

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CATERPILLAR INC.,
Petitioner,

v.

WIRTGEN AMERICA, INC.,
Patent Owner.

IPR2018-01091
Patent 8,308,395 B2

Before KEVIN W. CHERRY, JAMES J. MAYBERRY, and
RICHARD H. MARSCHALL, *Administrative Patent Judges*.

MARSCHALL, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining Some Challenged Claims Unpatentable

Denying Patent Owner's Motion to Amend

35 U.S.C. § 318(a)

We have jurisdiction to conduct this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed herein, we determine that Caterpillar Inc. (“Petitioner”) has shown, by a preponderance of the evidence, that claims 1, 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27 of U.S. Patent No. 8,308,395 B2 (Ex. 1001, “the ’395 patent”) are unpatentable, and that Petitioner has not shown that claims 5 and 15 of the ’395 patent are unpatentable. We also (1) deny the Wirtgen America, Inc.’s (“Patent Owner’s”) contingent Motion to Amend; (2) deny Patent Owner’s Motion to Exclude; and (3) grant Petitioner’s two Motions to Seal.

I. BACKGROUND

A. Procedural History

Petitioner requested *inter partes* review of the challenged claims on May 24, 2018. Paper 2 (“Pet.”), 1. Petitioner provided a Declaration of Dr. David M. Bevly in support of its positions. Ex. 1002 (“Bevly Declaration”). Patent Owner filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). Based on our review of these submissions, we instituted a trial on all of the claims challenged in the Petition, on all of the grounds set forth in the Petition. Paper 8 (Dec.). Petitioner contends that claims 1, 3, 5–8, 10, 11, 13, 15–17, 19, 20, 22, 24, 26, and 27 are unpatentable on the following grounds (Pet. 24, 64):

(1) claims 1, 3, 5–8, 10, 11, 13, 15–17, 19, 20, 22, 24, 26, and 27 as obvious under 35 U.S.C. § 103¹ based on Davis² and Brabec;³ and

(2) claims 1, 6, 8, 10, 11, 16, 17, 19, 20, 24, 26, and 27 as obvious under 35 U.S.C. § 103 based on Davis and Krieg.⁴

Patent Owner filed a Patent Owner Response (Paper 17) and Contingent Motion to Amend (Paper 18, “MTA”), along with a Declaration of Dr. Ralph Wilhelm in Support of Patent Owner’s Response and Contingent Motion to Amend (Ex. 2004, “Wilhelm Declaration”). Petitioner filed a Reply (Paper 22, “Pet. Reply”) and Opposition to Patent Owner’s Motion to Amend (Paper 23, “MTA Opp.”). Patent Owner filed a Sur-Reply to Petitioner’s Reply (Paper 35, “PO Sur-Reply”) and a Reply to Petitioner’s Opposition (Paper 34, “MTA Reply”), and Petitioner filed a Sur-Reply to Patent Owner’s Reply related to the Motion to Amend (Paper 41, “MTA Sur-Reply”). During trial, Patent Owner filed the Declaration of Jan Schmidt (Ex. 2008, “Schmidt Declaration”), and Petitioner filed the Declaration of Michael Netka (Ex. 1046, “Netka Declaration”), Declaration of Dr. David Bevly in Support of its Opposition to Patent Owner’s Motion to

¹ The relevant sections of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (September 16, 2011), took effect on March 16, 2013. Because the application from which the ’395 patent was filed before that date, our citations to Title 35 are to its pre-AIA version.

² U.S. Patent Pub. No. 2002/0047301, published April 25, 2002 (Ex. 1004, “Davis”).

³ U.S. Patent Pub. No. 2002/0154948, published October 24, 2002 (Ex. 1005, “Brabec”).

⁴ U.S. Patent No. 6,286,606 B1, issued September 11, 2001 (Ex. 1006, “Krieg”).

Amend (Ex. 1047, “Second Bevely Declaration”), and Declaration of Michael Aldrich (Ex. 1052, “Aldrich Declaration”).

Patent Owner filed a Motion to Exclude (Paper 42, “Mot. Exclude”), Petitioner filed a Response (Paper 43, “Resp. Mot. Exclude”), and Patent Owner filed a Reply to Petitioner’s Response (Paper 45, “Reply Mot. Exclude”). Petitioner filed a Motion to Seal (Paper 25, “Pet. Mot. Seal”), and Patent Owner filed an Opposition (Paper 36, “PO Opp. Mot. Seal”). Petitioner also filed an unopposed Motion to Seal (Paper 32, “Pet. Unopp. Mot. Seal”).

An oral hearing was held on August 22, 2019, and a transcript of the hearing is included in the record. Paper 48 (“Tr.”).

B. Related Matters

Petitioner and Patent Owner identify the following proceedings as related matters: *Wirtgen America, Inc. v. Caterpillar, Inc.*, No. 1:17-cv-00770 (D. Del., filed June 16, 2017); *Wirtgen America, Inc. v. Caterpillar Prodotti Stradali S.r.L.*, No. 0:17-cv-02085 (D. Minn., filed June 15, 2017); ITC Inv. No. 337-TA-1067 (“Road Milling Machines and Components Thereof”) (filed July 19, 2017). Pet. 77–78; Paper 5, 2. Neither party has apprised us of any developments in these proceedings that are relevant to the issues we address in this Decision. Petitioner also notes that the parties are in a pending dispute in Italy related to a foreign counterpart to the ’395

patent. Pet. 78.⁵ Patent Owner also identifies the following applications and patents that “claim or may claim the benefit of the priority of the filing date” of the ’395 patent: U.S. App. No. 13/671,786 (issued as U.S. Patent No. 8,511,932) and U.S. App. No. 13/934,875 (issued as U.S. Patent No. 8,690,474). Paper 5, 1.

C. The ’395 Patent

The ’395 patent describes a road construction machine that treats road surfaces with a height-adjustable milling drum. Ex. 1001, Abstract. The machine includes a controller that receives values of the milling depth and slope via sensors, and adjusts the position of the milling drum to maintain a desired depth and/or slope. *Id.* at 3:62–4:12.

According to the ’395 patent, milling machines with integrated levelling devices, sensors, and control systems were “already known” in the art. Ex. 1001, 1:11–15. The ’395 patent describes problems encountered during “the frequent change between the many different sensors, which is necessary for application-related reasons.” *Id.* at 1:34–36. For example, changing sensors typically involves interrupting the milling operation, which is necessary to prevent poor work results if the machine and the milling drum are not stopped during the sensor change. *See id.* at 1:36–53. To

⁵ Patent Owner submits a report from an “Italian court-appointed technical expert” from that proceeding that interprets the references at issue here. PO Resp. 12–14; Ex. 2014. The Italian court has not ruled on the validity of Patent Owner’s claims under Italian law. *See* Tr. 25:22–25. As to the report, Patent Owner does not explain how that analysis pursuant to Italian patent law impacts the analysis here, if at all, or the weight we can reasonably give such a report in this proceeding. PO Resp. 12–14; Ex. 2014. Under these circumstances, we give the Italian declaration no weight.

avoid these problems, the '395 patent describes an object of the invention as providing a leveling device that allows for the change of sensors “without any interruption in the milling operation.” *Id.* at 1:54–58.

To achieve this goal, the '395 patent describes a leveling device having an indication and setting device for the sensors currently in use, and another indication and setting device for an additional sensor not in use that will then be exchanged for one of the sensors currently in use. Ex. 1001, 1:62–67. The system allows for preparing a sensor with actual and set values while the operation continues, so that at the time of switchover, the sensor can “be changed without any alteration of the currently applicable adjustment value.” *Id.* at 2:1–7.

Figure 2 of the '395 patent appears below.

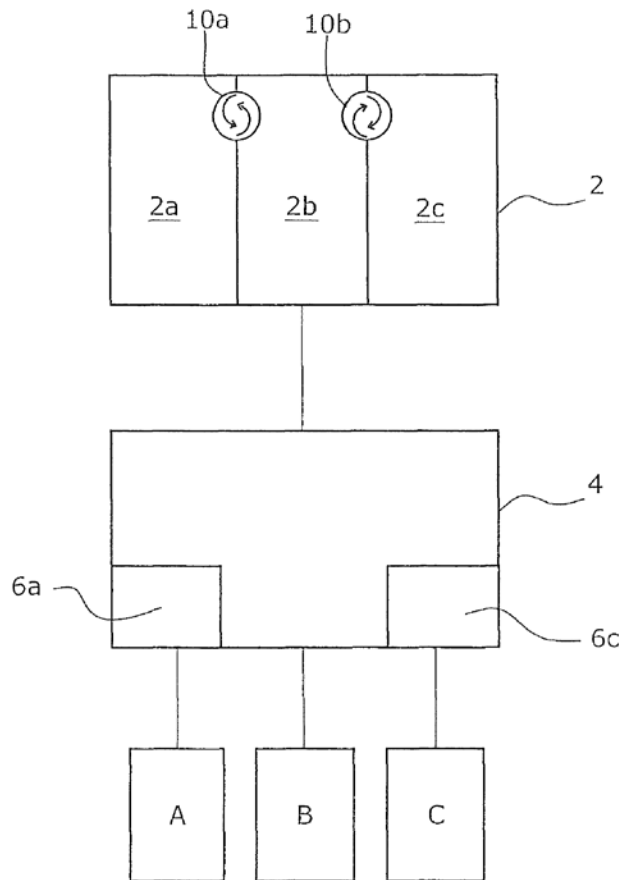


Fig. 2

Figure 2 depicts the connection of exchangeable sensors A, B, C to leveling device 4 with two controllers 6a, 6c. Ex. 1001, 3:62–66, 4:44–45. Sensors A, B, C register the current, actual value of the milling depth and/or slope of milling drum 3 relative to the road surface. *Id.* at 3:66–4:3. Leveling device 4 includes indication and setting device 2 having three nearly identical indication and setting units 2a, 2b, 2c. *Id.* at 4:13–15, 4:45–47. Indication and setting units 2a, 2b, 2c set the operating parameters for sensors A, B, C. *Id.* at 4:15–17. Controllers 6a, 6c automatically control the depth and/or slope of the milling drum based on predetermined set values and measured

actual values, with adjustments made as necessary when the measured value departs from the predetermined set value. *Id.* at 4:6–11, 4:19–23.

Controllers 6a and 6c remain in automatic mode during switchover to sensor B. *Id.* at 4:19–23. Switchover devices 10a and 10b allow a user to switch from sensor A or sensor C to sensor B, depending on which switchover device 10a or 10b is selected by the user. *Id.* at 4:28–34.

The challenged claims include five independent claims—claims 1, 11, 20, 26, and 27. Claim 1 is reproduced below:

1. A road construction machine for the treatment of road surfaces, comprising:
 - a milling drum, the milling drum being position adjustable with regard to at least one position characteristic selected from the group consisting of milling depth of the drum and slope of the drum; and
 - a leveling system configured to control the at least one position characteristic, the leveling system including:
 - a plurality of selectable sensors, each sensor configured to sense a current actual value of an operating parameter corresponding to at least one of the milling depth of the drum and the slope of the drum;
 - a plurality of indication and setting devices, each of the indication and setting devices being associatable with at least one of the plurality of selectable sensors, each indication and setting device being operable to indicate the current actual value of and to set a set value for each operating parameter sensed by its associated sensor or sensors;
 - a controller and switchover system configured to control the at least one position characteristic conditioned on set value or values and sensed current actual value or values of the operating parameter or parameters sensed by a selected subset of the plurality of selectable sensors by returning at least one adjustment value to adjust the at least one position characteristic so that the sensed current actual value or values

of the operating parameter or parameters approach the set value or values for the selected subset of the plurality of selectable sensors; and

the controller and switchover system being configured to switch over from control based upon a first selected subset of the plurality of selectable sensors to control based upon a second selected subset during milling operation without interruption of the milling operation and without any erratic alteration of the at least one adjustment value, the second selected subset exchanging at least one replacement sensor not in the first subset for at least one replaced sensor that was in the first subset.

Ex. 1001, 7:2–41. Claim 11 recites a “leveling system” that includes limitations similar to the leveling system recited in claim 1. *See id.* at 8:35–67. Claims 20, 26, and 27 recite methods for controlling a milling drum. *See id.* at 9:52–10:16, 10:40–10:59.

II. ANALYSIS

A. Principles of Law

To prevail in its challenges to the patentability of the claims, Petitioner must demonstrate by a preponderance of the evidence that the challenged claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “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 Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics*,

Inc., 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved based on 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 skill in the art; and (4) where in evidence, so-called secondary considerations.⁶ *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966). An obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). Petitioner, however, cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record” to support an obviousness determination. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380–81 (Fed. Cir. 2016). Petitioner also must articulate a reason why a person of ordinary skill in the art would have combined the prior art references. *In re NuVasive*, 842 F.3d 1376, 1382 (Fed. 2016).

⁶ Neither party directs us to evidence of secondary considerations.

B. Level of Ordinary Skill in the Art

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.*

Petitioner asserts that a person having ordinary skill in the art would have been someone having either: (1) a bachelor’s degree in mechanical engineering or an equivalent degree and two to five years of experience with machine control systems using sensors, or (2) seven to ten years of experience with machine control systems using sensors.

Pet. 7 (citing Ex. 1002 ¶¶ 21–23); *see also* Ex. 1002 ¶ 21 (addressing pertinent factors). Patent Owner “does not dispute [Petitioner’s] proposed skill *level*” quoted above, but contends that Petitioner’s perspective “is flawed because it fails to apply that level of skill to the *appropriate technical field* (i.e., *the art*) of the ’395 patent.” PO Resp. 18 (citing Ex. 2004 ¶¶ 22, 25). Patent Owner contends that the hypothetical person of ordinary skill in the art “would have had at least some direct experience with road milling machines and milling operations.” *Id.* (citing Ex. 2004 ¶¶ 26–27).

We find Petitioner’s proposed level of ordinary skill in the art appropriate and we apply that definition here. We do not agree with Patent Owner’s argument that a person of ordinary skill in the art *must* also have

“direct experience with road milling machines and milling operations.” *Id.* Patent Owner cites to the Wilhelm Declaration for support, but the Declaration merely cites to the ’395 patent’s disclosure of the road milling art and the testimony of Dr. Bevly that acknowledges that the environment that the control system operates in is a consideration when implementing a control system for a specific machine. Ex. 2004 ¶¶ 26–28. Neither piece of evidence, alone or in combination, establishes that one of ordinary skill in the art must have direct experience with milling machines, in addition to the education and years of experience in control systems, in order to qualify as one of ordinary skill in the art.

Further, Patent Owner’s proposed “direct experience” requirement introduces unnecessary ambiguities into the description of the level of ordinary skill in the art. For example, Patent Owner argues that Petitioner’s declarant Dr. Bevly lacks the required “direct experience” because he did not have the requisite experience, yet Patent Owner’s declarant Dr. Wilhelm did have that experience, because he “undertook significant self-education” regarding milling machines as part of his work on this case. *See* PO Resp. 19–23. In Patent Owner’s view, “direct experience” merely requires reviewing some additional milling machine literature and a visit to Patent Owner’s facility as a retained litigation consultant. *See* PO Resp. 20–21 (citing Ex. 2004 ¶¶ 28–29); Pet. Reply 25. Dr. Bevly would seem to have gained the same “direct experience” through his efforts in this proceeding. Patent Owner’s contrary positions demonstrates the ambiguity in the term “direct experience.” *See* Pet. Reply 25 (citing Ex. 1047 ¶¶ 6, 44–50). Given the ambiguity that Patent Owner’s proposal introduces, we do not find it

helpful, and even if we adopted Patent Owner’s proposal, our findings and conclusions in this case would remain the same.

C. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable constructions in light of the specification of the patent in which they appear. See 37 C.F.R. § 42.100(b) (2018); see also *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016) (upholding the use of the broadest reasonable interpretation standard).⁷ “In claim construction, [our reviewing] court gives primacy to the language of the claims, followed by the specification. Additionally, the prosecution history, while not literally within the patent document, serves as intrinsic evidence for purposes of claim construction.” *Tempo Lighting, Inc. v. Tivoli, LLC*, 742 F.3d 973, 977 (Fed. Cir. 2014). “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.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016).

In the Petition, Petitioner does not argue for any particular claim constructions, and instead asserts that “the Board should apply the broadest

⁷ The revisions to our claim construction standard do not apply to this proceeding, filed on May 24, 2018, because the new “rule is effective on November 13, 2018 and applies to all IPR, PGR and CBM petitions filed on or after the effective date.” Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (codified at 37 C.F.R. § 42.100 (2019)).

reasonable construction to all claim terms in the '395 patent.” Pet. 8. Patent Owner raises two claim construction arguments, which we address in turn.

1. “*Milling Operation*”

Patent Owner argues that the term “milling operation,” which appears in every challenged independent claim, should be construed to mean “the act of milling.” PO Resp. 14–15. Patent Owner distinguishes the “act of milling” from merely operating a milling machine. *See id.* In support of its position, Patent Owner relies on the '395 patent specification, which notes disadvantages in prior art machines that could not swap sensors “during [the] milling operation without interruption of the milling operation and without any erratic alteration of the at least one adjustment value.” *Id.* (citing Ex. 1001, 1:34–53, 2:7–14, 2:24–30, 2:37–42; Ex. 2004 ¶¶ 86–88).

Petitioner does not oppose Patent Owner’s proposed construction, or argue for a different construction, despite our invitation to do so, if necessary. *See* Dec. 9.

We agree with and adopt Patent Owner’s proposed construction, as we did for preliminary purposes in our Institution Decision. *See id.* at 8–9. The specification of the '395 patent clearly distinguishes swapping sensors “during [the] milling operation without interruption” from methods where the machine must be stopped to change sensors, even if the cutting drum continues to rotate and “cuts clear when standing.” Ex. 1001, 1:34–53. Claim 1 also emphasizes that the sensor swap occurs not only without interruption of the milling operation, but also “without any erratic alternation of the at least one adjustment value,” which is a concern when swapping sensors during the act of milling, not when swapping sensors if the milling

drum and machine are stopped. *See* PO Resp. 15. We therefore construe “milling operation” to mean “the act of milling.”

2. “*Selected Subset*”

Independent claims 1 and 11 include the terms “selected subset,” “first selected subset,” and “second selected subset.” Patent Owner argues that “the adjective ‘selected’ must be construed to modify the term ‘subset’ of sensors” and “necessarily acts to define a smaller group of sensors of the plurality of sensors.” PO Resp. 16. Patent Owner then relies on a dictionary definition of “selected” and contends that we should construe the phrase “selected subset” to mean “a subset of sensors purposefully chosen for preference or special quality over other available sensors.” *Id.* (citing Ex. 2004 ¶ 90). Patent Owner contends that the ’395 patent supports this construction by describing a switchover from a current sensor to a pre-selected sensor, “which connotes purposeful selection of the pre-selected replacement sensor.” *Id.* (citing Ex. 1001, 2:27–30; Ex. 2004 ¶ 91). Patent Owner also argues that the claim language supports the construction because the term “selected” modifies “subset,” suggesting that “each component of the subset is ‘selected.’” *Id.* at 17 (citing Ex. 2004 ¶ 91); *see also* PO Sur-Reply 17–18.

Petitioner argues that Patent Owner’s construction is inconsistent with the specification, and that the dictionary-driven construction for the term lacks any support in the specification or prosecution history. Pet. Reply 11–12 (citing Ex. 1047 ¶¶ 52–66). Petitioner contends that the term “pre-selected” in the specification merely refers to a sensor chosen before some event, not “a sensor purposefully chosen for preference or special quality.” *Id.* at 12 (citing Ex. 1043, 3). Petitioner argues that we should construe

“selected subset” to mean “a subset that is chosen.” *Id.* at 13. Petitioner relies on the claim language, which refers to a switch over from control based on one subset to control based on another, suggesting “a subset that is chosen for control.” *Id.* Petitioner also relies on the specification, which discloses a first selected subset that is merely in use rather than selected for preference or a special quality, and a second subset also merely chosen for control by exchanging a sensor with the first subset. *Id.* (citing Ex. 1001, 4:30–31). Petitioner also contends that Patent Owner relies on a “cherry-picked dictionary definition,” and other dictionary definitions support Petitioner’s construction. *Id.* at 12–13 (citing Ex. 1043, 4; Ex. 1048, 64:6–11, 65:15–22, 66:9–12).

We agree with Petitioner. The only direct support for the language in Patent Owner’s construction stems from a dictionary definition. *See* PO Resp. 16. This follows from Patent Owner’s claim construction process, which starts with a general dictionary definition and then looks for support for that definition in the specification. *See id.* at 16–17. That approach directly conflicts with the procedure set forth in *Phillips*. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1320 (Fed. Cir. 2005) (en banc) (overruling prior case law that incorrectly “suggested a methodology for claim interpretation in which the specification should be consulted only after a determination is made, whether based on a dictionary, treatise, or other source, as to the ordinary meaning or meanings of the claim term in dispute.”). Patent Owner’s selection of one dictionary definition over others, such as that relied on Petitioner, also lacks adequate reasoning. *See Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1371 (Fed. Cir. 2008) (holding that reliance on a single dictionary was legal error where the

dictionary definition was one of several possible meanings). Petitioner’s proposed construction more closely aligns with the specification, which does not discuss the subsets of sensors in a manner that suggests any sensors are “purposefully chosen for preference or special quality over other available sensors” as Patent Owner contends. See Ex. 1001, 2:27–30, 4:30–31. Accordingly, we construe “selected subset” to mean “a subset that is chosen.”

D. Obviousness Based on Davis and Brabec

Relying on the Bevely Declaration, Petitioner alleges that Davis and Brabec render claims 1, 3, 5–8, 10, 11, 13, 15–17, 19, 20, 22, 24, 26, and 27 obvious under 35 U.S.C. § 103. Pet. 24–64. Patent Owner, relying on the Wilhelm Declaration and other evidence of record, argues that the challenged claims would not have been obvious. PO Resp. 27–61.

1. Overview of Davis

Davis discloses “a road scarifier for cutting road surfaces.” Ex. 1004, Abstract. The scarifier includes cutting drum 11 for working road surface 12 based on the position of hydraulic jacks that position cutting drum 11. *Id.* ¶¶ 32, 33.

Petitioner’s annotated version of Figure 2 of Davis is reproduced below:

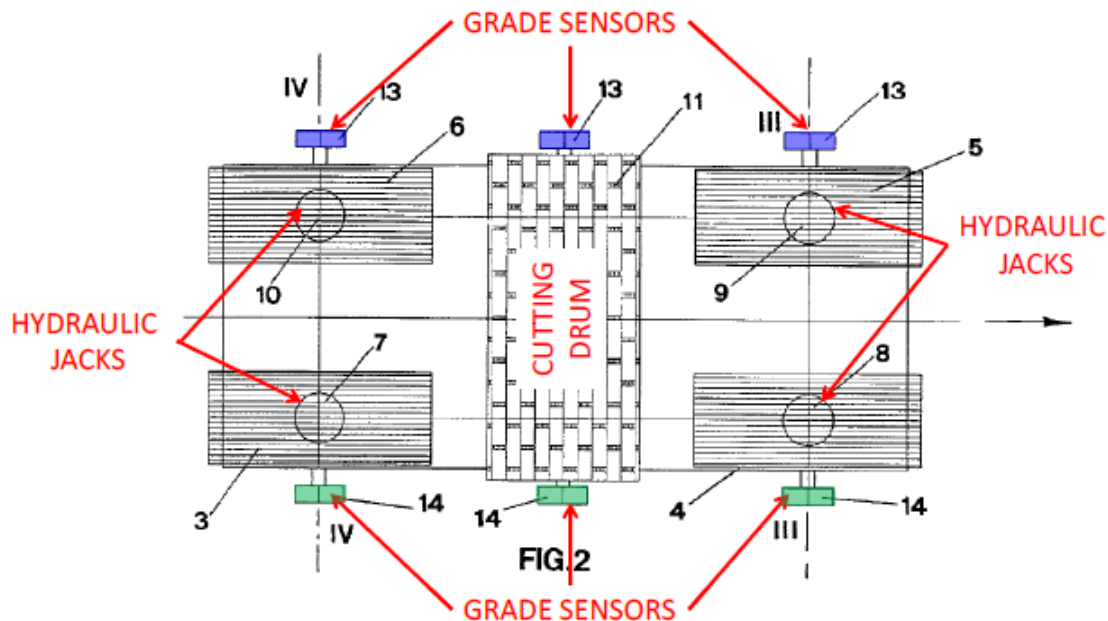


Figure 2 of Davis, annotated above, depicts cutting drum 11 and sensors 13, 14 along both sides of the scarifier. Ex. 1004 ¶ 32, 34. Front jacks 8 and 9 and rear jacks 7 and 10 can be controlled hydraulically independent of one another so that cutting drum 11 can be parallel to the road surface or sloped at an incline relative to the road surface. *Id.* ¶ 33. Sensors 13, 14 send their signals to data processing systems 16 and 17, and inclination sensor 18 sends a signal to data processing system 19. *Id.* ¶¶ 35–37. “[I]t is possible to set two of the three parameters necessary for the setting of the scarification in the first data processing systems 16, 17, or 19, since the third parameter can be derived from the other two.” *Id.* ¶ 38. In operation, each system 16, 17, 19 compares the set parameters for cutting drum depth and angle to measured readings and sends control signals to the hydraulic system to eliminate any differences between the set and actual readings. *Id.* ¶ 42.

2. Overview of Brabec

Brabec discloses an automatic mode in a controller for grading implements. Ex. 1005, Title. Brabec's method allows a controller to recognize the unavailability of a sensor and to switch automatically to an alternative control mode using an additional sensor. *Id.* at Abstract. When the controller utilizes the additional sensor, the controller uses "the last known value for the alternative mode" as the set point. *Id.* The method "replaces manual intervention by the operator with a new automatic method of intervention by the controller." *Id.* ¶ 11.

Petitioner's annotated version of Brabec's Figure 5 is reproduced below:

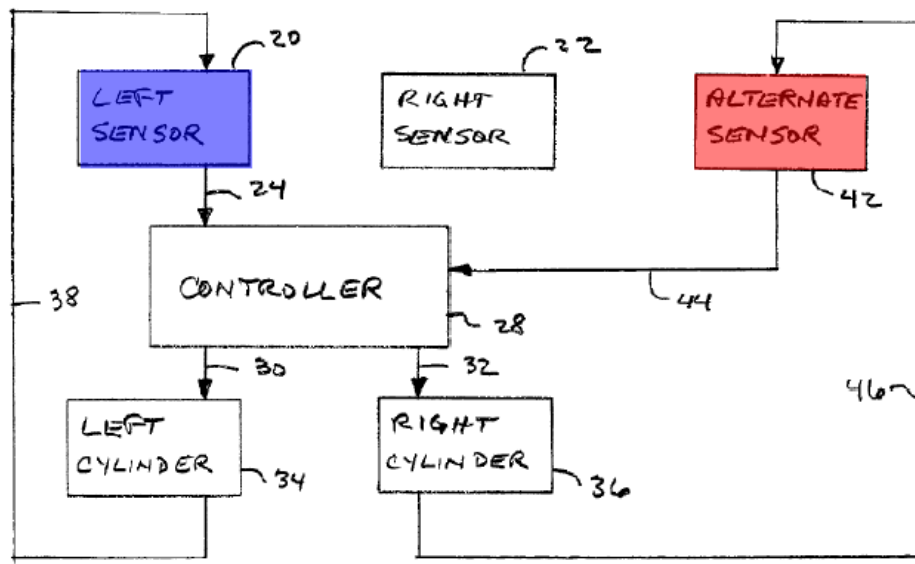


FIGURE 5

Figure 5 of Brabec, annotated above, depicts the use of alternate sensor 42 by controller 28 when right sensor 22 becomes unavailable and does not output a valid signal. Ex. 1005 ¶ 36. When this occurs, "[t]he last signal

output by the alternate sensor 42 prior to the right sensor 22 becoming unavailable is used as a set point for the right channel of the controller 28.” *Id.* In that way, Brabec’s system uses alternate sensor 42 to keep the right side in the same position as it was when right sensor 22 became blocked. *Id.*

3. Claim 1

a. Disclosure of Claim 1’s Limitations

Petitioner sets forth how the combination of Davis and Brabec discloses each limitation in claim 1. Pet. 31–45. Petitioner also sets forth reasons to combine Davis and Brabec. *Id.* at 25–31. With the exception of the “selected subset” limitations we discuss below, Patent Owner does not challenge Petitioner’s contention that—if combined, an issue we will address further below—the combination of Davis and Brabec discloses all of the limitations of claim 1.⁸ For the reasons provided below, we are persuaded that the combination discloses all of the limitations of claim 1.

Petitioner relies on Davis for its disclosure of a road scarifier that employs sensors and a controller to maintain a desired depth and slope of a cutting drum. Pet. 24. Petitioner relies on Brabec as disclosing a construction machine controller system that switches over to an alternate sensor without stopping machine operation. *Id.* According to Petitioner, one of ordinary skill in the art “would merely need to incorporate *Brabec’s*

⁸ As to the uncontested limitations, Patent Owner has waived any argument that the Davis-Brabec combination discloses the limitations. *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016); *see also* Paper 9, 5 (emphasizing that “any arguments for patentability not raised and fully briefed in the response will be deemed waived”).

sensor swap functionality into *Davis*'s controller system to arrive at the claimed invention of the '395 patent." *Id.* at 25.

More specifically, with respect to the preamble's recitation of a "road construction machine for the treatment of road surfaces," Petitioner contends that *Davis* discloses a road construction machine, i.e., a road scarifier for cutting road surfaces. Pet. 31 (citing Ex. 1002 ¶¶ 127–130; Ex. 1004, Abstract, ¶ 2). We are persuaded by Petitioner's argument and evidence, and find that *Davis* discloses a "road construction machine for the treatment of road surfaces."

Petitioner alleges that *Davis* discloses the claimed "milling drum," "leveling system," and "a plurality of selectable sensors." Pet. 32–35 (citing Ex. 1002 ¶¶ 131–139; Ex. 1004 ¶¶ 23, 34, 37, 38, Figs. 1, 2, 5). For example, Petitioner relies on cutting drum 11 of *Davis* as the claimed "milling drum," the independently controlled rear hydraulic jacks *Davis* uses to adjust the depth and slope of its cutting drum as the claimed "leveling system," and sensors 13, 14, and 18 in *Davis* as the claimed "plurality of sensors." *See id.* We are persuaded by Petitioner's argument and evidence, and find that *Davis* discloses the claimed "milling drum," "leveling system," and "a plurality of selectable sensors."

Petitioner also alleges that *Davis* discloses the claimed "plurality of indication and setting devices" by relying on *Davis*'s sensors 13, 14, 18 sending signals to respective data processing systems 16, 17, 19. *Id.* at 36–38 (citing Ex. 1002 ¶¶ 140–143; Ex. 1004 ¶¶ 35–37, 41, Fig. 5). We are persuaded by Petitioner's argument and evidence, and find that *Davis* discloses the claimed "plurality of indication and setting devices."

Claim 1 further requires a “controller and switchover system configured to control the at least one position characteristic conditioned on set value or values and sensed current actual value or values of the operating parameter or parameters sensed by a selected subset.” Ex. 1001, 7:22–32. For this limitation, Petitioner relies on Davis’s data processing systems 16, 17, 19 and the signals they send to PLC 20. Pet. 38 (citing Ex. 1004 ¶ 42). Petitioner contends that systems 16, 17, 19 compare the set values to actual readings, send signals representing the differences between the two values to PLC 20, which then sends control signals to the hydraulics to ensure the measured values approach the set values. *Id.* at 38–39 (citing Ex. 1002 ¶¶ 144–148; Ex. 1004 ¶ 42). Petitioner also contends that Patent Owner conceded during prosecution that Davis’s “controller system would use only two of the three sensors of Davis to control the depth and slope of Davis’s cutting drum.” *Id.* at 39 (citing Ex. 1008, 104; Ex. 1011, 20). Petitioner also contends that “it was well-known more than two decades prior to the ’395 patent that the depth and slope of a milling drum on a road milling machine is controlled based on a subset of sensors, including either two depth sensors or one depth sensor and one inclination sensor.” *Id.* at 39 (citing Ex. 1002 ¶¶ 107–117). Although this limitation includes the limitation “selected subset,” Patent Owner does not expressly argue that Davis does not disclose this limitation. See PO Resp. 51–54 (arguing that the combination fails to disclose a “first selected subset” and “second selected subset”). In any event, we are persuaded by Petitioner’s argument and evidence, and find that Davis discloses this limitation.

Claim 1 also requires “the controller and switchover system being configured to switch over from control based upon a first selected subset of

the plurality of selectable sensors to control based upon a second selected subset [of sensors] during milling operation without interruption of the milling operation and without any erratic alteration of the at least one adjustment value.” Ex. 1001, 7:33–41. Petitioner alleges that Brabec discloses a system with two positioning sensors 20, 22, and a third alternate sensor 42, with an automatic switchover to alternate sensor 42 when sensor 22 becomes unavailable. Pet. 40–43 (citing Ex. 1002 ¶¶ 149–155; Ex. 1005 ¶¶ 25–27, 35, 36, Figs. 4 and 5). Petitioner contends that Brabec discloses an automatic switchover to sensor 42 without interrupting the machine operation or any erratic interruption or abrupt change in the adjustment value, because Brabec uses the last known value of sensor 22 for alternate sensor 42, to “keep the right side in the same position.” *Id.* at 43 (citing Ex. 1002 ¶ 154–155; Ex. 1005 ¶¶ 11–12, 36). Petitioner further contends that “*Davis’s* controller system modified with *Brabec’s* teachings would switch control of its cutting drum orientation to the unused sensor” in *Davis*. *Id.* at 43. Petitioner walks through examples showing how only two of *Davis’s* three sensors are necessary to control *Davis’s* cutting drum, and how *Brabec’s* sensor swap functionality would allow for continued milling when one of *Davis’s* sensors becomes unavailable. *Id.* at 43–45 (citing Ex. 1002 ¶¶ 149–164; Ex. 1004, Fig. 5).

Patent Owner argues that Brabec fails to disclose either the first selected subset or second selected subset. PO Resp. 51. According to Patent Owner, Petitioner did not even mention those specific limitations in its analysis, which fails to comply with our rules. *Id.* Patent Owner also argues, based on its construction of “selected subsets,” that “in Brabec ‘subsets’ of sensors are not ‘selected.’” *Id.* at 52–53 (citing Ex. 1005 ¶¶ 34–

36; Ex. 2004 ¶¶ 89–91, 140–143). Patent Owner also argues that the Davis-Brabec combination does not disclose selection of the second selected subset during milling operation, because Brabec selects its alternative sensor based on a predetermined priority of available sensors. *Id.* at 54 (citing Ex. 1005 ¶¶ 11, 40; Ex. 2004 ¶ 145).

We are persuaded by Petitioner’s arguments and evidence as to this limitation, and we are not persuaded by Patent Owner’s arguments. First, we are not persuaded that Petitioner failed to provide adequate notice of its contentions regarding these limitations in the Petition. The Petition includes adequate explanation of how Petitioner contends the Brabec system works, including color-coded figures, and how the system switches from use of sensors 20 and 22, to a system using sensors 20 and 42. *See* Pet. 40–43 (citing Ex. 1002 ¶¶ 149–150; Ex. 1005 ¶¶ 25–27, 35–36). Petitioner also showed how Brabec’s teachings apply to Davis. *Id.* at 43–45 (citing Ex. 1002 ¶¶ 149–164; Ex. 1004, Fig. 5). Patent Owner could easily discern that these rather straightforward contentions correlate to the claimed first and second selected subsets. For example, Patent Owner appeared to understand the specifics of the contention when summarizing them and noting the further clarification provided by the cited declarant testimony. PO Resp. 52–53 (quoting Ex. 1002 ¶ 152 (“In my opinion, sensors 20 and 42 correspond to a second subset of sensors.”)). We find that the Petition included sufficient detail to apprise Patent Owner of Petitioner’s contentions, and did not run afoul of our Rules in the regard. *See* 37 C.F.R. § 42.104(b)(4) (requiring specificity as to “where each element of the claim is found in the prior art”).

Second, Patent Owner premises its argument on a proposed construction of “selected subset” that we rejected, and Patent Owner does not contend that the combination fails to disclose this limitation using Petitioner’s construction for “selected subset.” PO Resp. 52–55. Both the first and second subsets are “chosen” from among a number of potential sensors, which conforms to our construction of “selected subsets.” *See, e.g.*, Brabec ¶¶ 25 (describing various types of sensors from which sensors 20 and 22 (i.e., the “first subset”) are chosen), 40–41 (describing choosing from more than one alternative sensor and types of sensors available for selection).

Third, Patent Owner’s argument that the combination does not disclose selecting the second selected subset *during milling* improperly assumes that the act of determining which alternate sensor to use must occur during milling. The claims are not so limited on their face, and require only that the “switch over” from a first subset to the second subset occur during milling. *See* Ex. 1001, 7:33–36. Further, Patent Owner does not set forth a supported claim construction argument that compels us to read the claims that narrowly. *See* PO Resp. 54–55. Instead, Brabec’s teaching of selecting the alternate sensor based on a predetermined priority prior to the switch over, and then having the controller switch over to a second subset that includes the alternate sensor during milling, discloses the claim limitation. *See* Brabec ¶¶ 36, 39.

Based on the foregoing, we find that the Davis-Brabec discloses all of the limitations of claim 1.

b. Analogous Art

To determine if a prior art reference is analogous, one must consider “(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 Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992). Petitioner argues that Brabec is analogous art to the ’395 patent because it is from the same field of endeavor and addresses a similar problem. Pet. 25–26.

i. Field of Invention

As to the field of invention, Petitioner argues that the ’395 patent “relates to a road construction machine” and Brabec similarly “relates generally to machine control systems that control the orientation of a grading implement on a construction machine” and discloses a road construction machine. *Id.* at 25 (quoting Ex. 1001, 1:9; Ex. 1005 ¶ 2).

Patent Owner argues that Brabec is not analogous art “to the ’395 patent because it is not from the ’395 patent’s field of endeavor—road milling machines—and it is not reasonably pertinent to the particular problem solved by the inventors of the ’395 patent.” PO Resp. 28. As to the field of endeavor, Patent Owner argues that road milling machines are the field of endeavor of the ’395 patent, and Brabec does not disclose a road milling machine. *Id.* at 30. Patent Owner relies on portions of the ’395 patent referring to milling and alleged admissions by Dr. Bevly and Petitioner that the ’395 patent relates to milling. *Id.* at 30–31 (citing Pet. 25; Ex. 1001, Title, 1:34–37, 1:54–58; Ex. 2004 ¶¶ 115–116; Ex. 2006, 96:21–97:4). Patent Owner contends that Brabec only describes one type of

construction machine, a concrete screed, a “significantly different” machine than a milling machine. *Id.* at 31–32 (citing Ex. 1005 ¶¶ 2, 5; Ex. 2004 ¶ 118).

We agree with Petitioner that Brabec is analogous art because it is in the same field as the ’395 patent. We find that the field of endeavor of the ’395 patent encompasses road construction machines generally, not merely milling machines as Patent Owner contends. The ’395 patent itself repeatedly refers to its scope as related to a “road construction machine,” including in the Title, the Abstract, the description of the machine depicted in Figure 1, and the preamble to claim 1 and claims that depend from claim 1. Ex. 1001 (54), (57), 3:40, 7:2–8:34. In addition, the first line of the Background of the Invention, often reserved for the patentee’s description of the field of the invention, states that “[t]he invention relates to a road construction machine.” *Id.* at 1:9–10; see also Ex. 1002 ¶¶ 99–100. The fact that other portions of the ’395 patent focus on one type of road construction machine, a milling machine, does not mean that the field of endeavor must be limited to that narrower scope for purposes of the analogous art determination. The same can be said regarding Patent Owner’s reliance on alleged “admissions” that the ’395 patent is “about” road milling machines or that it addresses problems in that art. *See* PO Resp. 30 (quoting Pet. 25; Ex. 2006, 96:21–97:4). There is no dispute that the ’395 patent discloses and claims a machine that includes a milling drum for use in road milling, and methods involving a milling drum, that address perceived problems in that art. That does not require us to limit the scope of the field of invention for analogous art purposes to that disclosure. *See Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1001 (Fed. Cir. 2016) (“The field of endeavor of

a patent is not limited to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a given field.”).

Our finding as to the field of endeavor of the ’395 patent is determinative here, because Patent Owner does not contend that Brabec is not a road construction machine, or would not be analogous art if the field of endeavor of the ’395 patent encompasses road construction machines. We find that Brabec discloses a road construction machine. *See* Ex. 1005 ¶ 2 (stating that invention relates to a controller for “a grading implement on a construction machine”), ¶ 15 (describing machine in Figure 1 as a laser screed); *see also* Ex. 1002 ¶ 100. Accordingly, under our definition of the field of endeavor, Brabec is analogous art to the ’395 patent.

ii. Pertinent to Problem Involved in ’395 Patent

Although we have already found Brabec analogous art based on the field of invention analysis above, we also address whether Brabec is analogous art to the ’395 patent because it is pertinent to the problem addressed by the ’395 patent. As to the similarities in the problems confronted by the ’395 patent and Brabec, Petitioner argues that the ’395 patent “identifies halting of milling operations for switching sensors as a problem in the art of road milling” and solves the problem by providing a unit that changes sensors while operation of the machine continues. *Id.* at 25–26 (citing Ex. 1001, 1:34–38, 1:62–67; Ex. 1002 ¶¶ 101–103). Petitioner contends that Brabec already addressed a similar problem involving switching sensors when faced with a loss of signal, and making that switch during machine operation without erratically moving the machine implement. *Id.* at 26 (citing Ex. 1002 ¶ 106; Ex. 1005 ¶¶ 5, 35–36).

Patent Owner argues that the problem solved by the '395 patent, which "is specific to milling machines," relates to frequent sensor changes without interrupting milling operations, due to "application-related reasons." PO Resp. 32–33 (citing Ex. 1001, 1:34–38, 1:54–57, 2:15–23; Ex. 2004 ¶¶ 119–120; Ex. 2008 ¶¶ 18–25). Patent Owner characterizes Petitioner's definition of the problem as "controlling the orientation of a work implement on a construction machine," and argues that this proposal improperly omits reference to changing sensors without interrupting the milling operation. *Id.* at 34 (citing Ex. 2004 ¶ 121). Patent Owner also takes issue with Petitioner's alleged reference to Brabec's problem of replacing inoperative sensors, because the '395 patent does not address loss of signals from sensors and "[t]his was not even a significant concern for road milling machines at the time of the invention." *Id.* at 35 (citing Ex. 2004 ¶ 122; Ex. 2008 ¶ 30).

In its Reply, Petitioner argues that other prior art indicates that Brabec is analogous art because they describe similar implement controllers on a wide variety of road construction machines, including but not limited to milling machines. Pet. Reply 2. Petitioner also argues that although the '395 patent does not describe the application-related reasons for switching sensors, sensor failure on milling machines, such as blockage of a laser sensor, was common at the time and supports Petitioner's argument that Brabec discloses a pertinent solution to this problem. *Id.* at 3–4 (citing Ex. 1046 ¶¶ 34, 37–43; Ex. 1048, 58:7–25, 60:16–61:3; Ex. 2006, 99:20–100:2). In its Sur-Reply, Patent Owner contends, among other things, that the use of controllers on a variety of machines in the prior art does not establish that Brabec's screed and controller are analogous, and that the '395

patent never mentions the sensor failure problem Petitioner relies on to bring in Brabec. See PO Sur-Reply 20–23.

As an initial matter, we disagree with Patent Owner’s characterization of the problem as failing to acknowledge the milling context. PO Resp. 34. Patent Owner quotes from Petitioner’s description of the problem facing Davis and Brabec, while Petitioner proposes the following as the problem identified by the ’395 patent: “halting of milling operations for switching sensors as a problem in the art of road milling.” Pet. 25. We do not view this characterization of the problem confronting the inventors of the ’395 patent as meaningfully different than Patent Owner’s own proposal taken directly from the ’395 patent, “the frequent change between the many different sensors, which is necessary for application-related reasons, is not possible without an interruption of the milling operation and without negative influences on the work result.” PO Resp. 33 (quoting Ex. 1001, 1:34-38). We keep these proposals in mind as we address whether Brabec is pertinent to the problem addressed by the ’395 patent.

“A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor’s endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor’s attention in considering his problem.” *Clay*, 966 F.2d at 659; see *Unwired Planet, LLC*, 841 F.3d at 1000–01 (relying on *Clay*).

As the parties acknowledge, the ’395 patent describes the problem it confronted in terms of the need to switch sensors without interrupting the milling operation or negative results. See PO Resp. 33; Pet. 25; Ex. 1001, 1:34–38, 1:62–67. Although the problem relates to milling machines, the problem involves changing the way a controller handling the sensors

operates, not the mechanical manner in which a milling machine mills a road surface. See Ex. 1001, 1:67–2:30 (describing indication and setting device, and switchover device used to switch from a current sensor to pre-selected sensor during the milling operation without negatively impacting work result). While both parties acknowledge the milling context of the specific problem confronting the inventors of the '395 patent, we need not limit the scope of the art pertinent to that problem to the milling machine art, or controller for milling machines, as Patent Owner implies. The problem of switching sensors during machine operation without sacrificing results extends beyond milling machines, and at least includes controllers interfacing with sensors on other road construction machines. This approach finds support in the relevant case law. For example, in prior cases, hinged cabinets and piano lids were deemed analogous to a laptop computer hinge, and a folding bed was deemed analogous to a folding treadmill. See *In re Paulsen*, 30 F.3d 1475, 1481–82 (Fed. Cir. 1994) (addressing patent directed to hinge and latch for laptop); *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1380 (Fed. Cir. 2007) (addressing patent directed to treadmill with folding mechanism).

Applying these principles to the facts here, we find that Brabec is analogous to the '395 patent because it is pertinent to the problem addressed by the '395 patent. Brabec addresses a problem involving switching sensors during operation of a road construction machine. See Ex. 1005 ¶¶ 9–10 (noting potential difficulties of prior art manual switchover method), 13, 35–36 (describing automatic switchover method using controller). Brabec also addresses the problem of maintaining a consistent work surface when switching sensors during operation of the machine. *Id.* ¶¶ 34, 36; see also

Ex. 1002 ¶¶ 101–106 (discussing similarities in control systems of the ’395 patent and Brabec). Because Brabec addresses a similar problem to that faced by the ’395 patent, which focuses on the ability of a controller to switch sensors during operation of a road construction machine, we are persuaded that Brabec would have commended itself to the inventor of the ’395 patent’s attention in considering the controller-based problem of the ’395 patent.⁹

c. Rationale for Proposed Combination

Petitioner contends that it would have been “obvious to combine *Brabec*’s sensor swap functionality with *Davis*’s controller system for continuing milling operations even when a sensor used to control the drum orientation becomes unavailable during milling operations.” Pet. 43–45 (citing Ex. 1002 ¶¶ 149–164; Ex. 1004, Fig. 5). Petitioner contends that Davis discloses two depth sensors and an inclination sensor, but that only two of those three sensors are necessary to control the depth and slope of its cutting drum. *Id.* at 26–27 (citing Ex. 1001, 1:31–33; Ex. 1002 ¶¶ 71–76, 107–113, 115–118; Ex. 1004 ¶¶ 34, 37, 42; Ex. 1007, 18:34–44, 18:54–19:8; Ex. 1008, 104; Ex. 1011, 20). Petitioner also contends that (1) one of ordinary skill in the art would have understood that if one of the two sensors

⁹ We need not reach whether the loss of sensor signal was the part of the problem that provided the impetus for the need to swap sensors in the ’395 patent, although we do find Petitioner’s argument persuasive. The ’395 patent does not describe the “application-related reasons” behind the need to switch sensors, but Petitioner persuasively argues that one such need would have been loss of signal from a sensor, which would further support the view that Brabec’s solution to that problem would have commended itself to the inventors of the ’395 patent. See Ex. 1001, 1:34–38; Pet. Reply 4 (citing Ex. 1046 ¶¶ 34, 37–43; Ex. 2006, 99:20–100:2).

being used to control orientation of Davis’s cutting drum became unavailable, it would be necessary to use another sensor to adequately control the drum orientation; and (2) one of ordinary skill in the art would have been motivated to apply Brabec’s sensor swap method to Davis in order to continue uninterrupted milling operations. *Id.* at 27 (citing Ex. 1002 ¶¶ 117–119). According to Petitioner, the motivation to make the proposed combination includes eliminating down time, reducing operating costs, and improving productivity. *Id.* (citing Ex. 1002 ¶ 119). Petitioner also alleges that the combination would be simple and involve “well-known technologies that would perform their known functions to produce predictable results” and would have been “obvious to try.” *Id.* at 28–30 (citing Ex. 1002 ¶¶ 104–105, 120–122; Ex. 1004 ¶ 42). Finally, Petitioner contends that one of ordinary skill in the art would have known how to combine Davis and Brabec, and would have had a reasonable expectation of success in doing so. *Id.* at 30–31 (citing Ex. 1002 ¶¶ 123–126).

Patent Owner raises a number of arguments against the motivation to combine David and Brabec. PO Resp. 37–50; PO Sur-Reply 2–12. First, Patent Owner argues that the Petitioner improperly premises its motivation to combine analysis on the mistaken assumption that Davis uses only two of its three sensors to control milling drum depth and slope. *Id.* at 38 (citing Pet. 27; Ex. 1002 ¶¶ 117–118; Ex. 2004 ¶ 126). According to Patent Owner, Davis teaches using all three of its sensors, which provide for “interdependence” between the sensors and “complete control” of the cutting profile. *Id.* at 38–39 (citing Ex. 1004 ¶¶ 1, 10–12; Ex. 2004 ¶¶ 99–104, 127). Patent Owner acknowledges that Davis discloses *setting* only two of its three sensors, since the third sensor can be derived from the other two

provided by the operator, but emphasizes that setting two parameters does not mean that only two parameters are used to control the drum during milling. *Id.* at 39–42 (citing Ex. 1004 ¶¶ 38, 40, 42–43, Fig. 5; Ex. 2004 ¶¶ 99–104, 128–131). Patent Owner also contends that Petitioner’s declarant Dr. Bevly made statements in support of Patent Owner’s interpretation of Davis. *See id.* at 42–44; *see also id.* at 44–46 (arguing that Petitioner’s incorrect reading of Davis also undermines its rationales for the proposed combination).

Second, Patent Owner argues that Petitioner “wrongly assumes that 1) Brabec’s reason for automatic sensor switchover (sensor unavailability) is a problem in Davis’s scarifier; and 2) automatic switchover would be desirable for a scarifier.” PO Resp. 46 (citing Ex. 2004 ¶ 134). According to Patent Owner, loss of signals from a sensor “was not a significant concern for road milling machines,” due to robust design. *Id.* at 47 (citing Ex. 2004 ¶ 135; Ex. 2008 ¶ 30). Patent Owner also argues that it would be undesirable to automatically switch sensors in Davis because of “too many conditions . . . where specific sensors are relied upon for proper road milling.” *Id.* at 48 (citing Ex. 2004 ¶ 136; Ex. 2008 ¶ 30).

Third, Patent Owner argues that Petitioner’s declarant Dr. Bevly “used impermissible hindsight” in his analysis. PO Resp. 50. According to Patent Owner, the alleged improper hindsight analysis occurred because Petitioner provided Dr. Bevly with the prior art references in question, and Dr. Bevly then mapped Davis to the claim elements, and used Brabec to fill any gaps. *Id.* (citing Ex. 2006, 23:3–18, 214:16–215:10). Patent Owner contends that such a “gap-filling” approach amounts to improper hindsight analysis. *Id.*

In its Reply, Petitioner argues that Patent Owner leaves Petitioner's core argument unrebutted—that Davis needs only two of its three sensors, “leaving one unused sensor.” Pet. Reply 7. As it did in the analogous art context, Petitioner argues, with the support of a declarant, Mr. Netka, that “sensors routinely fail on milling machines due to wear and tear or damage caused by debris or obstructions on the job site.” *Id.* at 8 (citing Ex. 1046 ¶¶ 34, 37–43). Petitioner also argues that Brabec's automatic switchover method would indeed apply in the milling context, and that Patent Owner's argument that manual switchover was required is belied by the '395 patent itself, which discloses and claims automatic switchover in the milling context, and the testimony of Mr. Netka. *Id.* at 9–10 (citing PO Resp. 35–36, 48; Ex. 1046 ¶ 44–52; Ex. 2004 ¶ 36; Ex. 2006 ¶ 30).

In its Sur-Reply, Patent Owner argues that Petitioner changed its approach by arguing in the Petition that Davis “would” only use two of its three sensors, and arguing in the Reply that Davis “could” only use two of its three sensors. PO Sur-Reply 4. Patent Owner argues that even if one could control a milling machine using only two sensors, Davis discloses using all three, and using only two would “destroy Davis's principle of operation.” *Id.* at 4–5 (citing PO Resp. 39; Ex. 1004 ¶¶ 10–11; Ex. 2004 ¶¶ 127, 133). Patent Owner also contests Petitioner's assertion that sensor failure provides a motivation to combine, arguing that Petitioner's own literature suggests that failures are unlikely and that in the event of a failure, the operator would stop the machine. *Id.* at 8–12.

Based on the evidence and argument before us, we find that one of ordinary skill in the art would have been motivated, at the time of invention, to modify Davis's teachings with Brabec's teachings, for the reasons

provided by Petitioner. As to Patent Owner’s primary argument regarding Davis’s use of sensors, we do not read the Petition as restrictively as Patent Owner, or Petitioner’s arguments in Reply as going so far beyond the Petition that we should not consider the arguments made in the Reply. See PO Sur-Reply 4. We characterized Petitioner’s arguments in the Petition, at the time of our Institution Decision and before Patent Owner raised the argument in question, as “one of ordinary skill in the art would recognize that only two of Davis’s three sensors 13, 14, 18 *are necessary* to control the depth and slope of its cutting drum.” Dec. 14 (emphasis added). That interpretation—that only two sensors are necessary—has support in the Petition, and remains consistent with Petitioner’s arguments in Reply. See Pet. 25–26; Pet. Reply 4–7.

Davis discloses the use of three sensors, left and right sensors (13, 14) on each side of the milling drum to measure the distance between the sensors and the road, and an angle of inclination sensor (18) to measure the angle of frame supporting the milling drum. Ex. 1004 ¶¶ 34, 37. We find, and Patent Owner appears to concede as a general matter,¹⁰ that only two of these three measurements are necessary to control the position of a milling drum because, if any one of the three measurements are missing, the position of the drum (its heights on either end and its angle of inclination) can be determined using measurements from the two remaining sensors. See Ex. 1001, 1:28–33 (describing known prior art methods that require use of only two sensors to control milling drum); Ex. 1002 ¶¶ 107–113. As Davis

¹⁰ See PO Sur-Reply 4 (“Even if [Petitioner’s] evidence demonstrates that prior-art milling machines could *control* milling depths and slope using only two sensors . . .”); Tr. 23:11–13, 24:12–14.

itself points out, the third parameter can be determined from the other two. Ex. 1004 ¶¶ 38, 40. Patent Owner argues that even though control with two sensors may be possible, Davis nevertheless requires the use of three sensors to control the milling drum. See PO Sur-Reply at 4–5. While we agree that Davis obtains readings from three sensors and sends difference signals to the PLC based in part on those readings, Davis does not describe how to use all three sensor readings to control the position of the milling drum. See Ex. 1004 ¶ 49.¹¹ Patent Owner relies on Davis’s statement that its method provides “interdependence” between the measured parameters, but that disclosure also fails to indicate how all three of the sensor inputs are necessary to *control* the milling drum. See *id.* ¶ 11. Those statements can most reasonably be read as referring to the ability of the operator to input only two parameters, while the third is derived from the first two, due to their “interdependence.” See *id.* ¶¶ 11, 16, 38. In that case, although Davis uses all three sensors in some manner, Davis does not necessarily use all three sensors to *control* the drum position. In any event, although there may be roles for the third sensor to play in Davis, Davis does not describe that role in any detail, and does not suggest that all three sensors are *required* for purposes of controlling the milling drum, which would conflict with the accepted understanding in the industry. See Ex. 1001, 1:28–33; Ex. 1002 ¶¶ 107–113.

¹¹ It remains unclear, based on this record, how Davis could use a third sensor input when it can already control all it needs to control by using two sensors, or what happens if the third input conflicts with one of the first two sensor inputs.

Importantly, our interpretation of Davis finds support in the intrinsic record, because Patent Owner admitted that Davis uses only two of its three sensors during prosecution before this Office as well as the European Patent Office. See Pet. 26–27; Pet. Reply 5–6. Patent Owner argued before this Office that “[t]he only thing that the EP reference [i.e. Davis] teaches is that before starting the milling operation, the operator can choose to control right and left side milling depth and slope by selecting to control based on sensors for any two of those three parameters.” Ex. 1008, 104. Patent Owner also argued to the EPO that Davis does not disclose an exchange of sensors and that, in Davis, “[t]wo sensors have to be selected prior to the milling operation.” Ex. 1011, 20 (emphasis removed). Patent Owner argues that the statement made during prosecution of the ’395 patent did not persuade the Examiner to allow the claims, and that “a skilled artisan reading Davis in its entirety would have understood that Davis uses *all three* sensors—not just two—to control the depth and slope of its cutting drum.” PO Resp. 10–11. Patent Owner characterizes its statements during prosecution as “an honest mistake” and a “conflation.” Tr. 31:22–32:1 (Patent Owner’s counsel stating, with respect to prosecution history statements, that “I think an honest mistake and a conflation was made” and arguing that Petitioner’s declarant Dr. Bevly “conflated things the same way”). The prosecution history of the ’395 patent provides a public notice function, and Patent Owner’s publicly-stated position as to Davis was that it controlled milling depth and slope using only two of the three sensors. Ex. 1008, 104. Even if not binding, the statement supports Petitioner’s position that Davis only needed two of its three sensors to control the milling drum.

We agree with Petitioner's argument and related evidence that one of ordinary skill in the art would understand that one of Davis's three sensors was not needed to control the position of the milling drum. *See* Pet. 26–27; Pet. Reply 4–7; Ex. 1001, 1:28–33; Ex. 1002 ¶¶ 107–113; Ex. 2006, 176:10–15. Because one of ordinary skill in the art would view Davis's as including a third sensor that was not needed to control the milling drum, that third sensor would have been viewed as available for the modification that Petitioner proposes based on Brabec's teachings. *See* Pet. 27. More specifically, we find that one of ordinary skill in the art would have understood that if one of the two sensors used to control Davis's drum became unavailable, Brabec's sensor switchover method could be applied to use the third sensor¹² to control the drum without interrupting milling operations and without destroying Davis's principle of operation as Patent Owner contends. *See id.*; Ex. 1002 ¶ 119. Petitioner persuasively argues that the motivation includes reducing down time and operating costs, and increasing productivity. *See id.*; Ex. 1002 ¶ 119. We also find that the modification involves a relatively simple combination of well-known technologies that would perform their known functions and produce predictable results. *See id.* at 28; Ex. 1002 ¶¶ 104–105. Patent Owner does

¹² This is not to say that Davis's third sensor serves no function in Davis at all. Whatever its function, it does not teach away from the use of the third sensor in the manner proposed by Petitioner, or suggest that the advantages of Petitioner's proposed modification are outweighed by the lost functionality that Davis achieves when using all three sensors. Because Davis discloses so little regarding the need and use of a third sensor after the parameters are set, we are not convinced that Petitioner's proposed modification would destroy its principle of operation as Patent Owner contends. *See* PO Sur-Reply 4–5.

not directly contest these findings, as it focuses most of its attention on the usage of Davis's sensors.

We also find that the need to account for sensor unavailability provides further support for the motivation to make the proposed modification based on Brabec, which addresses sensor unavailability with its method. *See* Pet. Reply 8–9; Ex. 1005 ¶¶ 11, 13, 34; Ex. 1041, 1:30–33, 3:7–8. We credit the testimony of Mr. Netka on this point. *See* Ex. 1046 ¶¶ 34, 37–43. Mr. Netka testifies that sensors routinely fail on milling machines due to a number of reasons. *See id.* Based on our review of the testimony and evidence in the record, the need to account for sensor unavailability provides an additional motivation to employ Brabec's method on Davis's milling machine.

Finally, we are not persuaded by Patent Owner's argument that if a sensor did become unavailable, an operator would not rely on an automatic switchover to an alternate sensor as Brabec discloses. PO Resp. 48–49 (citing Ex. 2004 ¶ 136; Ex. 2006, 136:4–9; Ex. 2008 ¶ 30). The evidence cited in support of that argument does not appear to address the situation where an automatic switchover method was available to an operator, and the operator nevertheless chose to use the manual method. *See id.* Mr. Netka more persuasively testifies that an operator will typically choose to continue milling operations uninterrupted in the event of sensor failure to maximize the use of their machines. *See* Ex. 1046 ¶¶ 44–52. In addition, the '395 patent itself touts and claims the automatic switchover method as an improvement. *See, e.g.,* Ex. 1001, 2:19–23 (stressing ability to perform switchover “at the push of a button without any time loss and without an interruption of the milling operation”). It appears, based on Brabec and the

'395 patent, that some operators prefer the automatic switchover method to the manual method, and that one of skill in the art would not avoid Brabec's automatic method because operators would rather stop their machines and manually switch sensors whenever a sensor became unavailable.

Based on the record as a whole, Petitioner establishes adequately that one of ordinary skill in the art would have been motivated to modify Davis based on the sensor switchover method of Brabec, without resort to hindsight.

d. Conclusion as to Claim 1

Based on our review of the entire record, we determine that Petitioner has established by a preponderance of the evidence that the combination of Davis and Brabec discloses all of the limitations of claim 1, that one of ordinary skill would have been motivated to apply the teachings of Brabec to Davis, and that claim 1 would have been obvious based on Davis and Brabec.

4. Claims 5 and 15

Claims 5 and 15 depend from independent claims 1 and 11, respectively, and further require "the controller and switchover system includes a manually operable switchover device . . . so that a human operator may manually pre-select the replacement sensor and manually pre-set the operating parameter of the replacement sensor prior to effecting the switchover." Ex. 1001, 7:59–67, 9:19–27. In the Petition, Petitioner relies on Davis as allegedly disclosing an unused sensor that "is manually selectable and configurable by an operator." Pet. 47. Petitioner also relies on Brabec's disclosure of a "manual mode" in its Background, which Brabec would employ before re-enabling the automatic control. *Id.* at 47–50 (citing

Ex. 1002 ¶ 172; 1005 ¶ 9). Petitioner argues that this constitutes the “manually operable switchover device” of claims 5 and 15. *Id.* at 48. Petitioner acknowledges that Brabec proposes replacing the manual method with automatic switchover to an alternate sensor, but argues that “nothing in *Brabec* prohibits the manual operations.” *Id.* (citing Ex. 1005 ¶ 11). Petitioner also provides various reasons in support of making the Davis-Brabec combination and employing the manual method over the automatic method. *Id.* at 48–49 (Ex. 1002 ¶ 174–177).

Patent Owner argues that Davis does not disclose any switchover of sensors and therefore cannot disclose the “manually operable switchover device” of claims 5 and 15. PO Resp. 55–56. Patent Owner also argues that Brabec’s Background discussion of a manual method does not disclose the details of the system or that one can manually switch between sensors during a milling operation without erratic alteration of an adjustment value as required by claims 1 and 11. *Id.* at 56 (citing Ex. 1005 ¶ 9; Ex. 2004 ¶¶ 148, 150). Patent Owner notes that Petitioner “alleges that these elements of the independent claims are met by the *automatic* sensor switching embodiments of Brabec,” not the manual embodiment of Brabec. *Id.* at 56–57 (citing Ex. 2004 ¶¶ 149–150). Patent Owner also contends that Petitioner fails to support the argument that one of ordinary skill in the art would be motivated to replace Brabec’s automatic system with its manual system, and that Brabec teaches away from the use of the manual system. *Id.* at 57–59.

In its Reply, Petitioner argues that it relies on Brabec’s manual method alone for claims 5 and 15, not a combination of Brabec’s manual and automatic embodiments. Pet. Reply 20. Petitioner contends that Brabec’s manual approach can avoid erratic alteration of the adjustment

value by “pre-setting” the replacement sensor. *Id.* at 20–21 (citing Ex. 1001, 5:13–17; Ex. 1002 ¶¶ 172–173, 176; Ex. 1047 ¶¶ 99–101). Petitioner also argues that Brabec does not teach away from use of its manual system, and even if it did, the manual system “is nonetheless prior art.” *Id.* at 21. Patent Owner responds to Petitioner’s exclusive reliance on Brabec’s manual embodiment as failing to account for the Petitioner’s reliance, in the context of claims 1 and 11 in the Petition, on Brabec’s automatic embodiment. PO Sur-Reply 13–14.

We agree with Patent Owner that the Petition does not suggest any reliance on Brabec’s manual embodiment in the context of claims 1 and 11. *See* Pet. 40–45 (addressing Brabec in the context of claim 1), 56–57 (addressing Brabec in the context of claim 11). If it appears at all in Petitioner’s briefing, it appears for the first time in Reply. *See* Pet. Reply 20–22. As to the Petition, the portions addressing claims 1 and 11 do not even mention the word “manual” or cite to the relevant portions of Brabec disclosing that approach. *See* Pet. 40–45. The Petition does address Brabec’s manual method in the context of claims 5 and 15, but that discussion does not suggest that Petitioner intended to replace its reliance on Brabec’s automatic method in the context of claims 1 and 11, with exclusive reliance on Brabec’s manual method for those claims. *See id.* at 46–49 (addressing claim 5), 57 (addressing claim 15). Instead, those portions of the Petition read as if Petitioner relies on Brabec’s manual method with respect to claims 5 and 15, but nothing more. *See id.* If Petitioner meant to go further, it needed to explain, in further detail, how the manual method discloses all of the limitations of claims 1 and 11, with reference to the relevant limitations. That argument and evidence does not appear in the

Petition. We view Petitioner's reliance solely on Brabec's manual embodiment for claims 5 and 15, as well as claims 1 and 11 from which they depend, as a new argument not included in the Petition. Under these circumstances, we consider the argument waived. See 37 C.F.R. § 42.23(b) ("All arguments for the relief requested in a motion must be made in the motion. A reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, or patent owner response."); see also *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) ("It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify 'with particularity' the 'evidence that supports the grounds for the challenge to each claim.' 35 U.S.C. § 312(a)(3).").

Even if not waived, Petitioner has not provided a claim construction for claims 1 and 11, with support in the record, that supports its new theory that the claims cover entirely manual switchover of sensors. We are not persuaded, especially absent any cogent evidence and argument from Petitioner, that claims 1 and 11 cover manual switchover. See, e.g., Ex. 1001, 7:33 (claiming a "controller and switchover system being configured to . . ."); 2:7–9 (describing switchover of sensor "upon activation of a switchover command"), 2:20–21 (describing switchover of sensors "at the push of a button"), 4:20–23 (describing use of "automatic button to effect the corresponding control automatically" where the "controllers remain in automatic mode during switchover").

Based on foregoing, we determine that Petitioner has not established, by a preponderance of the evidence, that either of claims 5 or 15 are unpatentable under 35 U.S.C. § 103 as obvious based on Davis and Brabec.

5. *Remaining Claims*

Petitioner sets forth evidence and argument alleging that the combination of Davis and Brabec also discloses the limitations of claims 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27. Pet. 46, 49–64. For these claims, Patent Owner relies on the same arguments that we rejected above in the context of claim 1. PO Resp. 61. Patent Owner does not contend that the combination of Davis and Brabec fails to disclose any of the limitations of these claims. As to these uncontested limitations and claims, Patent Owner has waived any argument that the combination discloses the limitations. *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) (“Although the Board did not make findings as to whether any of the other claim limitations (such as fusion apertures or anti-migration teeth) are disclosed in the prior art, it did not have to: NuVasive did not present arguments about those limitations to the Board. . . . The Board, having found the only disputed limitations together in one reference, was not required to address undisputed matters.”); *see also* Paper 9, 5 (emphasizing that “*any arguments for patentability not raised and fully briefed in the response will be deemed waived*”).

Even absent such waiver, the record fully supports that the Davis-Brabec combination discloses the limitations in these claims. *See* Pet. 46, 49–64. We have reviewed the information in the Petition and supporting evidence, and we determine that the combination of Davis and Brabec renders obvious claims 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27. We adopt as our factual findings the factual contentions in the Petition based on the evidence and arguments in the Petition.

6. Summary of Davis-Brabec Challenges

Based on all of the evidence in the record, Petitioner demonstrates by a preponderance of the evidence that Davis and Brabec render obvious claims 1, 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27. Petitioner does not demonstrate by a preponderance of the evidence that Davis and Brabec render obvious claims 5 and 15.

E. Obviousness Based on Davis and Krieg

Relying on the Bevely Declaration, Petitioner alleges that Davis and Krieg render claims 1, 6, 8, 10, 11, 16, 17, 19, 20, 24, 26, and 27 obvious under 35 U.S.C. § 103. Pet. 64–77. Patent Owner, relying on the Wilhelm Declaration, argues Petitioner failed to establish that any of the claims are obvious. See PO Resp. 62–65.

1. Overview of Krieg

Krieg discloses a grader that includes implement control system 12 for controlling work implement 14 such as a grader blade. Ex. 1006, 3:10–15. Selectively actuatable hydraulic lift cylinders 20 move blade sub-assembly 16 to desired positions. *Id.* at 3:15–20. Krieg further discloses implement controller 28 that includes an “automatic” control mode. *Id.* at 3:60–64, 4:32–36. In this mode, after a first grading pass but before a second grading pass, the implement controller swaps sensor assignments so that a mirror image angular grade can be produced on the second pass compared to the first pass. *Id.* at 6:1–3, 6:23–67.

2. Discussion

Petitioner relies on Davis as disclosing the same limitations discussed above in the context of the Davis-Brabec ground. See Pet. 70. Petitioner relies on Krieg as disclosing swapping sensors between passes, and when

combined with Davis, the result satisfies the “without interruption of the milling operation” limitation. *See id.* at 70–74. More specifically, Petitioner alleges that “*Davis’s* controller system modified with *Krieg’s* teachings would switch control of drum orientation (i.e., depth and slope), for example, from left depth sensor 13 to the unused right depth sensor 14 when the right side surface or a right side curb of the roadway provides a better grade reference.” *Id.* at 74 (citing Ex. 1002 ¶¶ 284–292). According to Petitioner, one of ordinary skill in the art would have been motivated to make such a modification of Davis’s controller system “without stopping milling operations to switch sensors from the left side of the machine to the right side of the machine.” *Id.* Petitioner contends that the motivation to employ Krieg’s sensor swap stems in part from the recognition that “curbs on opposite sides of the roadway may provide a better grade reference” and the proposed combination would “reduce or eliminate operator errors caused by manually reconfiguring the scarifier to use the different sensors.” *Id.* at 67 (citing Ex. 1002 ¶¶ 272–274).

Patent Owner argues that neither Davis nor Krieg disclose switching sensors during a milling operation as required by all of the independent claims. PO Resp. 62. Patent Owner emphasizes that Krieg only discloses switching sensors between grading passes, rather than during a milling operation, as we have construed that term above. *Id.* at 62–63. Patent Owner directs us to our Institution Decision, where we found Petitioner’s evidence and argument unpersuasive based on the record as it stood at that time. *Id.* (citing Dec. 20).

In its Reply, Petitioner does not take issue with our construction of “milling operation” that requires switching sensors during the act of milling.

Pet. Reply 22–23. Instead, Petitioner argues that Krieg is not limited to switching sensors between passes because Krieg discloses “its sensor swap technology independent of a motor grader,” and states that the system can be used with “profilers,” which are milling machines. *Id.* at 23 (quoting Ex. 1006, 3:29–35) (citing Ex. 1006, 14:10–12). According to Petitioner, “[n]othing in *Krieg* restricts when this manual device may be actuated” and it therefore “permits changing sensor assignments anytime, including during milling operations.” *Id.* at 24. Patent Owner responds to Petitioner’s Reply by arguing that “the absence of a prohibition, without more, does not constitute a disclosure.” PO Sur-Reply 23.

We agree with Patent Owner. We find that Krieg discloses switching sensors when reconfiguring the motor grader blade between grading passes. *See* Ex. 1006, 1:53–2:2, 4:55–63, 5:61–67, 7:14–22. Petitioner and its declarant, at the time of the filing of the Petition, appeared to agree on this point. *See* Pet. 71–72; Ex. 1002 ¶ 265 (“*Krieg* discloses automatically swapping the grade sensors between the two grading passes to prevent operator errors and to allow grading operations to continue without stopping the motor grader.”). Based on our construction of “milling operation” to mean “during the act of milling,” we find that Krieg’s swapping sensors between grading passes does not amount to a disclosure of swapping sensors during the act of milling.

Petitioner’s arguments in Reply are unpersuasive. Petitioner does not argue that Krieg expressly discloses swapping sensors during the act of milling and could not reasonably do so. Petitioner’s argument also lacks sufficient analysis and evidence to support a finding of inherency. *See* Pet. Reply 22–24. Petitioner relies on Krieg’s lack of a prohibition against

swapping sensors during the act of milling as sufficient to disclose the limitation. We disagree because, as Patent Owner put it, “the absence of a prohibition, without more, does not constitute a disclosure.” PO Sur-Reply 23. Petitioner does not acknowledge that neither Davis nor Brabec discloses the limitation, and argue that it would have been obvious to one of ordinary skill in the art to supply that limitation. Instead, Petitioner relies solely on Krieg for this disclosure, and contends that “*Krieg*’s sensor swap functionality would operate in the same manner on *Davis*’s scarifier, as it did on *Krieg*’s motor grader.” Ex. 1002 ¶ 277. As noted above, Krieg does not disclose swapping sensors during the act of milling as required by the challenged claims.

Accordingly, we determine that Petitioner has not established by a preponderance of the evidence that any of claims 1, 6, 8, 10, 11, 16, 17, 19, 20, 24, 26, and 27 of the ’395 patent are unpatentable under 35 U.S.C. § 103 based on Davis and Krieg.

F. Patent Owner’s Contingent Motion to Amend

Patent Owner filed a contingent Motion to Amend original claims 1, 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27 and replace them with proposed substitute claims 28–43. MTA 1. Patent Owner does not propose substitute claims corresponding to claims 5 and 15. We have determined that all of the original claims that are subject to Patent Owner’s Motion to Amend unpatentable by a preponderance of the evidence; therefore, we proceed to address Patent Owner’s contingent Motion to Amend.

In an *inter partes* review, amended claims are not added to a patent as of right, but rather must be proposed as a part of a motion to amend. 35 U.S.C. § 316(d). We first must determine whether the motion to amend

meets the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. Specifically, we must determine whether (1) the amendment responds to a ground of unpatentability involved in the trial; (2) the amendment does not seek to enlarge the scope of the claims of the patent or introduce new subject matter; (3) the amendment proposes a reasonable number of substitute claims; and (4) the proposed claims are supported in the original disclosure. 37 C.F.R. § 42.121; *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 (PTAB Feb. 25, 2019) (precedential).

Patent Owner “does not bear the burden of persuasion to demonstrate the patentability of [the proposed] substitute claims.” *Lectrosonics*, slip op. at 4 (citing *Aqua Prods. Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017); *Bosch Auto. Serv. Sols. LLC v. Matal*, 878 F.3d 1027 (Fed. Cir. 2017)). “Rather, as a result of the current state of the law and [U.S. Patent and Trademark Office] rules and guidance, the burden of persuasion ordinarily will lie with the petitioner to show that any proposed substitute claims are unpatentable by a preponderance of the evidence.” *Id.*

1. Requirements Under 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121

Patent Owner asserts that proposed substitute claims are responsive to an asserted ground of unpatentability, do not enlarge the scope of the originally issued claims, constitute a reasonable number of substitute claims, and are supported by the original specification (as well as the parent applications). MTA 1–3. Patent Owner set forth the support for the claims in the specification and priority applications with cites to the record and Patent Owner’s declarant. *See id.* at 3–22. Notably, Petitioner opposes the

Motion but does not contend that Patent Owner failed to comply with any of these requirements. *See generally* MTA Opp.

We have reviewed Patent Owner's arguments and cited evidence, and determine that Patent Owner has met the requirements of 35 U.S.C. § 316(d), 37 C.F.R. § 42.121(a)(2)(ii), and 37 C.F.R. § 42.121(a)(3). Patent Owner proposes no more than a single substitute claim for each original claim, and therefore, meets the requirement for a reasonable number of substitute claims. *See* 37 C.F.R. § 42.121(a)(3); *see also Lectrosonics*, slip op. at 4 ("There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim."); MTA 27–37 (Claims App.). Further, based on the citations to the applications from which the '395 patent issued, provided in the Motion, we find sufficient written description support for Patent Owner's proposed substitute claims. *See* MTA 3–22. We determine that the contingent Motion to Amend meets the requirements of 35 U.S.C. § 316(d), 37 C.F.R. § 42.121(a)(2)(ii), and 37 C.F.R. § 42.121(a)(3).

As explained below, Petitioner has proven, by a preponderance of the evidence based on the entirety of the record, that the proposed substitute claims are unpatentable under 35 U.S.C. § 103.

2. Obviousness of Proposed Substitute Independent Claim 28

As a replacement for independent claim 1, Patent Owner proposes claim 28. MTA 27 (Claims App.). Proposed substitute independent claim 28 is reproduced below with annotations showing amendments to original claim 1:

28. (Substitute for claim 1) A road construction machine for the treatment of road surfaces, comprising:

a milling drum, the milling drum being position adjustable with regard to at least one position characteristic selected from the group consisting of milling depth of the drum and slope of the drum; and

a leveling system configured to control the at least one position characteristic, the leveling system including:

a plurality of selectable sensors, each sensor configured to sense a current actual value of an operating parameter corresponding to at least one of the milling depth of the drum and the slope of the drum;

a plurality of indication and setting devices, each of the indication and setting devices being associatable with at least one of the plurality of selectable sensors, each indication and setting device being operable to indicate the current actual value of and to set a set value for each operating parameter sensed by its associated sensor or sensors;

a controller and switchover system configured to control the at least one position characteristic conditioned on set value or values and sensed current actual value or values of the operating parameter or parameters sensed by a selected subset of the plurality of selectable sensors by returning at least one adjustment value to adjust the at least one position characteristic so that the sensed current actual value or values of the operating parameter or parameters approach the set value or values for the selected subset of the plurality of selectable sensors;

a switchover button configured for manual actuation by an operator of the road construction machine during a milling operation; and

the controller and switchover system being configured to switch over, upon the manual actuation of the switchover button, from control based upon a first selected subset of the plurality of selectable sensors to control based upon a second selected subset during the milling operation without interruption of the milling operation and without any erratic alteration of the at least one adjustment value, the second selected subset being selected by the operator of the road

construction machine during the milling operation, and the second selected subset exchanging at least one replacement sensor not in the first subset for at least one replaced sensor that was in the first subset.

MTA 27–28 (Claims App.). In its Motion, Patent Owner contends that proposed substitute claim 28 and the other proposed substitute claims are patentable over the combination of Davis and Brabec.

Petitioner sets forth four grounds of unpatentability in its Opposition to Patent Owner’s Motion. We will focus on Petitioner’s Ground 3 because we find it determinative as to all of the proposed amended claims. In that challenge, Petitioner contends that all of the proposed substitute claims are unpatentable under 35 U.S.C. § 103 based on the PM-465 OMM¹³ and Brabec. MTA Opp. 9.

a. The Prior Art Status of the PM-465 OMM

The PM-465 OMM is an “Operations and Maintenance Manual” for one of Petitioner’s “Cold Planer” products. Ex. 1037, Cover. Before we turn to the content of the PM-465 OMM and Petitioner’s related contentions, we must consider whether Petitioner has established that the PM-465 OMM is prior art. Petitioner contends that the PM-465 OMM is a printed publication published in January 1999, more than a year before the earliest effective priority date of the ’395 patent, and is therefore prior art under 35 U.S.C. § 102(b). MTA Opp. 9. Petitioner sets forth the following in support of its argument that the PM-465 OMM was publicly accessible:

¹³ PM-465 Cold Planer Operation & Maintenance Manual No. KEBU6879-01, published in January 1999 (the “PM-465 OMM”) (Ex. 1037). Patent Owner’s Motion to Exclude, which we deny for the reasons discussed below, seeks to exclude the PM-465 OMM and a number of related exhibits.

Under Caterpillar policy, each product when shipped must include an operation manual. Ex-1036, 3; Ex- 1046, ¶¶14-17. Caterpillar also issued monthly Factory Notification Lists (FNLs), identifying the manuals shipped with Caterpillar machines. Ex-1046, ¶¶6, 18-20. FNLs issued between May 2000-March 2003, each lists PM-465 OMM for shipment with a PM-465 machine. Exs-1016-1024 (listing the KEBU6879-01 version of the PM-465 OMM under the PM-465 heading); Ex-1046, ¶¶20-24. Caterpillar shipped at least eleven PM-465 machines with the PM-465 OMM, including to US customers during that time. Ex-1046, ¶20; Exs. 1025-1035. Further, anyone in the US, regardless of whether they purchased a PM-465 cold planer, could have purchased PM-465 OMM between May 2000-March 2003 from one of 50 Caterpillar dealers. Ex-1046, ¶25-27.

MTA Opp. 10.

Patent Owner argues that the PM-465 OMM “does not qualify as prior art” because Petitioner “failed to show that PM-465 OMM was publicly accessible before the ’395 patent’s April 27, 2006 priority date.” MTA Reply 7. Patent Owner makes three arguments in support of its position that Petitioner failed to establish that PM-465 OMM is prior art.

First, Patent Owner argues that dates on the document are insufficient to establish publication on that date. MTA Reply 7. “Neither the ‘January 1999’ date on the cover page nor the ‘© 1999’ indication on the last page of PM-465 OMM establish when—if ever—this document was published.” *Id.* at 8.

Second, Patent Owner argues that Mr. Netka’s general testimony does not establish publication because it lacks sufficient foundation from one with personal knowledge. MTA Reply 8. According to patent Owner, Mr. Netka did not work at a dealer at the time and his declaration does not explain how the PM-465 OMM was made available to dealers. *Id.* Patent Owner also

points to Mr. Netka's deposition testimony, where he conceded that he does not remember a customer or member of the public ever requesting a PM-465 OMM. *Id.* at 8–9 (citing Ex. 1055, 36:21–24, 38:3–7).

Third, Patent Owner argues that Mr. Netka's testimony related to machine sales between May 2000 and March 2003 does not establish publication. MTA Reply 9. Patent Owner takes issue with Mr. Netka's reliance on Petitioner's internal documents purporting to establish that 11 sales were made and each were shipped with the PM-465 OMM because Mr. Netka did not create a table in his declaration and was not familiar with the invoices or FNLs prior to reviewing them for his declaration. *Id.* at 9–10 (citing Ex. 1055, 34:8–24, 35:14–36:9). Patent Owner also asserts that Mr. Netka lacks personal knowledge of whether the PM-465 OMM was included with the sold machines. *Id.* at 10 (citing Ex. 1055, 36:12–20, 27:20–28:2).

Petitioner argues in Reply that, “[w]hile not dispositive, the date on the PM-465 OMM provides probative evidence that the manual was publicly accessible on that date.” MTA Sur-Reply 6 (citing *Caterpillar Inc. v. Wirtgen America, Inc.*, IPR2017-02187, Paper 42 at 22 (PTAB May 21, 2019)). As to Patent Owner's arguments regarding Mr. Netka's lack of knowledge, Petitioner contends that “Mr. Netka himself did quality checks to ensure that Caterpillar's practices were being followed and the PM-465 OMM was present when machines were shipped to customers.” *Id.* (citing Ex. 1055, 23:16–24:4). Petitioner also contends that the PM-465 OMM contains language suggesting that it was sent with sold machines. *Id.* at 6–7

(quoting Ex. 1037, 2¹⁴ (“This manual should be stored in the operator’s compartment in the literature holder or seat back literature storage area.”)). Petitioner labels Patent Owner’s argument that the PM-465 OMM was not available to customers as “preposterous” because “[t]hat is precisely the audience for which the PM-465 OMM was prepared.” *Id.* at 7. Petitioner also argues that Mr. Netka’s failure to recall a specific customer requesting the “PM-465 OMM is a red herring” because public accessibility does not require that any members of the public actually received the PM-465. *Id.* (citing cases). Finally, Petitioner contends that “the Board has previously considered similar evidence and concluded that public availability of Caterpillar’s OMM manuals was established.” *Id.* at 8 (citing *Caterpillar*, Paper 42 at 22–26).

Whether a document qualifies as a printed publication under § 102 is a legal conclusion based on underlying factual determinations. *Medtronic, Inc. v. Barry*, 891 F.3d 1368, 1380 (Fed. Cir. 2018) (citation omitted). A reference is publicly accessible upon a satisfactory showing that it has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it. *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016) (quoting *Kyocera Wireless Corp. v. Int’l Trade Comm’n*, 545 F.3d 1340, 1350 (Fed. Cir. 2008)); *see also GoPro, Inc. v. Contour IP Holding LLC*, 908 F.3d 690, 693 (Fed. Cir. 2018) (explaining that accessibility goes to the issue of “whether interested members of the

¹⁴ To maintain consistency with the practice of the parties, we cite to the page numbering provided in the PM-465, not the page numbering added when Petitioner filed the Exhibit.

relevant public could obtain the information if they wanted to”). “If accessibility is proved, there is no requirement to show that particular members of the public actually received the information.” *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1569 (Fed. Cir. 1988). Petitioner bears the burden of establishing that a particular document is a printed publication. *Medtronic*, 891 F.3d at 1380.

At the outset, we agree with Patent Owner that the dates on the face of the document, including the copyright notice and associated date, do not, standing alone, establish a date of publication on that date. Nevertheless, those dates are probative, and are consistent with other evidence in the record showing shipment of the PM-465 OMM in the years after 1999. *See Nobel Biocare Servs. AG v. Intradent USA, Inc.*, 903 F.3d 1365, 1376 (Fed. Cir. 2018), *as amended* (Sept. 20, 2018) (finding date on cover of a catalog was “relevant evidence” that, in conjunction with other evidence, supported the Board’s finding of public accessibility as of that date). For example, Petitioner provides a series of documents tying the PM-465 OMM to 11 sales of the associated PM-465 product, together with invoices and related documents showing that the PM-465 OMM was included with the machines when they were shipped to customers. *See* Exs. 1016–1024 (Factory Notification Lists (“FNLs”)); Exs. 1025–1035 (invoices); Ex. 1046 ¶¶ 20–24. Petitioner also submits a document setting forth the corporate policy of sending manuals with sold machines. Ex. 1036, 3 (“Certain technical information such as the owner/operator manual and parts manual must be furnished with each product as a condition of shipment from the factory.”); 1046, ¶¶ 14–17.

In addition to extensive contemporaneous documentation, Petitioner relies on the Netka Declaration. Ex. 1046. Mr. Netka worked at Petitioner from 1988 to 2013, which included a stint in the quality control department, where he worked directly with documents similar to the manuals and FNLs Petitioner relies upon here. *Id.* ¶¶ 4, 6. Mr. Netka also ensured that all cold planers included the appropriate manuals when shipped. *Id.* ¶ 6. From 2000–2007, Mr. Netka oversaw development of manuals, including the PM-465 OMM. *Id.* ¶ 8. He testifies that every PM-465 cold planer shipped during the May 2000 to March 2003 time frame—which is the relevant time frame here—would have included a PM-465 OMM. *Id.* ¶ 18. Mr. Netka also testifies that these manuals were not intended to be confidential, and were available to the public (including those interested in road construction machines) for years, including from May 2000 to March 2003. *Id.* ¶¶ 11, 26. We credit this and the other testimony of Mr. Netka in his declaration. Patent Owner’s attempts to poke holes in Mr. Netka’s assertions based on lack of personal knowledge regarding the specific documents relied on by Petitioner do not undermine his credibility, or suggest that he lacked sufficient personal knowledge to attest to the statements in his declaration. *See* MTA Reply 7–8. We weigh those statements for what they do establish based on his personal knowledge, and consider them with the other evidence provided by Petitioner in support of its arguments, including the documents themselves. Taking all of this evidence together, and weighing Patent Owner’s arguments and evidence in opposition, we conclude that Petitioner has established by a preponderance of the evidence that the PM-465 OMM was published and publicly available at least as early as 2003.

The relatively limited nature of the “publication” at issue here, compared to a published book or article, for example, does not indicate that the PM-465 OMM was not sufficiently published to fall within the scope of § 102(b). Far-flung distribution and/or indexing in a library are not required in order to establish that a document constitutes prior art. *See In re Klopfenstein*, 380 F.3d 1345, 1348 (Fed. Cir. 2004). In addition, dissemination to 11 customers without restriction, coupled with the open availability of the PM-465 OMM at dealers, supports a finding of publication here. *See Massachusetts Inst. of Tech. v. AB Fortia*, 774 F.2d 1104, 1109 (Fed. Cir. 1985) (holding that 6 copies of paper delivered to attendees at a conference, where paper was orally presented, was a printed publication).

Based on the foregoing, and considering all of the record evidence, we find that Petitioner establishes, by a preponderance of the evidence, that the PM-465 OMM was publicly available more than one year prior to the earliest effective priority date of the ’395 patent, and is therefore prior art to the ’395 patent.

b. Disclosure of Limitations In Proposed Substitute Claim 28

Petitioner supports its assertion that the combination of the PM-465 and Brabec discloses all of the limitations of proposed substitute claim 28 with citations to the PM-465 OMM and Brabec on a limitation-by-limitation basis, with support from Dr. Bevely. MTA Opp. 11–14. For example, Petitioner contends that the PM-465 OMM discloses the claimed “road construction machine,” i.e., a milling machine with a “milling drum,” electronically controlling the position of the drum in a manner that discloses the claimed “levelling system,” and a number of grade and slope sensors that

disclose the claimed “plurality of selectable sensors.” *Id.* at 11–12 (citing Ex. 1037, 2, 32, 111; Ex. 1047 ¶¶ 197–203). Petitioner also relies on the PM-465 OMM’s electronic control module and related electronics and structures as disclosing the limitations directed to aspects of the claimed “plurality of indication and setting devices” and “a controller and switchover system.” *Id.* at 12–13 (citing Ex. 1037, 32–33, 48, 61; Ex. 1047 ¶¶ 204–213). Petitioner relies on Brabec as disclosing the “adjustment value feature” and argues that one of ordinary skill in the art “would have implemented *Brabec*’s well-known method of using deviations on the PM-465 ECM to control the milling drum depth and slope.” MTA Opp. 14 (citing Ex. 1047 ¶¶ 214–216). Petitioner relies on the PM-465 OMM as disclosing the “switchover button configured for manual actuation,” which is a limitation added to claim 1 in proposed substitute claim 28. *Id.* at 14 (citing Ex. 1037, 32, 55, 65; Ex. 1047 ¶¶ 217–221); *id.* at 27 (Claims App.). Petitioner relies on a combination of the PM-465 OMM and Brabec as disclosing the last, amended limitation of proposed substitute claim 28, and contends that the combination discloses the “selected subsets” limitations under either party’s construction of that term. *Id.* at 14–16 (citing Ex. 1005 ¶¶ 9, 36; Ex. 1037, 32, 55, 65; Ex. 1047 ¶¶ 222–241); *id.* at 27 (Claims App.).

With the exception of the added “switchover button” and “indicate the current actual value of and set a set value” limitations we discuss below, Patent Owner does not raise any other arguments contesting Petitioner’s contentions that the combination of the PM-465 OMM and Brabec discloses all of the limitations of proposed substitute claim 28. *See* MTA Reply 10–11. We view Patent Owner’s decision not to address Petitioner’s arguments

as an effective admission that the combination discloses these limitations. *See In re NuVasive, Inc.*, 841 F.3d at 974. Even if not an admission, we find that the evidence and argument Petitioner provides persuasively demonstrates that the combination of the PM-465 OMM and Brabec discloses all of the limitations of proposed substitute claim 28.

As to the “switchover button” limitation, Petitioner argues that the PM-465 OMM discloses switches 2 and 3 that are buttons used to select grade or slope sensors for controlling the left and right sides of the milling drum. MTA Reply 14 (citing Ex. 1037, 32). We agree. The PM-465 OMM includes a figure depicting the control module, which includes structures for switches 2 and 3 that look like buttons. *See* Ex. 1037, 32; MTA Reply 13 (showing annotated version of figure). In addition, the text of the PM-465 states that one should “[p]ress MAN/AUTO switch . . . to select AUTOMATIC mode,” consistent with how one would “press” a button. Ex. 1037, 65. Although not necessary for our determination, we also find Petitioner’s reliance on the related PM-465 SOTA¹⁵ manual persuasive. That document, dated December 1999 and describing the same PM-465

¹⁵ PM-465 Cold Planer Caterpillar Grade & Slope Electronic Control System, Systems Operation Testing and Adjusting Manual, No. KENR3106-01 (Ex. 1039) (“PM-465 SOTA”). Petitioner relies on the PM-465 SOTA as one of the references at the center of its fourth Ground challenging the proposed amended claims, which we need not reach. *See* MTA Opp. 22–24. Patent Owner argues that the PM-465 SOTA is not prior art, but it need not be in order for us to consider it as part of our analysis and our interpretation of how one of ordinary skill in the art would interpret the PM-465 OMM. *See Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1365 (2015); *Cross Med. Prod., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1322 (Fed. Cir. 2005); *Thomas & Betts Corp. v. Litton Sys., Inc.*, 720 F.2d 1572, 1580–81 (Fed. Cir. 1983).

machine, refers to the “push buttons (switches) on the controller.” Ex. 1039, 33.

Patent Owner argues that switches 2 and 3 cannot be buttons because the text describes them as “switches,” which could suggest toggle switches rather than buttons. MTA Reply 10–11 (citing Ex. 1037, 32, 65; Ex. 2018 ¶¶ 66–69; Ex. 2019, 58, 59; Ex. 2023, 78:2–18, 116:2–10, 116:21–117:3, 118:1–11, 118:19–121:16). According to Patent Owner, even if a switch could be a button that does not mean the term “switch” in the PM-465 OMM discloses a “button,” so “when PM-465 OMM says ‘switch,’ it discloses only a ‘switch,’ not a ‘button.’” *Id.* at 11 (citing Ex. 2018 ¶ 70). We are not persuaded by these arguments. The PM-465 depicts switches 2 and 3 as circular objects in a picture of the control module, and states that one must press these structures to activate sensor switchover. Ex. 1037, 32, 65. While it may be possible that the structures are in fact toggle switches covered by some other structure, we find it more likely than not that they are what they appear to be—buttons. *See id.*; Ex. 1047 ¶¶ 217–221. Accordingly, we find that the PM-465 OMM discloses the claimed “switchover button.”

Patent Owner also argues that the PM-465 OMM fails to disclose the limitation “each indication and setting device being operable to indicate the current actual value of and to set a set value for each operating parameter sensed by its associated sensor.” MTA Reply 13–14. Patent Owner contends that the ’395 patent figures and specification support a construction that requires “the current sensor value *and* set the set value are displayed *at the same time.*” *Id.* (citing Ex. 1001, 4:48–52, 5:26–6:14, Figs. 3, 6a–8d; Ex. 2023 ¶ 63). According to Patent Owner, the PM-465 OMM “only

displays the setpoint in automatic mode and only displays the actual value in manual mode.” *Id.* at 14 (citing MTA Opp. 12; Ex. 1037, 32; Ex. 2023, 122:5–124:2; Ex. 2018 ¶¶ 64–65). Petitioner contends that Patent Owner’s argument incorrectly presumes that the claims require simultaneous display of the current value and set value. MTA Sur-Reply 11.

We agree with Petitioner that the claim language does not require simultaneous display of the current value and set value. The language itself does not allude to the time of display of these values, and merely requires that the claimed indication and setting devices be operable to indicate the current value and set the set value. *See* Ex. 1001, 7:15–21. This language does not even require display of the set value, just that the device be operable to “set” the set value. *See id.* Even if the claim language required display of both values, the language still does not suggest that the claims require *simultaneous* display of the set value with the current value. *See id.* Patent Owner’s one sentence of argument on this point does not persuade us to construe the claim in the manner it proposes by importing various aspects of the specification to the claims. *See* MTA Reply 13–14. Accordingly, we are persuaded that the PM-465 OMM discloses “each indication and setting device being operable to indicate the current actual value of and to set a set value for each operating parameter sensed by its associated sensor.”

Patent Owner also alleges that it cannot tell whether Petitioner relies on Brabec’s manual or automatic system to meet the “without erratic alteration of the at least one adjustment value” requirement of the claims. MTA Reply 12–13. Patent Owner appears to acknowledge that Petitioner and Dr. Bevly rely on Brabec’s manual embodiment, but argue that this embodiment fails to teach using the last known sensor value to prevent

erratic alteration of the value. *Id.* at 13 (citing Ex. 2023, 92:3–93:12; 124:6–125:20; Ex. 1047 ¶ 232; Ex. 1005 ¶ 36). Petitioner contends that it only relies on Brabec’s manual embodiment, and only references Brabec’s automatic embodiment “to reinforce that the target setting functionality is the same for *Brabec*’s manual and automatic system.” MTA Sur-Reply 10. Petitioner also contends that the “current value,” in the context of the manual embodiment, equates to the last measured value. *Id.* at 10–11.

We agree with Petitioner that its Opposition adequately references the manual embodiment as disclosing this limitation. *See* MTA Opp. 15 (citing Brabec ¶ 9). We also find that Brabec’s manual embodiment discloses setting the sensor to the “current elevation or slope,” which would prevent the claimed erratic alteration because the current values are chosen to minimize such alteration. *See* Ex. 1005 ¶ 9. Based on this finding, we are

persuaded that the PM-465 OMM as modified by Brabec discloses the “without erratic alteration of the at least one adjustment value” limitation.¹⁶

Based on the foregoing, we find that Petitioner established sufficiently that the combination of the PM-465 OMM and Brabec discloses all of the limitations of proposed substitute claim 28.

c. Rationale for Proposed Combination

Petitioner argues that one of ordinary skill in the art “would have been motivated to combine *Brabec*’s target setting functionality with the PM-465 ECM to help prevent abrupt movement of the milling drum,” and, “[g]iven the extensive teachings in the prior art, a POSITA would know how to implement *Brabec*’s target setting functionality in the PM-465 ECM.” MTA Opp. 11 (citing Ex. 1047 ¶¶ 191–196). Petitioner further argues that one of ordinary skill in the art “would have implemented *Brabec*’s well-known

¹⁶ Patent Owner also argues, with reference to a previous argument, that Brabec teaches away from the manual embodiment. See MTA Reply 13. That earlier argument was in the context of a Davis-Brabec combination, and asserts, in three sentences, that Brabec’s discussion of the manual method’s disadvantages amount to a teaching away from that method. We are not persuaded by this limited argument. First, Patent Owner does not establish that the argument applies to the combination of the PM-465 OMM and Brabec, which does necessarily require the multiple manual movements Brabec describes. See Ex. 1037, 32 (depicting buttons used for manual operation); Ex. 1005 ¶ 9. Second, although Brabec notes advantages of its automatic system over a manual system, Brabec does not suggest that the manual approach would not work, and Patent Owner does not establish that this passage teaches away from the manual method in the context of the combination with the PM-465 OMM. See MTA Reply 13. Patent Owner’s limited argument in the context of another combination does not persuade us that Brabec teaches away from the proposed modification to the PM-465 OMM at issue here.

method of using deviations on the PM-465 ECM to control the milling drum depth and slope” and “would have been motivated to modify the PM-465 ECM with *Brabec*’s initialization scheme to help prevent abrupt movement of the milling drum.” *Id.* at 14–15 (citing Ex. 1047 ¶¶ 214–216, 222–234).

Patent Owner argues that one of ordinary skill in the art would not have combined the PM-465 OMM with *Brabec* because the PM-465 OMM’s “auto-hold” function already solves the purported problem that *Brabec* addresses. MTA Reply 11–12. More specifically, Patent Owner argues that the PM-465’s auto-hold “function disables automatic control of the machine based on the replacement sensor ‘when the rate of change (ROC) is faster than expected from the hydraulic control.’” *Id.* at 12 (citing Ex. 1037, 32, 33, 65; Ex. 2018 ¶¶ 60–62). According to Patent Owner, this feature “already addresses erratic alteration of the milling drum,” and there is no reason “to turn to *Brabec* to search for a solution for this problem.” *Id.* (citing Ex. 2018 ¶ 62).

Petitioner contends that Patent Owner misplaces reliance on the PM-465 OMM’s auto-hold function, because it only engages in limited circumstances when a sensor falls outside minimum and maximum values associated with a sensor. MTA Sur-Reply 9–10 (citing Ex. 1037, 32; Ex. 1039, 17). Petitioner further contends that because the auto-hold feature does not engage when the sensor readings are within the acceptable ranges, one of ordinary skill in the art would remain “motivated to implement *Brabec*’s no erratic alteration functionality on PM-465 to prevent abrupt movements of the milling drum when the sensor readings are within the acceptable range.” *Id.* at 10 (citing Ex. 1047 ¶¶ 194–195, 230–233).

We find that Petitioner establishes adequately that one of ordinary skill in the art would have been motivated to add Brabec’s functionality to the PM-465 OMM to prevent abrupt movements of the milling drum in the PM-465 OMM. *See* Ex. 1047 ¶¶ 194–195; 230–233. As to the auto-hold feature, we are persuaded by Petitioner’s explanation, supported by the PM-465 OMM, that the mode only engages when the sensor readings fall outside an “acceptable” range, and that Brabec’s functionality would still provide benefits when the sensors operate within an acceptable range. *See* Ex. 1037, 32–33; *see also* Ex. 1039, 17 (PM-465 SOTA describing maximum and minimum values that define acceptable range). Accordingly, the presence of the auto-hold feature does not fatally undermine Petitioner’s argument and evidence in support of its rationale for modifying the PM-465 OMM with Brabec’s teachings.

d. Conclusion as to Claim 28

Based on our review of the entire record, we determine that Petitioner has established by a preponderance of the evidence that the combination of the PM-465 OMM and Brabec discloses all of the limitations of proposed substitute claim 28, that one of ordinary skill would have been motivated to apply the teachings of Brabec to the PM-465 OMM, and that proposed substitute claim 28 would have been obvious based on the PM-465 OMM and Brabec.

3. Remaining Proposed Substitute Claims

Petitioner sets forth evidence and argument alleging that the combination of the PM-465 and Brabec also discloses the limitations of the remaining proposed substitute claims 29–43. MTA Opp. 16–22. For these claims, Patent Owner relies on the same arguments that we rejected above in

the context of proposed substitute claim 28. MTA Reply 10–14; *see also id.* at 13–14 (raising same argument regarding “indicat[ing] the current actual value of and set a set value” argument in the context of claim 34). Aside from those previously-addressed arguments, Patent Owner does not contend that the combination of the PM-465 and Brabec fails to disclose any of the limitations of these claims. As to these uncontested limitations and claims, Patent Owner has waived any argument that the combination discloses the limitations. *See In re NuVasive, Inc.*, 841 F.3d at 974. Even absent such waiver, the record fully supports Petitioner’s assertion that the combination of the PM-465 OMM and Brabec discloses the limitations in proposed substitute claims 29–43. MTA Opp. 16–22. We have reviewed the information in the Petition and supporting evidence, and we determine that the combination of Davis and Brabec renders obvious proposed substitute claims 29–43. We adopt as our factual findings the factual contentions in the Petitioner’s Opposition based on the evidence and arguments therein.

4. Summary of Patent Owner’s Motion to Amend

Based on all of the evidence in the record, Petitioner demonstrates by a preponderance of the evidence that the PM-465 OMM and Brabec render obvious proposed substitute claims 28–43. Accordingly, we deny Patent Owner’s Contingent Motion to Amend.

G. Patent Owner’s Motion to Exclude

Patent Owner moves to exclude Exhibits 1016–1038 based on the alleged inadmissibility of the exhibits. Mot. Exclude 1. Patent Owner timely filed objections related to these exhibits. *See* Paper 27, 1–4.

Exhibits 1016–1024 are Petitioner’s Factory Notification Lists (“FNLs”) that Petitioner relies on to establish that the PM-465 OMM was

shipped with PM-465 machines. Mot. Exclude 1. Patent Owner argues that Petitioner failed to authenticate the exhibits because Petitioner's declarant conceded at deposition that he lacked the required personal knowledge of the relevant facts. *Id.* at 2. Patent Owner also contends that certain portions of these documents are hearsay. *Id.* at 3–4. Exhibits 1025–1035 are Petitioner's invoices related to the alleged sales of the PM-465, and Patent Owner raises similar authentication and hearsay objections as to these exhibits. *Id.* at 5–7. Exhibit 1036 is Petitioner's "corporate policy" document Petitioner relies on to show procedures for shipping a PM-465 milling machine, Exhibit 1037 is the PM-465 OMM itself, and Exhibit 1038 is a later version of that same manual. *Id.* at 8, 10, 14. Patent Owner raises similar authentication and hearsay objections as to Exhibits 1036 and 1037, and adds an objection for relevance as to Exhibit 1037. *Id.* at 8–15. Patent Owner notes that if Petitioner relies on the business records hearsay exception under FRE 803(6), the inquiry turns on authenticity under FRE 902(11). *See* Mot. 4–5.

Petitioner argues that it relied on very similar documents in other IPRs, and Patent Owner never objected, and the panels in those cases denied Patent Owner's motion to exclude when it did object. Resp. Mot. Exclude 1–3. Petitioner also argues that Mr. Netka's declaration and testimony establish that he is qualified to opine on these issues, and he need not have personal knowledge of the details of the document's creation to satisfy the business records hearsay exception. *Id.* at 3–5. Petitioner also relies on Mr. Netka's declaration and statements with respect to the specific allegations regarding each exhibit, and to support Petitioner's contention that

each exhibit is authentic and falls under the business records hearsay objections. *See id.* at 5–14.

In its Reply, Patent Owner argues that Petitioner improperly relied on Mr. Netka’s deposition testimony in its Response because Petitioner did not identify the deposition testimony as supplementary evidence in response to Patent Owner’s objections. Reply Mot. Exclude, 1. Patent Owner contends that Petitioner’s deadline for serving supplemental evidence fell on July 1, 2019, and that Patent Owner filed the deposition transcript on July 3, 2019, without any indication that it was supplemental evidence. *See id.* Patent Owner also continues to argue that Mr. Netka “is not a qualified witness” and that Petitioner fails to comply with some of the requirements of the hearsay exceptions. *Id.* at 2–5.

We first address Patent Owner’s contention that Petitioner cannot rely on the deposition of Mr. Netka because it failed to identify the transcript as supplementary evidence by July 1, 2019. The facts here do not involve a simple failure to follow our deadlines for filing supplemental evidence.

Here, the deposition was taken in close proximity to the July 1, 2019 deadline, and Patent Owner knew that some of the questioning directly related to the admissibility of the exhibits. *See, e.g.*, Ex. 1055, 18:3–23, 35:8–24, 35:14–36:11, 56:16–58:9. In other words, Patent Owner was not caught off guard by Petitioner’s reliance on the deposition transcript, and had an opportunity to re-cross examine the witness on those topics. *See* Tr. 43:20–24 (Patent Owner had opportunity to recross but decided not to because he was “comfortable with the record before us”). More importantly, Patent Owner relies heavily on this very transcript in its opening brief in support of the Motion. *See* Mot. Exclude 2 (citing Ex. 1055, 18:3–23, 35:8–

24, 35:14–36:11) (arguing that Mr. Netka, “at his deposition” made statements allegedly in support of Patent Owner’s positions); *see also id.* at 5–6, 8–9, 11–12 (relying on transcript to support arguments). Patent Owner also describes Petitioner’s questioning on redirect as “transparent attempt to qualify the FNLs as business records.” *Id.* (citing Ex. 1055, 56:16–58:9). Questioning that transparent certainly put Patent Owner on notice that Petitioner may rely on that testimony in response to any motion to exclude, even if the filing of the transcript occurred after the deadline. Patent Owner cannot credibly claim surprise or prejudice due to a failure to foresee Petitioner’s reliance on the testimony. Further, Patent Owner’s repeated use of the transcript in its Motion belies its assertion that the transcript is off limits. We will not endorse Patent Owner’s attempt to use the transcript as a sword for its purposes, and our rules as a shield to prevent Petitioner from using the same transcript to rebut Patent Owner’s contentions.¹⁷ Accordingly, we consider all of Petitioner’s cited evidence in support of its positions, including the transcript from the deposition of Mr. Netka. *See* Ex. 1055.

Turning to the merits, we agree with Petitioner that Mr. Netka’s declaration and testimony are sufficient to authenticate the documents. As an initial matter, Patent Owner does not argue that any of the content of the exhibits suggest that the documents are not what they purport to be, or that they were altered in some way.

¹⁷ To the extent Petitioner failed to timely file supplementary evidence, under these unique circumstances, we exercise our discretion to waive that deadline. *See* 37 C.F.R. § 42.5(b).

Given the lack of any specific argument that the documents are not what they appear to be, or that they were not Petitioner's business records produced and maintained in the ordinary course of business, Petitioner need not do much to show that these documents are authentic and fall under the business records exception. For example, courts have referred to the authentication requirement under Federal Rule of Evidence 901 as a "low bar." *United States v. Turner*, 934 F.3d 794, 798 (8th Cir. 2019). "The party authenticating the exhibit need only prove a rational basis for that party's claim that the document is what it is asserted to be." *United States v. Needham*, 852 F.3d 830, 836 (8th Cir. 2017) (internal quotation marks and citation omitted). As to the business records hearsay exception pursuant to Federal Rule of Evidence 803(6), "[b]ecause of the general trustworthiness of regularly kept records and the need for such evidence in many cases, the business records exception has been construed generously in favor of admissibility." *Conoco Inc. v. Dep't of Energy*, 99 F.3d 387, 391 (Fed. Cir. 1996), *as amended on reh'g in part* (Jan. 2, 1997). Courts have made clear "that the 'custodian or other qualified witness' who must authenticate business records need not be the person who prepared or maintained the records, or even an employee of the record-keeping entity, as long as the witness understands the system used to prepare the records." *Id.*

In our view, Mr. Netka possesses sufficient knowledge to credibly testify that the exhibits are what they purport to be. Our previous discussion of Mr. Netka's relevant personal knowledge and credibility, in the context of the PM-465 OMM discussion, applies here as well. We highlight the following additional facts as relevant here.

Mr. Netka worked at Petitioner during the relevant time frame, and had intimate knowledge regarding the types of documents in question and Petitioner's general practices. Ex. 1046 ¶¶ 4–8, 11, 13–14, 16–17, 19–23. This knowledge suffices to establish Mr. Netka's first-hand knowledge, and the declaration coupled with his statements at deposition establish the authenticity of the documents and that the documents fall under the business record exception to hearsay. *See id.* ¶¶ 1–25; Ex. 1055, 19:12–21:7 (personal knowledge regarding shipment of manuals consistent with protocol associated with FNLs), 21:21–23:7 (personally responsible for maintaining manuals), 27:7–13 (responsible for group that mainlined PM-465 OMM). Mr. Netka testified that he reviewed the FNLs cited in his declaration and the source of the documents. Ex. 1055, 13:18–14:7, 26:3–16, 34:25–35:13. Mr. Netka also testified as to the dates of creation of Exhibits 1016–1024, the individuals that created them at Petitioner, how they were kept (in the ordinary course of business), where they were stored, and the individual that provided them to Mr. Netka. *See* Ex. 1055 at 56:16–58:9. Mr. Netka provided similarly cogent testimony regarding Exhibits 1036 and Exhibits 1025–1035. *See id.* at 32:21–33:11, 34:25–35:24, 53:3–55:7 (addressing invoices at Exs. 1025–1035), 55:9–56:15 (addressing Ex. 1036). As to Exhibits 1037–1039 (the PM-465 OMM manuals), Mr. Netka again provided sufficient testimony to establish the authenticity of the documents, and that they were produced and kept in the ordinary course of business. *See id.* at 10:1–13, 21:21–23:22, 26:3–16, 27:4–13, 51:3–53:1, 58:10–60:16; *see also* Ex. 1046 ¶¶ 11, 15–27.

We credit the testimony of Mr. Netka in his declaration and at his deposition, and are not persuaded by Patent Owner's repeated arguments

that he lacks sufficient personal knowledge to assess the authenticity and business records issues they raise. Patent Owner raises the bar too high. *See Air Land Forwarders, Inc. v. United States*, 172 F.3d 1338, 1344 (Fed. Cir. 1999) (where additional guarantees of reliability were present, the business records “were properly admitted by the trial court even though the government did not produce a witness that could testify with first-hand knowledge as to the procedures used in the original preparation of each of the repair estimates”); *Conoco*, 99 F.3d 391 (witness need not be the person who prepared or maintained the records).

As to the business records exception, we have difficulty imagining how a company that sells and ships complex products that require manuals could *not* have produced and maintained the invoices, Factory Notification Lists, and manuals at issue here in the ordinary course of business. That is their business.¹⁸ *See Conoco*, 99 F.3d at 392 (“[T]he sufficiency of the foundation evidence must be assessed in light of the nature of the documents at issue; documents that are standard records of the type regularly maintained by firms in a particular industry may require less by way of foundation testimony than less conventional documents proffered for admission as business records.”); *see also City of New York v. Pullman, Inc.*, 662 F.2d 910, 914 (2d Cir. 1981) (noting exceptions to the hearsay rule are to be “applied in a commonsense manner”).

¹⁸ We also reject Patent Owner’s argument that Exhibit 1037, the PM-465 OMM manual, lacks relevance because it was not prior art. *See* Mot. Exclude 13–14. As discussed above, we conclude that Ex. 1037 is prior art.

Based on the foregoing, we are not persuaded that any of the exhibits subject to this Motion are inadmissible and should be excluded.

Accordingly, we deny Patent Owner's Motion to Exclude.

H. Petitioner's Motion to Seal (Paper 25)

Petitioner's first Motion to Seal seeks to seal confidential versions of Exhibits 1046 and 1052, which are declarations, and documentary Exhibits 1016–1036. Paper 25, 2. Petitioner provides redacted versions of the declarations that exclude purportedly confidential information. *Id.*

Petitioner argues that the confidential information

consists of descriptions of sensitive customer, shipping, and dealer information. This information is contained in paragraph 20 of Exhibit 1046, paragraphs 3-6, 8, and 9 of Exhibit 1052, and Exhibits 1025-1035. The second category consists of Caterpillar internal corporate policies and systems. This information is contained in paragraph 13 of Exhibit 1046 and Exhibits 1016-1024 and 1036.

Id. at 3–4. Petitioner argues that good cause exists for sealing the confidential information because it includes sensitive information, such as customer, shipping, dealer information, and internal corporate policies that would be valuable to Petitioner's customers and harmful to Petitioner if made public. *Id.* at 4–5. Petitioner agrees to be bound by the Board's default protective order. *Id.* at 5.

Patent Owner argues that we should deny Petitioner's Motion because Petitioner redacted Exhibits 1016–1036 in their entirety, without identifying with sufficient specificity the information that contains confidential information. Opp. Mot. Seal 1–2. Patent Owner contends that Petitioner's references to confidential corporate policies and procedures as well as specific customer information are too generic to justify the redactions. *Id.* at

3. Patent Owner also contends that “it appears” that some portions of the exhibits do not fall into the categories of confidential information Petitioner identifies in its Motion. *Id.* at 4.

There is a strong public policy that favors making information filed in *inter partes* review proceedings open to the public. *See Garmin Int’l v. Cuozzo Speed Techs., LLC*, IPR2012-00001, Paper 34 at 1–2 (PTAB March 14, 2013) (discussing the standards of the Board applied to motions to seal). The moving party bears the burden of showing that the relief requested should be granted. 37 C.F.R. § 42.20(c).

[A] movant to seal must demonstrate adequately that (1) the information sought to be sealed is truly confidential, (2) a concrete harm would result upon public disclosure, (3) there exists a genuine need to rely in the trial on the specific information sought to be sealed, and (4), on balance, an interest in maintaining confidentiality outweighs the strong public interest in having an open record.

Argentum Pharms. LLC v. Alcon Research, Ltd., IPR2017-01053, Paper 27 at 4 (PTAB January 19, 2018) (informative).

We find that Petitioner has established good cause for sealing the exhibits in question. Contrary to Patent Owner’s argument, our review of the exhibits—mainly invoices and FNLs—do not appear to include large amounts of information that should be made public. Notably, Patent Owner does not call out any information in particular that should not be considered confidential. By not providing any examples of any content that does not qualify as confidential information, Patent Owner provides scant support for its arguments. We are also mindful that Petitioner and Patent Owner are competitors, and that any public disclosure of potentially sensitive and confidential information helpful to Patent Owner should not be taken lightly.

Under these circumstances, we find that Petitioner has established good cause for sealing the exhibits in the manner it proposes, and we grant Petitioner's Motion to Seal. *See* Paper 25.

I. Petitioner's Motion to Seal (Paper 32)

Petitioner's second Motion to Seal seeks to seal confidential versions of Exhibits 1054 and 1055, which are redacted versions of deposition transcripts. Paper 32, 2. Petitioner contends that the redacted information in the exhibits includes "sensitive, non-public, customer and dealer information that a business would not make public." *Id.* According to Petitioner, the redacted information includes "customer and dealer information." *Id.* at 3. Petitioner argues that good cause exists to seal this information. *Id.* at 4. Patent Owner does not oppose the Motion.

Based on our review of the subject exhibits, we find that Petitioner seeks to keep sensitive, confidential information sealed, and has established good cause to seal the information because it is sensitive and confidential. Accordingly, we grant Petitioner's second Motion to Seal. *See* Paper 32.

III. CONCLUSION

For the foregoing reasons, Petitioner has demonstrated, by a preponderance of the evidence, that claims 1, 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27 are unpatentable under 35 U.S.C. § 103 based on Davis and Brabec. Petitioner has not demonstrated by a preponderance of the evidence that claims 5 and 15 are unpatentable under 35 U.S.C. § 103 over Davis and Brabec or that claims 1, 6, 8, 10, 11, 16, 17, 19, 20, 24, 26, and 27 are unpatentable under 35 U.S.C. § 103 based on Davis and Krieg. As to Patent Owner's Contingent Motion to Amend, Petitioner has demonstrated that Patent Owner's proposed substitute claims are

unpatentable under 35 U.S.C. § 103, and we deny Patent Owner’s Motion to Amend. We also deny Patent Owner’s Motion to Exclude, and grant both of Petitioner’s Motions to Seal.

We set forth a summary of our conclusions with respect to the challenged claims in the tables below.

References	Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
Davis and Brabec	§ 103	1, 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27	5 and 15
Davis and Krieg	§ 103		1, 6, 8, 10, 11, 16, 17, 19, 20, 24, 26, and 27
Overall Outcome		1, 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27	5 and 15

Motion to Amend Outcome	Claims
Original Claims Cancelled by Amendment	1, 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27
Substitute Claims Proposed by Amendment	28–43
Substitute Claims: Motion to Amend Granted	
Substitute Claims: Motion to Amend Denied	28–43
Substitute Claims: Not Reached	

IV. ORDER

Accordingly, it is

ORDERED that claims 1, 3, 6–8, 10, 11, 13, 16, 17, 19, 20, 22, 24, 26, and 27 of U.S. Patent No. 8,308,395 B2 are determined to be unpatentable;

FURTHER ORDERED that claims 5 and 15 of U.S. Patent No. 8,308,395 B2 are not determined to be unpatentable;

FURTHER ORDERED that Patent Owner's Contingent Motion to Amend (Paper 18) is *denied*;

FURTHER ORDERED that Patent Owner's Motion to Exclude (Paper 42) is *denied*;

FURTHER ORDERED that Petitioner's Motion to Seal (Paper 25) is *granted*;

FURTHER ORDERED that Petitioner's Motion to Seal (Paper 32) is *granted*; and

FURTHER ORDERED that, because this is a final 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.

IPR2018-01091
Patent 8,308,395 B2

For PETITIONER:

Joshua Goldberg
Christopher Isaac
Abhay Watwe
FINNEGAN, HENDERSON, FARABOW, GARRETT, & DUNNER, LLP
joshua.goldberg@finnegan.com
chris.isaac@finnegan.com
abhay.watwe@finnegan.com

For PATENT OWNER:

Richard Coller
Jason Fitzsimmons
Trevor O'Neill
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
rcoller-PTAB@sternekessler.com
jfitzsimmons-PTAB@sternekessler.com
toneill-PTAB@sternekessler.com

Gary Montle
PATTERSON INTELLECTUAL PROPERTY LAW GROUP PC
glm@iplawgroup.com