only receive an A.C. input and supply *any* power to a light source. Such a construction is overly broad and would be removed from the context of the specification. *See In re NTP, Inc.*, 654 F.3d 1279, 1288 (Fed. Cir. 2011).

In sum, although we declined to construe A.C. dimmer circuit in our Decision on Institution (Dec. 10), on the full record, we determine that the term “A.C. dimmer circuit” means “a circuit that provides an alternating current (A.C.) dimming signal.” Similarly, we clarify our claim construction and determine that the “alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage” requires an A.C. signal, where the signal is not a standard A.C. line voltage.

2. “*duty cycle*” and “*varies a duty cycle*”

Claim 10 recites the term “duty cycle” in the limitation stating that “the operation of the user interface varies a duty cycle of the power-related signal.” Claim 10 depends from claims 2 and 9, which recite “an (A.C.) dimmer circuit” and that “the A.C. dimmer circuit is controlled by a user interface to vary the power-related signal.” Ex. 1001, 25:4–5, 25:40–51. We determined previously that “duty cycle” is construed as “the ratio of pulse duration to pulse period.” Dec. 7–8.

Patent Owner argues that the Board properly construed the term “duty cycle,” but asserts that the term was misapplied with respect to the cited prior art. PO Resp. 16. Patent Owner also contends that the “’138 patent explains that the claimed ‘variable duty cycle’ means varying the ratio of pulse duration to pulse period, where ‘pulse’ is properly understood as a half-cycle of a sinusoidal waveform.” PO Resp. 16 (citing Ex. 2004 ¶ 35). Patent Owner contends that the proper interpretation of varying or adjusting the duty cycle is, therefore, “modulating the phase angle.” PO Resp. 17 (citing Ex. 1001, 2: 2:17–18 (“adjust the duty cycle (i.e., modulate the phase angle)”), 9:45–47 (“dimmer circuit that provides a duty cycle-controlled (i.e., angle modulated) A.C. signal”), 12:61–63 (“dimmer circuit that outputs duty cycle-controlled (i.e., angle modulated)”). Patent Owner also contends that the use of the “i.e.” to introduce angle modulation with respect to “duty cycle” indicates repeated and consistent usage of the term that defines varying or adjusting the duty cycle. *Id.* at 17 (citing *In re Abbott*, 696 F.3d at 1150; *SkinMedica, Inc. v. Histogen Inc.*, 727 F.3d 1187, 1201 (Fed. Cir. 2013)). Patent Owner also argues that duty cycle controlled A.C. signal by angle modulation comports with the primary purpose of the ’138 patent

invention which is to substitute LED-based sources for incandescent sources controlled by the commonly used A.C. dimming circuits. PO Resp. 17–18. Furthermore, each of the A.C. dimmer circuits described by the '138 patent specification also describe a varied duty cycle by modulating the phase angle. *Id.* at 18.

On the other hand, Petitioner argues, and we agree, that Patent Owner's argument narrows the pulse" from a particular signal, "a half-cycle of a sinusoidal waveform," and is not commensurate with the scope of the claims. Pet. Reply 6. We also agree that the claims themselves are not restricted to a type of periodic signal. Patent Owner's contention also attempts to limit the broadly recited "varying a duty cycle" to the "only two types of A.C. dimmer circuits that the "'138 patent describes as varying the duty cycle, both of which modulate a phase angle." PO Resp. 18. We are persuaded by Petitioner's evidence that there are many types of periodic signals that can have variable duty cycles. Pet. Reply 6 (citing Ex. 1019 ¶¶ 7–9). Accordingly, we are not persuaded by Patent Owner's argument that "pulse" as used in the construction of "duty cycle" is limited to a half-cycle of a sinusoidal waveform. We also determine that "varies the duty cycle" does not require additional construction, as the plain meaning of the term applies given the construction of "duty cycle" as "the ratio of pulse duration to pulse period."

3. *"illumination apparatus" and "illumination method"*

Our Decision determined that the preamble terms "illumination apparatus" and "illumination method" as recited in claims 1 and 33 are not limiting on the apparatus and method claimed. Dec. 8. Although the Patent Owner indicates that the term "illumination method" requires construction

(PO Resp. 6–7), Patent Owner provides no argument or proposed construction for the claim term. Thus, the parties do not dispute this construction. Accordingly, for the reasons provided in the Decision on Institution the terms require no further construction.

B. Level of Skill in the Art

In determining the level of ordinary skill in the art at the time of the invention, we note that various factors may be considered, including “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)).

Petitioner’s declarant, Mr. Neal Tingler, testified that:

a person of ordinary skill in the art would have at least (i) a bachelor degree in electrical engineering and/or physics with at least 3 years of industrial experience designing power supply circuitry, or (ii) the equivalent relevant industrial experience, including circuit design experience, for a person lacking a formal degree, which would be about 3-5 years in the industry, or (iii) a person of substantially higher graduate education in optoelectronics, such as a Masters or a Doctoral degree. In addition, a POSITA would understand legacy lighting circuits and circuit requirements such as for incandescent lighting control and the corresponding lighting circuitry and requirements for powering LED arrays for the application areas generally covered by the patents at issue. Finally, a POSITA would be familiar with switch mode power supply concepts and their common embodiments at the time.

Ex. 1006 ¶ 10. Patent Owner’s declarant, Dr. Reagan Zane, testifies “that the level of a person of ordinary skill in the art defined by Mr. Tingler is

lower than the level required to be aware of all pertinent art and think along conventional wisdom in the art.” Ex. 2004 ¶ 20. Despite these differences, both parties indicate that the level of ordinary skill in the art would not affect the proffered testimony. *Id.*; Pet. Reply 16 n.3. Upon review of the ’138 patent and cited prior art, we credit Mr. Tingler’s testimony regarding the ordinary level of skill in the art.

C. Anticipation by Hochstein (Ex. 1003)

1. Overview of Hochstein (Ex. 1003)

Hochstein relates to a power supply for operating light emitting diode (“LED”) array traffic signals. Ex. 1003, 1:5–8. Hochstein describes using an LED traffic light with a traffic signal controller that provides a “half wave rectified a.c. line power” to dim the traffic light at night to reduce glare. *Id.* at 10:38–61. Hochstein also discloses “an apparatus for supplying regulated voltage d.c. electrical power to an LED array. The apparatus includes a rectifier having an input and an output, the rectifier being responsive to a.c. power at the input for generating rectified d.c. power at the output.” *Id.* at 3:18–23.

The Hochstein apparatus provides a boost, buck/boost or buck, switch-mode converter to a power-line operated LED array. *Id.* at 3:34–36. It includes an adaptive clamp circuit upstream of a rectifier input for preventing leakage current problems. *Id.* at 3:41–43. One embodiment of the Hochstein apparatus is depicted in Figure 5, reproduced below.

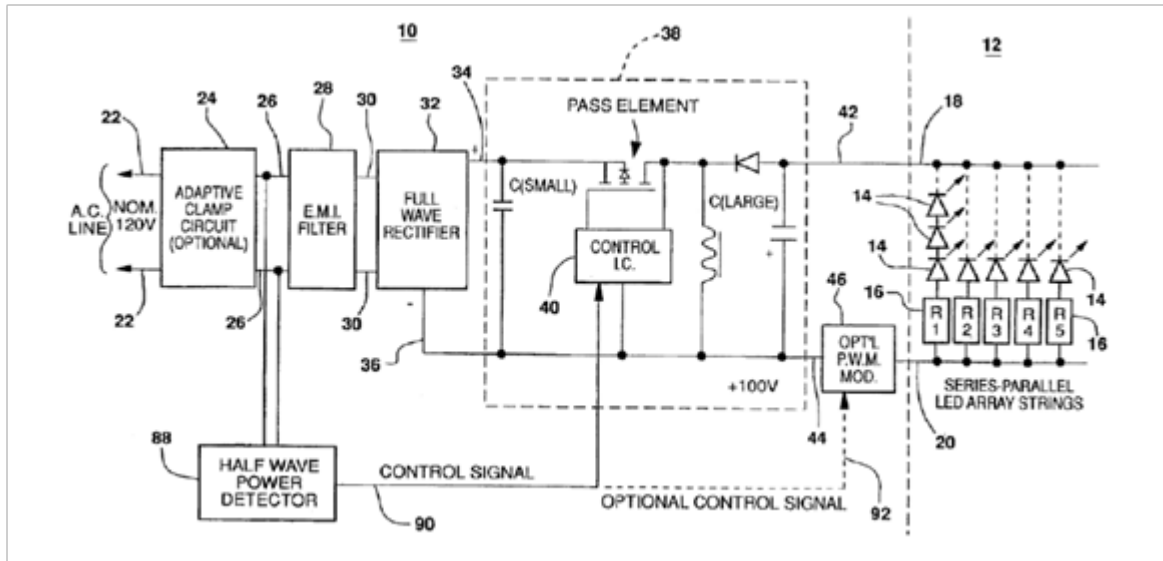


Figure 5 depicts regulated voltage, switch-mode power supply 10 with a pair of input lines 22 and an optional adaptive clamp circuit 24. *Id.* at 5:11–15. The output of adaptive clamp circuit 24 is connected to an input of an electromagnetic interference (“E.M.I.”) filter 28, which prevents conducted interference from feeding back into the power lines. *Id.* at 5:31–35. Lines 34 and 36 connect to an input of a power factor correction, buck/boost converter 38, which includes a power factor correction (“P.F.C.”) integrated circuit controller 40. *Id.* at 41–45. The output voltage of PFC switch-mode converter 38 is fed directly to LED array 12, or alternatively through pulse width modulated (“P.W.M.”) modulator 46. *Id.* at 5:66–6.

2. Analysis

Petitioner contends that Hochstein discloses the limitations of claims 1, 2, 9, 10, 11, 20, 31, 33, and 34. Pet. 16–31. Petitioner provides analysis and citations to the Declaration of Mr. Tingler (Ex. 1006) to support its contentions that the rectifier circuit of Hochstein discloses the challenged claim limitations. *Id.* (citing Ex. 1006 ¶¶ 46–81).

With respect to independent claims 1 and 33, Patent Owner argues that Hochstein does not disclose multiple signals other than a standard A.C. line voltage. PO Resp. 21–22. Based on our construction above regarding such signals, we agree with Patent Owner. Hochstein discloses a “half wave signal.” Pet. 25; Ex. 1003, 10:46–48; *see* Ex. 2004 ¶ 58.

Petitioner replies that two identical waveforms other than a standard waveform produced at different times (temporal separation) are “signals other than a standard A.C. line voltage.” Pet. Reply 7–8. Petitioner has not provided sufficient evidence that a person of ordinary skill in the art would understand that Hochstein discloses multiple signals. Indeed, Petitioner states that “Hochstein discloses a half-wave rectified signal connected to the controller.” Pet. 7. Petitioner has not shown by a preponderance of the evidence that Hochstein disclose that the same signal that does not vary and is sent at different times constitutes two or more signals.

Petitioner also contends that “[i]n the alternative, the half-wave rectified signal of Hochstein may be of either polarity, and thus constitutes two separate waveforms or signals.” Pet. Reply. 8 (citing Ex. 1019 ¶¶ 10–14). Petitioner relies on “de facto” dimming techniques known at the time to adjust the voltage applied to the light source to reduce the intensity of the light generated. *Id.* Thus, “[a] person of ordinary skill in the art at the time the alleged inventions of the ’138 patent were made . . . would have understood that the ‘half-wave rectified’ signal in Hochstein could be either positive or negative pulses of a standard A.C. line voltage.” Ex. 1019, ¶¶ 13–14. We are not persuaded by Petitioner’s evidence that Hochstein anticipates the limitation that the A.C. power source provide more than one signal. Petitioner’s reliance on “de facto” standards does not demonstrate by

a preponderance of the evidence that a person of ordinary skill in the art would understand the Hochstein half wave rectified signal is more than one signal for dimming purposes under the “de facto” dimming standard.

Accordingly, we find that Hochstein does not disclose that an A.C. power source provides “signals” (more than one) other than a standard A.C. line voltage. Thus, Hochstein does not anticipate independent claims 1 and 33.

Dependent claim 2 depends from independent claim 1. Claim 2, from which claims 9–11, 20, and 31 depend, recites “the A.C. power source is an (A.C.) dimmer circuit.” Ex. 1001, 25:4–5. Claim 34 also recites “a power-related signal from an alternating current (A.C.) dimmer circuit.” *Id.* at 28:21–25. Patent Owner argues that the “half-wave rectified signal” (Pet. 21–22) in Hochstein is a non-variable D.C. signal and thus cannot satisfy the A.C. dimmer circuit limitation. PO Resp. 25.

Petitioner admits that “the signal that dims the LED device in Hochstein is a *type of D.C. signal*,” but adds that “the claims of the ’138 patent do not require that the A.C. dimmer circuit outputs an A.C. signal.” Pet. Reply 10 (emphasis added). Petitioner also notes that Dr. Zane, Patent Owner’s declarant, admits that “the half-wave rectified signal in Hochstein was ‘derived from an AC voltage.’” *Id.* (citing Ex. 1017, 132:18–133:1). Because the circuit in Hochstein receives an A.C. signal as input, Petitioner concludes, it is enough to make it an “A.C. dimmer circuit” as recited in the claims. *Id.*

We disagree with Petitioner. Petitioner and Mr. Tingler both agree that the rectifier in Hochstein outputs a D.C. signal. Pet. 7; Ex. 1006 ¶ 7; Ex. 2013, 124:7–125:16. Petitioner has not shown that the D.C. output

discloses the A.C. dimmer circuit. Although the signal in Hochstein is derived from an A.C. signal, this is not sufficient to anticipate the A.C. dimmer circuit limitation, given that Petitioner and its declarant admit that the output of Hochstein is a D.C. signal.

For the reasons discussed above in Section II.A.1, we disagree with Petitioner. Because the dimming signal in Hochstein is a type of D.C. signal it does not teach the “A.C. dimmer circuit” limitation of claims 2, 9–11, 20, 31, and 34.

D. Hochstein (Ex. 1003) and Bogdan (Ex. 1004)

1. Bogdan (Ex. 1004)

Bogdan discloses a custom dimmer that replaces a standard switch for use with gas discharge lamps (e.g., fluorescent lamps) and incandescent lamps (e.g., halogen lamps). Ex. 1004, 1:9–22. Figure 1 shows an embodiment of the invention with a universal dimmer. Ex. 1004, 3:33–35.

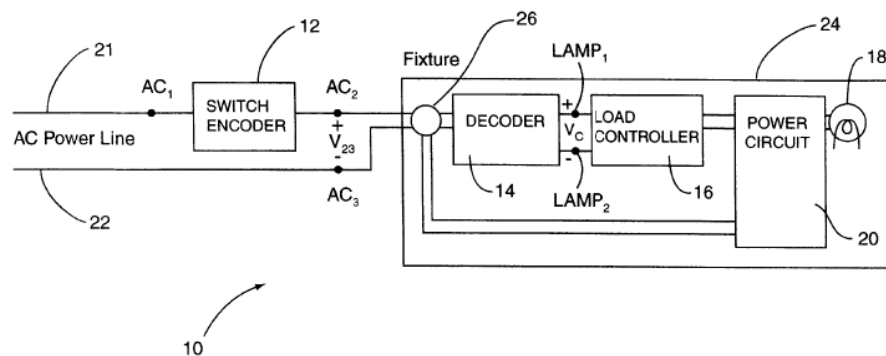


FIG. 1

Figure 1 shows universal dimmer 10, switch encoder 12, decoder 14 and load controller 16 to dim a lamp 18 (either incandescent or gas discharge) by appropriately controlling the operation of power circuit 20 associated with lamp 18. *Id.* at 4:29–34.

Bogdan discloses “a dimmer circuit for controlling an electrical lighting device having a load input” which further includes “a power input terminal” with “an input AC waveform” and “an encoding circuit . . . for selectively wave chopping the half cycles of said input AC waveform”

Id. at 2:42–51. Bogdan further states that

The transmitted AC power waveform is used to power the electrical lighting device by connection to a decoder. The decoder decodes the transmitted AC power waveform by generating a voltage pulse waveform having pulse widths corresponding to the duration of the zero crossing step delays A load controller receives the decoder output and appropriately controls the operation of the electrical lighting device.

Id. at Abstract.

2. Analysis

Petitioner contends that Bogdan discloses the limitations of claims 1, 2, 9, 10, 11, 20, 31, 33, and 34, except for the use of LED-based source, which is disclosed in Hochstein. Pet. 31–32. Petitioner provides analysis, citations to Bogdan and Hochstein, and citations to the Tingler Declaration in support of its contention. Pet. 31–50. Petitioner also provides a rationale to combine the references, stating that a person of ordinary skill in the art would have been motivated and able to make modifications to Bogdan to use with the LED light source of Hochstein (Pet. 32–35). Petitioner contends that Bogdan teaches an illumination apparatus in combination with the LED in Hochstein. Pet. 32–33. Petitioner identified the controller in Bogdan that receives the power-related signal from the AC power source and provides power to the LED. Pet. 35–36. Petitioner also provides evidence that Bogdan discloses four examples of power-related signals that provide A.C.

signals as output, teaching the “configured to receive a power-related signal from an alternating current (A.C.) power source” limitation of claims 1 and 33. Pet. 36–38 (citing Ex. 1004, Figs. 3a–3d, 4:61–65, 6:7–13, 6:63–67, 7:17–30, 7:51–60; Ex. 1006 ¶¶ 101, 102). Finally, Petitioner shows that Bogdan and Hochstein in combination teach a controller configured to provide power to a “controller further configured to provide power to the at least one LED based on the power-related signal.” Pet. 38–39. Petitioner also provides evidence that Hochstein teaches the “A.C. dimmer circuit” of claim 2, 9–11, 20, 31, and 34. Pet. 39–50.

Based on the full record, Petitioner has provided sufficient evidence to show that Hochstein and Bogdan teach the limitations of claims 1, 2, 9–11, 20, 31, and 34.

ANALOGOUS ART

Patent Owner does not dispute that the references teach the limitations of claims 1, 2, 9–11, 20, 31, and 34. Instead, Patent Owner challenges the combination of the references as being nonanalogous art that are not from the same field as the claimed invention or pertinent to the problem solved by the '138 patent. PO Resp. 40–42. We disagree.

Two separate tests define the scope of analogous prior art: “(1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). Patent Owner contends that Bogdan is not from the same field of endeavor because the custom dimmer for A.C.-based gas discharge and incandescent lamps in Bogdan does not disclose powering

D.C.-based LEDs as disclosed in Hochstein. Pet. Reply 41–42. Thus, Bogdan and Hochstein pertain to different structures and different functions than the '138 patent. *Id.* (citing Ex. 2004 ¶¶ 96–97). Patent Owner also contends that only impermissible hindsight allows the custom A.C. dimmer of Bogdan applicable to the Hochstein on-off traffic signal that uses a non-varying D.C. signal. PO Resp. 42–43 (citing Ex. 2004 ¶¶ 96–101)

Petitioner contends that the scope of analogous art is to be construed broadly. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010) (“The Supreme Court’s decision in *KSR* . . . directs us to construe the scope of analogous art broadly.”). Petitioner argues that both “Hochstein and the '138 patent disclose systems and methods by which LED lights are powered, and dimmed, from an A.C. line and that Hochstein, Bogdan and the '138 patent relate to dimming applications in lighting.” Pet. Reply 17–18 (Ex. 1006 ¶¶ 88, 91–101). Furthermore, Hochstein and Bogdan are cited together as relevant art in other related patents to LEDs. Pet. Reply 18 (citing Ex. 1021; Ex. 1022; Ex. 1023, Ex. 1024).

We are not persuaded by Patent Owner’s arguments that Bogdan and Hochstein are not analogous art. We find that both references are from the same field of endeavor. *Wyers*, 616 F.3d at 1237. Patent Owner’s arguments and evidence narrowly cabin Bogdan and Hochstein based on the details of their disclosures rather than the field of endeavor. We agree with Petitioner that Bogdan and Hochstein both “disclose solutions for dimming light sources using pulse width modulation schemes in response to a dimming command from a dimmer.” *See* Pet. 31.

MOTVIATION TO COMBINE

Patent Owner contends that Petitioner’s reasons to modify Bogdan and combine the references is erroneous and conclusory. PO Resp. 43–44. Patent Owner argues that “Petitioner provides no explanation of how LEDs provide an improvement in efficiency over the high-energy efficiency of gas discharge lamps in Bogdan.” *Id.* At the time of invention, Patent Owner argues, LED lights were less efficient than fluorescent and gas discharge lighting and used for different purposes. *Id.* (citing Ex. 2004 ¶¶ 104–105).

In addition, Patent Owner argues that Bogdan and Hochstein address different problems with differing solutions. Patent Owner argues that:

Bogdan modifies existing A.C. gas discharge lamps and incandescent lamps with a custom A.C. dimmer that avoids the expense of new wiring. Ex. 1004 at 1:9-22, 1:34-37; Ex. 2004, ¶ 106. In contrast, Hochstein describes using a “half wave detector” in a D.C. LED traffic light to detect a D.C. “half wave signal” to dim the traffic light at night to reduce glare. Ex. 1003 at 10:38-11:6; see Ex. 2004, ¶ 106. Thus, Bogdan and Hochstein address opposite problems. Ex. 2004, ¶ 107. Bogdan replaces a non-dimming switch with a custom A.C. dimmer, and Hochstein wants compatibility for a specific, two-mode D.C. dimmer for traffic lights. *Id.*

PO Resp. 45. Patent Owner argues that these “references even teach different types of lights for different purposes—A.C. lights for illumination in Bogdan, and D.C. lights for traffic signal indication in Hochstein. *See, e.g.,* Ex. 2006 at 310–13 (explaining differences between illumination and indication applications).” *Id.*

We disagree with Patent Owner and credit the testimony of Dr. Zane who admitted that LEDs existed at the time of invention that were more efficient than incandescent sources. Ex. 1017, 200:7–15 (“[I]t would

generally be understood that you could get LEDs that are more efficient than incandescent bulbs at the time of the invention.”); Pet. 20. We also agree that Hochstein itself specifically states that there are efficiency gains in replacing incandescent sources with LEDs. Ex. 1003, 1:62–64. Thus, we are not persuaded by Patent Owner’s testimony that the costs and efficiency negate the combination of the references. See Ex. 2004 ¶¶ 104–105; Ex. 1017, 200:7–15. We are not persuaded by Dr. Zane’s testimony that the efficiency would not have been clear to an ordinary skilled artisan because of lighting recommendations for public schools in 2001 that discuss high efficiency fluorescent lighting. Ex. 2004 ¶ 104 (citing Ex. 2011, 3; Ex. 2012, 43). Based on the full record and evidence, we do not find that Petitioner lacks an articulated reason with rational underpinning to combine Bogdan and Hochstein.

TEACHING AWAY

Patent Owner contend that the Bogdan and Hochstein references teach away from one another. Pet. 45–46 (citing Ex. 2004 ¶ 108; *Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 1359–60 (Fed. Cir. 1999) (“There is no suggestion to combine, however, if a reference teaches away from its combination with another source.”)).

A reference teaches away from a claimed invention if it “criticizes, discredits, or otherwise discourages” modifying the reference to arrive at the claimed invention. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). We will not, however, “read into a reference a teaching away from a process where no such language exists.” *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1364 (Fed. Cir. 2006).

Patent Owner argues that because Hochstein is concerned with leakage current problems when using LEDs with triac and thyristor switches for traffic lighting, and Bogdan desires thyristor or triac switches to power incandescent lights, they teach away from combining LEDs of Hochstein with the switches of Bogdan. PO Resp. 46 (citing Ex. 1003, 5:15–23; Ex. 1004, Fig. 6a, 13:60–51; Ex. 2004 ¶ 109).

We agree with Petitioner that Hochstein’s discussion of leakage current does not rise to the level of discouraging modification of the reference. Pet. Reply 21–22. Hochstein identifies problems, but also suggests corrections to these problems. Ex. 1003, 2:66–3:16. The issues identified by Patent Owner do not rise to level of criticizing, discrediting or discouraging the claimed solution. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

Patent Owner’s arguments that Bogdan teaches away from Hochstein are equally unavailing. PO Resp. 46 (citing Ex. 2004 ¶ 110). Patent Owner contends that “Bogdan teaches that problems are caused when the power supplied to the load varies too much.” PO Resp. 46. Thus, Bogdan’s switch encoder intentionally generates “small” step delays to avoid a large variance in the power supplied to the load, while Hochstein intentionally varies the power to the load. *Id.* at 47. We agree with Petitioner (Pet. Reply 22–23) that the “small step delays” in the signals of Figures 3a–3d in Bogdan are not delivered to the load at all. Ex. 1004, Abstract. On the full record, we do not find that a person of ordinary skill in the art would have been discouraged from combining Bogdan and Hochstein based on the step delays on the AC line. *See* Ex. 1006 ¶¶ 97–101.

MODIFICATION OPERABILITY AND INTENDED PURPOSE

Petitioner states that a person of ordinary skill in the art could modify Bogdan in two ways for use with any lighting device. Pet. 34. Specifically Petitioner states:

At least two such modifications are possible via simple modifications to load controller 16 in Bogdan. The first concerns a modification to the output of microcontroller 40 in Bogdan to generate an output pulse, whose pulse width varies based upon the value of control voltage V_c . Bogdan, Figure 6a (Ex. 1004). Such a pulse width modulated output could then be fed into the optional PWM modulator of Hochstein to drive LEDs. Tingler ¶¶ 91-94 (Ex. 1006). The second modification entails removal of the inverter and resonance circuit associated with gas discharge lamps and driving the LED array of Hochstein using the output of the boost converter in Figure 6b of Bogdan. Bogdan, Figure 6b (Ex. 1004); Tingler ¶¶ 95-96 (Ex. 1006). As explained by Tingler, either modification would have been obvious to a person of ordinary skill in the art in view of both Bogdan and Hochstein. Tingler ¶¶ 88-97 (Ex. 1006).

Pet. 34–35.

Patent Owner contends that Petitioner has not provided sufficient motivation to modify Bogdan to achieve the claimed invention, and such modification would neither operate nor would provide an expectation of success. PO Resp. 49–51. Patent Owner further asserts that the testimony of Petitioner’s declarant is conclusory and insufficient to provide articulated rationale for the basis of the combination. *Id.* at 52. With respect to the first theory of modification, Patent Owner argues that the two sentences offered by Petitioner are insufficient, offering testimony that there is no reasonable expectation of success for the first modification Petitioner cites. *Id.* at 52–53 (citing Ex. 2004 ¶ 115; Ex. 1006 ¶ 91). Patent Owner provides argument

and testimony that the modification proposed by Petitioner involves multiple embodiments of the Bogdan invention and uses hindsight to modify Bogdan to power an LED. *Id.* Patent Owner argues that Petitioner's cited testimony fails to explain the modification, how they would interoperate or explain the success of connecting the PWM modulator and LED of Hochstein to the microcontroller of Bogdan. *See* PO Resp. 53–54 (citing Ex. 2004 ¶¶ 115–117; Ex. 1006 ¶¶ 91–94). Finally, Patent Owner challenges whether the first proposed modification would meet the claim limitations, as the PWM modulator in Hochstein does not provide power to LED as asserted in Petitioner's modification. PO Resp. 55 (citing Ex. 2004 ¶ 116); Pet. 38 (Ex. 1004, 4:66–5:1)

With respect to the second modification, Patent Owner asserts that Petitioner fails to provide any expectation of success in making the second modification, removing the circuitry for the gas discharge lamps and driving the LED array of Hochstein with the output of the boost converter in Bogdan (Pet. 35), without rendering the circuit inoperative for its intended purpose. PO Resp. 56–57 (citing Ex. 2004 ¶¶ 120–121). Patent Owner provides argument and testimony that the modifications proposed by Petitioner would lead to an inoperable and incompatible circuitry between Bogdan and Hochstein. PO Resp. 57–58 (citing Ex. 1006 ¶¶ 95–96; Ex. 2004 ¶¶ 120–121).

Petitioner argues that Patent Owner's detailed argument and testimony merely attempts to rebut Mr. Tingler's testimony on modifications with arguments that Bogdan and Hochstein could not be physically combined. Pet. Reply 23. Arguing that an actual, physical substitution of elements in Bogdan and Hochstein is not required, Petitioner asserts that Patent Owner

has not rebutted the obviousness showing made at the institution phase of the proceeding. Pet. 23 (citing *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *In re Keller*, 642 F.3d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.”)). Petitioner also argues that “[i]n making a determination of obviousness, the Board must consider the ‘inferences and creative steps that a person of ordinary skill in the art would employ.’” Pet. 23 (quoting *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007)).

Petitioner has the burden of showing unpatentability, which includes articulating, in the Petition, sufficient articulated rationale and reasoning, even if it relies on an application of common sense. 35 U.S.C. § 316(e); 37 C.F.R. § 42.104 (a)(4); *In re Zurko*, 258 F.3d 1379, 1385 (Fed. Cir. 2001) (“[D]eficiencies of the cited references cannot be remedied by . . . general conclusions about what is ‘basic knowledge’ or ‘common sense’ to one of ordinary skill in the art.”). Here, Petitioner has failed to rebut Patent Owner’s testimony showing that either theory of modification would yield operable results. Pet. 34–35; Pet. Reply 23. At oral argument, Patent Owner’s counsel emphasized that Dr. Zane’s unrebutted testimony does not simply bodily incorporate Bogdan into Hochstein, but instead modifies Bogdan as proposed by Petitioner and finds them inoperable. Tr. 54:4–23 (arguing that Patent Owner was not arguing bodily incorporation and Patent Owner’s expert testified that Petitioner’s proposed modifications would not work).

Patent Owner’s arguments raise sufficient questions regarding the operability of Petitioner’s proposed modifications. PO Resp. 49–58.

Although Petitioner provides some evidence and argument regarding an expectation of success (Pet. 34–35; Ex. 1006 ¶¶ 90–97), Petitioner fails to address or rebut sufficiently Patent Owner’s contentions regarding a reasonable expectation of success and operability for the proposed modifications of Bogdan. *See In re O’Farrell*, 853 F.2d 894, 903–904 (Fed. Cir. 1988) (noting that for obviousness under § 103, “all that is required is a reasonable expectation of success”); *see also Dome Patent L.P. v. Lee*, 799 F.3d 1372, 1380 (Fed. Cir. 2015) (“If all elements of a claim are found in the prior art, as is the case here, the factfinder must further consider the factual questions of whether a person of ordinary skill in the art would be motivated to combine those references, and whether in making that combination, a person of ordinary skill would have had a reasonable expectation of success.”).

Based on the full record and unrebutted testimony proffered by Patent Owner, Petitioner has not shown by a preponderance of the evidence a reasonable expectation of success for the modifications to combine Bogdan and Hochstein. Accordingly, Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 2, 9, 10, 11, 20, 31, 33, and 34 are unpatentable as obvious under 35 U.S.C § 103 over Bogdan and Hochstein.

E. Hochstein (Ex. 1003) and Faulk (Ex. 1005)

Faulk discloses an A.C. adapter for use in portable computers that reduces the size of the adapter. Ex. 1005, 3:48–53. The A.C. adapter in Faulk converts “high voltage AC power provided from the AC main, for example, an electrical outlet, to low voltage DC power. . . .” *Id.* at 2:55–57.

The power supply disclosed in Faulk uses a full-wave diode bridge rectifier and a space-efficient EMI filter. *Id.* at Abstract, Figure 5; 9:56–61.

Petitioner argues that Hochstein and Faulk disclose the limitations of dependent claim 21 and claims 1, 2, 9, 10, 11, 20, 31, 33, and 34. Petitioner does not assert that Faulk teaches any limitation of claims 1, 2, 9, 10, 11, 20, 31, 33, and 34, relying only on Hochstein to teach the limitations of those claims. Pet. 54. For the same reasons discussed in Section II.C., Petitioner has failed to show by a preponderance of the evidence that claims 1, 2, 9, 10, 11, 20, 21, 31, 33, and 34 would have been unpatentable under 35 U.S.C. § 103(a) as obvious in view of Hochstein and Faulk.

III. REQUEST FOR REHEARING

Patent Owner filed a Request for Rehearing (Paper 10) seeking review of the Decision to Institute for claims 1 and 33 in grounds 1 and 3 and claims 20 and 31 in Ground 1 and claims 20, 21, and 31 in Ground 3. In view of the foregoing, we deny Patent Owner's request as *moot*.

IV. MOTION TO EXCLUDE

Petitioner seeks to exclude Exhibits 2007, 2009, and 2011 based on relevancy, Exhibit 2008 as hearsay, and Exhibits 2009 and 2010 on relevancy as they are not contemporaneous with the invention of the '138 patent. Pet. Mot. Exclude 1–6. We deny the Motion to Exclude as *moot*, because that evidence objected to was not relied upon in reaching our determination that Petitioner has not met its burden of showing that claims 1, 2, 9, 10, 11, 20, 21, 31, 33, and 34 of the '138 patent are unpatentable.

V. CONCLUSION

For the foregoing reasons Petitioner *has not demonstrated* by a preponderance of the evidence that: (1) claims 1, 2, 9, 10, 11, 20, 31, 33, and 34 are unpatentable as anticipated by Hochstein under 35 U.S.C. § 102; (2) claims 1, 2, 9, 10, 11, 20, 31, 33, and 34 are unpatentable as obvious under 35 U.S.C. § 103(a) over Bogdan and Hochstein; and (3) claims 1, 2, 9, 10, 11, 20, 21, 31, 33, and 34 are unpatentable as obvious under 35 U.S.C. § 103(a) over Hochstein and Faulk. Patent Owner's Request for Rehearing is denied. Petitioner's Motion to Exclude is denied.

VI. ORDER

Accordingly, it is

ORDERED that claims 1, 2, 9, 10, 11, 20, 21, 31, 33, and 34 of the '138 patent have not been shown to be unpatentable;

ORDERED that Patent Owner's Request for Rehearing is *denied*;

ORDERED that Petitioner's Motion to Exclude is *denied*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2015-01293
Patent 7,352,138 B2

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