

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ANTHONY INC.,
Petitioner,

v.

CONTROLTEC, LLC,
Patent Owner.

IPR2025-00559
Patent 7,207,181 B2

Before SCOTT A. DANIELS, BARRY L. GROSSMAN, and
SEAN P. O'HANLON, *Administrative Patent Judges*.

GROSSMAN, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background and Summary

Anthony Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–20 (the “challenged claims”) of U.S. Patent No. 7,207,181 B2 (Ex. 1001, “the ’181 patent”). ControlTec, LLC (“Patent Owner”) filed a Preliminary Response (Paper 8, “Prelim. Resp.”).

We have jurisdiction under 35 U.S.C. § 314. Under § 314, an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). The Board determines whether to institute a trial on behalf of the Director. 37 C.F.R. § 42.4(a).

Petitioner has the burden of proof. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (“In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”).

After considering the Petition, the Preliminary Response, and the evidence of record, based on the analysis in this Decision, we determine that Petitioner has demonstrated that there is a reasonable likelihood that at least one of the challenged claims is unpatentable. A decision to institute is “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition.” *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018). Accordingly, we institute an *inter partes* review of all challenged claims and on all grounds asserted in the Petition.

B. Real Parties-in-Interest

Petitioner identifies itself as well as Dover Corporation and Hillphoenix, Inc. as the real parties-in-interest. Pet. 87.

Patent Owner identifies itself as the sole real party-in-interest. Paper 4, 2.

C. Related Matters

The parties indicate that the '181 patent is the subject of the following district court proceeding: *ControlTec, LLC v. Anthony, Inc.*, Case No. 1:24-cv-00883 (D. Del.). Pet. 87; Paper 4, 2.

We note that the '181 patent also is related to Patent No. 7,421,847 B2 (“the '847 patent”), which is challenged in IPR2025-00636. The '847 patent is a “[d]ivision of application No. 11/069,378, filed on Mar. 1, 2005, now Pat. No. 7,207,181.” Ex. 3001 code (62).

D. The '181 patent

The '181 patent is titled “Refrigeration Unit Condensation Prevention.” Ex. 1001, code (54). The disclosed technology relates to frame and door heating to remediate condensation build-up in refrigerated display cases. *Id.* at 1:6–8. An exemplary method prevents condensation from forming by “activating frame/door heaters before the dew point temperature at frame and door surfaces is reached.” *Id.* at 2:17–20. In this example, the apparatus is configured to sense “frame temperature and dew point by thermally isolating temperature sensors and constantly updating data to reliably provide the ability to accurately anticipate condensation at case surfaces.” *Id.* at 2:22–26.

Figure 1 of the '181 patent is reproduced below.

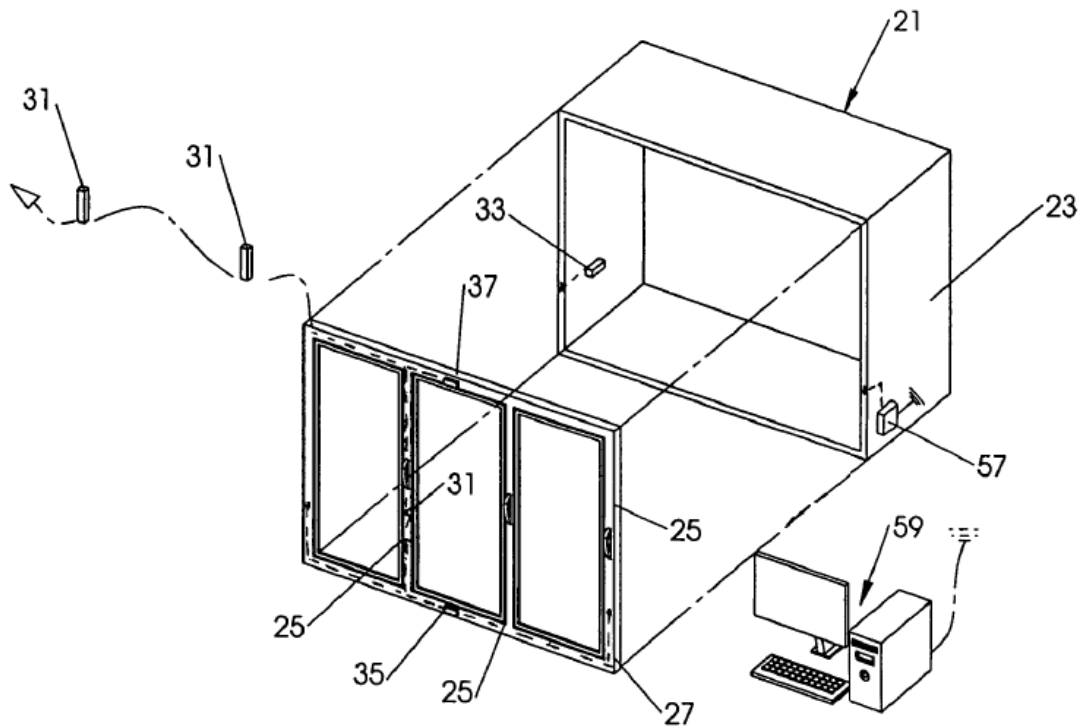


FIGURE 1

Figure 1 “is a diagrammatic illustration of one embodiment of the condensation prevention apparatus and system.” Ex. 1001, 4:43–44. Commercial freezer/cooler display unit 21 includes a display container 23 having doors 25 in frame 27. *Id.* at 5:15–17. Case 21 has “local controller unit 31 connected with an array of case sensors including internal case temperature sensor 33, external case frame temperature sensor 35 and dew point sensor 37.” *Id.* at 5:21–24.

Controller unit 31 includes microprocessor 53 and communications board/transmitter/receiver 57 connected to controller unit 31. *Id.* at 5:34–44; Fig. 2. “Central processing” 59 (*see* Fig. 1) receives data from controllers 31 via communications board/transmitter/receiver 57, “including data

enabling tracking, storing and making available reports of the history of ambient air temperature and humidity from dew point sensor 37, case frame and internal case temperatures from sensors 35 and 33, respectively, and power consumption of door heaters.” *Id.* at 5:65–6:5.

Temperature sensors 33 and 35 are similar and are housed in housing 83, illustrated in Figure 5, reproduced below. *Id.* at 6:28–32.

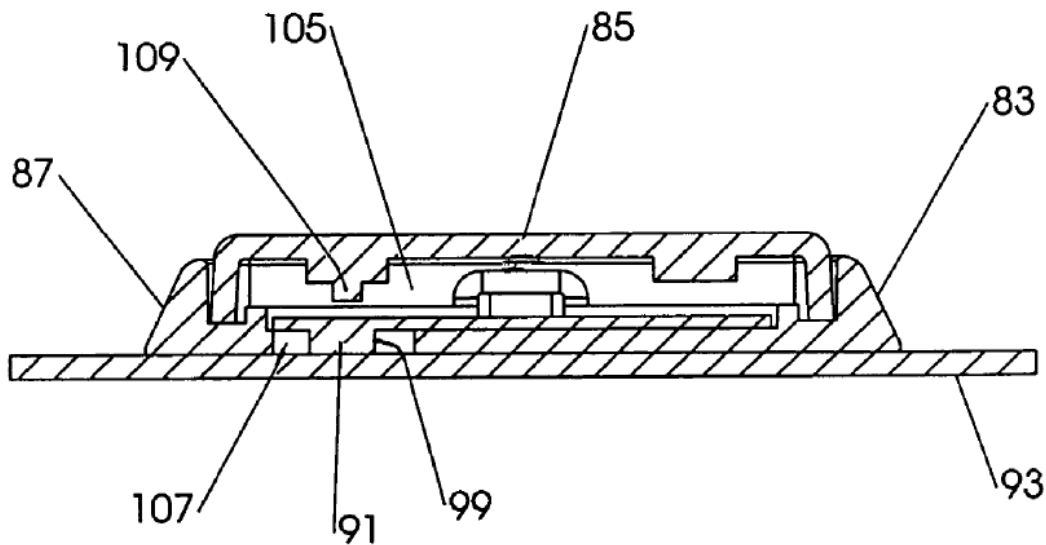


FIGURE 5

Figure 5 “is a sectional view of the sensor/housing.” Ex. 1001, 4:53. Housing 83 includes cover 85, sensor locating base 87 and circuit board/carrier 89 locating temperature sensor 35 including temperature sensing chip 91. *Id.* at 6:32–34. The housing assembly is mounted to case frame unit or door frame unit 93 of display case as shown in Figure 5. *Id.* at 6:35–38. Cover 85 and base 87 of housing 83 are configured to “thermally isolate sensing chip 91 from the warming effects of ambient air temperature in the vicinity of the chip and transfer thereof by the housing to the chip.” *Id.* at 6:50–53. In particular, “[a]ir space pockets 105 and 107 above and

around chip 91, respectively, and limited housing contact (see Fig. 5 wherein only a single locating post 109 maintains board/carrier 89 at its position in housing 83) isolate chip 91 from the housing.” *Id.* at 6:53–57. The ’181 patent explains that housing 83 should be located at the coldest spot on the exterior of the freezer, which is usually in the center of the case between the bottom of door 25 and door or case frame unit 93.

Figure 6 is reproduced below.

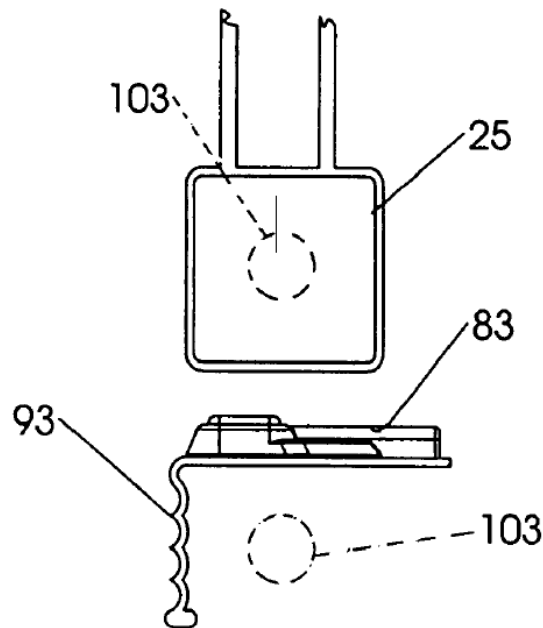


FIGURE 6

Figure 6 “is an illustration showing positioning of the sensor/housing.” Ex. 1001, 4:54–55. In Figure 6, door and frame heaters 103 are located inside door 25 and frame 93 of case 21. *Id.* at 6:48–49.

E. Illustrative Claim

Petitioner challenges claims 1–20. Claims 1, 8, and 14 are independent claims. Independent claim 1 is directed to an “apparatus.” Ex. 1001, 9:29–31. Independent claims 8 and 14 are directed to a “system.” *Id.* at 10:34–37, 11:20–22.

Independent claim 1 is illustrative and is reproduced below with bracketed labels employed by Petitioner to facilitate analysis and discussion. *See* Pet. ix.

[1.pre] Condensation control apparatus for a refrigerated display case having at least one door, a frame and at least one frame/door heater, said apparatus comprising:

[1.a] a frame temperature sensing unit adapted for monitoring temperature of one of the display case door or display case frame and including a carrier having a temperature sensor thereat;

[1.b] a dew point sensing unit adapted for monitoring ambient air temperature and relative humidity outside of the display case and including a carrier having at least one dew point sensing component thereat;

[1.c] a control unit communicating with said sensing units and including processing means connected for activating the display case frame/door heater when monitored display case door or frame temperature drops below a preselected set point above a dew point value derived from monitored ambient temperature and relative humidity; and

[1.d] housing means for locating said sensing units including structure establishing thermal isolation of said sensing units by minimizing heat transfer contacts between said sensing units and said housing means and locating said temperature sensor and said at least one dew point sensing component amid insulated air pockets formed by said structure of said housing means.

Ex. 1001, 9:29–53.

F. Prior Art and Asserted Grounds

Petitioner asserts that one or more of the challenged claims would have been obvious on the following five grounds, which Petitioner labels as Grounds “1A–1E” (Pet. 1):

Claim(s) Challenged	35 U.S.C. §¹	Reference(s)/Basis
1, 2, 14–18	103(a)	Carter ²
1–7, 14–18	103(a)	Carter, Beatenbough ³ , King ⁴
17–20	103(a)	Carter, Beatenbough, King, Gatling ⁵
1–6	103(a)	Carter, Beatenbough, Kotani ⁶
8–13	103(a)	Carter, Beatenbough, Gatling

Petitioner also relies on the Declaration testimony of Dr. George P. Henze. *See* Ex. 1003.⁷

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 296–07 (2011), took effect on September 16, 2011. The changes to 35 U.S.C. §§ 102 and 103 in the AIA do not apply to any patent application filed before March 16, 2013. Because the application for the patent at issue in this proceeding was filed before March 16, 2013, we refer to the pre-AIA version of the statute.

² U.S. Patent No. 7,137,262 B2, Nov. 21, 2006, Ex. 1004 (“Carter”).

³ U.S. Patent No. 5,778,689, July 14, 1998, Ex. 1006 (“Beatenbough”).

⁴ U.S. Patent No. 6,422,062 B1, July 23, 2002, Ex. 1005 (“King”).

⁵ U.S. Patent No. 6,502,409 B1, Jan. 7, 2003, Ex. 1007 (“Gatling”).

⁶ U.S. Patent No. 5,396,796, Mar. 14, 1995, Ex. 1008 (“Kotani”).

⁷ Dr. Henze earned an undergraduate degree in Mechanical Engineering, Master’s degrees in Mechanical Engineering, and a Ph.D. degree “in civil engineering, focusing on building systems engineering.” Ex. 1003 ¶ 6. He currently is “an endowed professor at the University of Colorado Boulder in the Department of Civil, Environmental, and Architectural Engineering in the College of Engineering and Applied Science.” *Id.* ¶ 10. His extensive experience in academia and research is summarized in his testimony. *See id.* ¶¶ 5–14; *see also id.*, App. A (Dr. Henze’s CV).

II. DISCRETIONARY DENIAL

In its Preliminary Response, Patent Owner asserts that the *inter partes* review should not be instituted under 35 U.S.C. § 325(d) because the primary references have already been considered. Prelim. Resp. 46–50. This issue is beyond our delegated authority, as set out in the Acting Director’s March 26, 2025, Memorandum stating the “Interim Process for PTAB Workload Management” and in the Decision referring this proceeding to the Board (Paper 12).

Pursuant to the Acting Director’s Memorandum, Patent Owner filed an opening brief on Discretionary Denial (Paper 7, filed on April 24, 2025) and a Reply brief (Paper 10, filed on June 12, 2025). As stated in its Preliminary Response, Patent Owner brings its request for discretionary denial to our attention because “[a]fter Patent Owner presented its brief on Discretionary Denial (Paper 7), the Director issued a new precedential opinion addressing the scope and application of discretionary denial under 35 U.S.C. § 325(d).” Prelim. Resp. 46 (citing *Ecto World, LLC v. Rai Strategic Holdings, Inc.*, IPR2024-01280, Paper 13 (PTAB May 19, 2025)). We note that this decision could have been cited in Patent Owner’s June 12, 2025, Reply brief on discretionary denial (Paper 10), but was not cited in that brief.

On July 16, 2025, the Acting Director issued her decision, which denied Patent Owner’s request for discretionary denial and referred this case to the Board. Paper 12, 3. As stated in the Acting Director’s decision, “the Petitions are referred to the Board to handle the cases in the normal course, including by issuing a decision on institution addressing the merits and other nondiscretionary considerations, as appropriate.” *Id.* Thus, the scope of our delegated authority only extends to “the merits and other nondiscretionary

considerations.” Accordingly, we do not address the discretionary denial issue raised in Patent Owner’s Preliminary Response.

III. ANALYSIS

A. *Legal Standards*

Section 103 forbids issuance of a patent when “the differences between the subject matter sought to be patented 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 on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when available, evidence such as commercial success, long felt but unsolved needs, and failure of others.⁸ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *see also* *KSR*, 550 U.S. at 407 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”). The Court in *Graham* explained that these factual inquiries promote “uniformity and definiteness,” for “[w]hat is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context.” 383 U.S. at 18.

The Supreme Court made clear that we apply “an expansive and flexible approach” to the question of obviousness. *KSR*, 550 U.S. at 415. Whether a patent claiming the combination of prior art elements would have

⁸ Patent Owner does not direct us to any objective evidence of non-obviousness in its Preliminary Response.

been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To support this conclusion, however, it is not enough to show merely that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness additionally requires that a person of ordinary skill at the time of the invention “would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.*

In determining whether there would have been a motivation to combine prior art references to arrive at the claimed invention, it is insufficient to simply conclude the combination would have been obvious without identifying any reason *why* a person of skill in the art would have made the combination. *Metalcraft of Mayville, Inc. v. Toro Co.*, 848 F.3d 1358, 1366 (Fed. Cir. 2017).

Moreover, in determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 164 (Fed. Cir. 1985) (“It is elementary that the claimed invention must be considered as a whole in deciding the question of obviousness.”); *see also Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983) (“[T]he question under 35 U.S.C. § 103 is not whether the differences *themselves* would have been obvious. Consideration of differences, like each of the findings set forth in *Graham*, is but an aid in reaching the ultimate determination of whether the claimed invention *as a whole* would have been obvious.”).

As a factfinder, we also must be aware “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *KSR*, 550 U.S. at 421.

Applying these general principles, we consider the evidence and arguments of the parties.

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). “This reference point prevents . . . factfinders from using their own insight or, worse yet, hindsight, to gauge obviousness.” *Id.*

“The *Graham* analysis includes a factual determination of the level of ordinary skill in the art. Without that information, a . . . court cannot properly assess obviousness because the critical question is whether a claimed invention would have been obvious at the time it was made to one with ordinary skill in the art.” *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *see also Ruiz v. A.B. Chance*, 234 F.3d 654, 666 (Fed. Cir. 2000) (“The determination of the level of skill in the art is an integral part of the *Graham* analysis.”).

Factors pertinent to a determination of the level of ordinary skill in the art include: (1) educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of workers active in the field. *Env’t Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). Not all such factors may be present in every case, and one or

more of these or other factors may predominate in a particular case. *Id.* Moreover, these factors are not exhaustive but are merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007). In determining a level of ordinary skill, we also may look to the prior art, which may reflect an appropriate skill level. *Okajima*, 261 F.3d at 1355.

Petitioner asserts that a person of ordinary skill in the art would have had “a bachelor’s degree in mechanical engineering, electrical engineering, or a comparable field and at least three to five years of experience related to heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems.” Pet. 4 (citing Ex. 1003 ¶¶ 31–35).

Dr. Henze’s Declaration testimony states he considered some of the factors listed above. Ex. 1003 ¶¶ 31–35). Dr. Henze testifies that, in his opinion, the level of ordinary skill is as stated by Petitioner. *Id.* at 31. He also states that “[s]uch experience could be obtained through research and study in a graduate program or through comparable exposure through industry employment, and additional years of experience could substitute for the advanced-level degree.” *Id.*

Patent Owner does not assert a level of ordinary skill, nor does Patent Owner dispute Petitioner’s definition of the level of ordinary skill. *See generally* Prelim. Resp.

For purposes of this Decision, based on the prior art, the sophistication of the disclosed technology in the ’181 patent, and Dr.

Henze’s undisputed testimony, we adopt Petitioner’s definition of the level of ordinary skill.⁹

C. Claim Construction

We construe each claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b) (2021). Under this standard, claim terms are generally given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc) (“We have frequently stated that the words of a claim ‘are generally given their ordinary and customary meaning.’” (citations omitted)).

Petitioner asserts that nine terms are “mean-plus-function claim terms.” Pet. 4–10. As required by our rule, (37 C.F.R. § 104(b)(3)), for each of the mean-plus-function claim terms, Petitioner identifies the function as well as the specific portions of the ’181 patent’s specification that describe the corresponding structures. *Id.*

Patent Owner does not comment on Petitioner’s proposed means-plus-function claim constructions. *See generally* Prelim. Resp. Thus, for purposes of this initial decision, we will adopt the means-plus-function constructions proposed by Petitioner.

Regarding additional claim construction, however, Patent Owner asserts:

⁹ Any determination, no matter how designated in this decision (except our decision to institute), is preliminary and non-binding. Our Final Written Decision, based on a fully developed record of arguments and evidence, will state our binding determinations, findings, and conclusions.

The preamble limitations, namely a “refrigerated display case,” breath[e] life and meaning into the claims and form the antecedent for “the display case door or display case frame” of claims 1 and 8 and the “the display case frame” of claim 14, and therefore provide aspects of the claim that need to be addressed.

Prelim. Resp. 13–14.

According to Patent Owner, “[t]he specification explains that the display container shown in Fig. 1 does not show the display container frame, and yet Petitioner points to substantially similar figure in Carter as allegedly showing a ‘display case frame.’” *Id.* at 14. Patent Owner does not direct us to any other figure or any disclosure in the ’181 patent that shows or describes the “frame.” It is not Patent Owner’s burden to do so. We find no illustration or description of a “frame” element or limitation, however, on our own review of the ’181 patent.

Neither Petitioner nor Patent Owner provide any specific construction of the word “display” or “frame,” or the term “display case.”

We do not perceive the need to construe any additional claim limitation. Our conclusion concerning instituting an *inter partes* review would be unaffected by a determination that the preambles of the claims are limiting. Accordingly, for this initial Decision to institute an *inter partes* review, the words “display” or “frame,” and the term “display case” will be given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure.

Patent Owner’s argument concerning a “display case” is directed solely to the Carter reference. Patent Owner asserts that Carter does not use the word “frame” or “display” in describing the disclosed structure. *See, e.g.*, Prelim. Resp. 16–17. Patent Owner is correct. Neither the word

“frame” nor the word “display” appears in Carter’s disclosure. Moreover, Carter does not disclose use of a glass door, which allows one to see inside the case without opening the door. In Carter, it appears that one must open the door of the disclosed case to see inside and see the goods that may be displayed.

In the context of 35 U.S.C. § 102, a reference need not disclose the elements in the very same terms used by a patent to establish that claims in the patent are invalid or not patentable. *Adasa Inc. v. Avery Dennison Corp.*, 55 F.4th 900, 910 (Fed. Cir. 2022) (citing *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (“[T]he reference need not satisfy an *ipsissimis verbis* test.” (citing *In re Bond*, 910 F.2d 831, 832–33 (Fed. Cir. 1990)))). And “[e]ven if a reference’s teachings are insufficient to find anticipation, that same reference’s teachings may be used to find obviousness” where it suggests some reason to modify the prior art to obtain the claimed limitations. *Id.* (citation omitted). Thus, when using the same reference in an obviousness context, the same principle would apply, the reference need not satisfy an *ipsissimis verbis* test. Thus, the fact that Carter does not use the word “frame” does not mean that Carter’s disclosed freezer/refrigeration system does not have a frame, as claimed in the ’181 patent.

Carter discloses a freezer/refrigeration system that includes a means for reading a first *cabinet surface* temperature measurement, a means for reading a first ambient temperature measurement, and means for reading an ambient relative humidity. Ex, 1004, 2:44–54. The system also provides for a means for measuring a calculated dew point reading. *Id.*; *see also id.* at 2:49–55–67.

The ’181 patent discloses the same surface temperature measurement. As stated in the summary of the disclosed invention, the ’181 patent

discloses “preventing condensation from forming by activating frame/door heaters before the dew point temperature at *frame and door surfaces* is reached.” Ex. 1001, 2:14–20 (emphasis added). Thus, the “frame” may be a surface surrounding an opening. Carter also discloses clearly that it is “desirable to automatically control the operation of providing supplemental heat such that it is only activated under conditions that would promote surface condensation on the sealing surface of freezer/refrigeration equipment.” Ex. 1004, 2:27–31.

Claims must be construed “only to the extent necessary to resolve the controversy.” *AstraZeneca AB v. Mylan Pharms. Inc.*, 19 F.4th 1325, 1345 (Fed. Cir. 2021) (quoting *Vivid Techs., Inc. v. American Science & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“Because we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy,’ we need not construe the claim preambles here where the construction is not ‘material to the [obviousness] dispute.’” (citations omitted)).

We determine that an explicit construction of the claims, beyond the required means-plus-function terms, is not necessary for the purposes of determining whether there is a reasonable likelihood that the Petitioner would prevail with respect to at least one of the claims challenged in the Petition. This determination does not preclude the parties from arguing their proposed constructions of the claims during trial. Indeed, the parties are hereby given notice that claim construction, in general, is an issue to be addressed at trial. Claim construction will be determined at the close of all the evidence and after any hearing. The parties are expected to assert all their claim construction arguments and evidence in the Petition, Patent

Owner's Response, Petitioner's Reply, Sur-reply or otherwise during trial, as permitted by our rules.

We also note that it is beyond reasonable dispute that Beatenbough, applied with Carter against the challenged claims in Grounds 1B–1E (*see, e.g.,* Pet. 35–41), discloses an “energy conservation device, for use with *display type* refrigeration and freezer units having *glass display doors* for preventing the formation of condensation and frost on the glass of the doors.” Ex. 1006, code (57) (Abstract, emphasis added).

*D. Ground 1A¹⁰ – Claims 1, 2, and 14–18
Based on Carter*

Petitioner asserts claims 1, 2, and 14–18 would have been obvious over Carter. Pet. 10–35. First, we summarize the disclosure of Carter.

1. Carter (Ex. 1004)

a) Analogous Art

Before discussing the substance of Carter, we consider Patent Owner's argument that Carter is not “analogous art.” Patent Owner asserts “Carter's teachings do not operate in the context of a refrigerated display case. As this ground [Ground 1A] is likely to fail since the primary reference is not even analogous art, significant time would be wasted addressing Ground 1A alone.” Prelim. Resp. 46. Patent Owner cites no evidence or analysis to support the conclusory assertion that Carter is not analogous prior art. *See Garrido v. Holt*, 547 F. App'x 974, 979 n.3 (Fed. Cir. 2013) (citing *In re Schulze*, 346 F.2d 600, 602 (CCPA 1965) (“Argument in the brief does not take the place of evidence in the record.”)). Patent Owner makes a similar argument in discussing the field of endeavor

¹⁰ We use Petitioner's alpha-numeric designation of the five distinct grounds for consistency with the record.

of Carter, but without labelling this as an “analogous art” issue. Prelim. Resp. 22–25. We address Patent Owner’s assertions here to determine whether Carter qualifies as a reference to be applied against the challenged claims.

A reference qualifies as prior art for an obviousness determination only when it is analogous to the claimed invention. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004) (“References within the statutory terms of 35 U.S.C. § 102 qualify as prior art for an obviousness determination only when analogous to the claimed invention.” (citing *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992))).

The Federal Circuit has laid out two separate tests to determine whether a reference is analogous art to the claimed invention, i.e., whether one of ordinary skill in the art would even look to the teachings of that reference. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). These two tests are: “(1) whether the art is from the same field of [the inventor’s] endeavor” 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.” *Id.*; see also *Netflix, Inc. v. DivX, LLC*, 80 F.4th 1352, 1359 (Fed. Cir. 2023) (“Importantly, ‘the scope of any field of endeavor will vary with the factual description of each invention.’ Unlike the reasonable-pertinence test, the field-of-endeavor test does not look to the problem that the patent purports to address. It is enough that the prior art reference falls within the relevant field of endeavor of the patent-in-suit.”) (citations omitted); *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1001 (Fed. Cir. 2016) (“To determine if art is analogous, we look to ‘the purposes of both the invention and the prior art.’ If a reference disclosure and the claimed invention have a same purpose, the reference

relates to the same problem, which supports an obviousness rejection.”
(citations omitted)).

The Supreme Court also informs us that:

When a work is available in one field, design incentives and other market forces can prompt variations of it, either in the same field or in another. If a person of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, § 103 likely bars its patentability. Moreover, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person’s skill.

KSR, 550 U.S. at 401. Additionally, *KSR* informs us that a “person of ordinary skill [here, a degreed engineer with at least three to five years of experience related to heating, ventilating, air conditioning, and refrigeration systems] is also a person of ordinary creativity, not an automaton.”
Id. at 421.

We determine, based on the record before us and the analysis above, and for purposes of this Decision, that Petitioner has established that Carter is analogous art because it relates to the same purpose and the same problem as the challenged claims, which is controlling condensation in refrigerator or freezer equipment in the form of a case with a door. Pet. 11–12. We recognize that Carter does not refer specifically to a “display” case. The record before us, however, does not support Patent Owner’s assertion that a refrigerated *display* case, as claimed in the ’181 patent, is substantively different from a refrigerated case, as disclosed in Carter. Indeed, based on *Beatenbough*, and the record before us, the only difference between a refrigerated *display* case and a refrigerated case is a glass door. *See, e.g.*, Ex. 1006, 1:46–52; Ex. 1003 ¶ 81 (“[J]ust as *condensation control apparatus*

were desirable in the context of refrigerated cases for specimens, they were likewise sought by those of skill in the art for refrigerated cases used to display food items.”).

For purposes of establishing a reasonable likelihood of Petitioner prevailing, there is no persuasive argument or evidence in the record before us that Carter is *not* analogous to the claimed invention in the '181 patent.

b) Carter's Disclosure

Carter is titled “Supplemental Heat Control Apparatus and Method for Freezer/Refrigeration Equipment.” Ex. 1004, code (54). Carter “relates to providing supplemental heat from a heat source based upon the operating environment of refrigeration or freezer equipment.” *Id.* at 1:9–11. As summarized in its Abstract, Carter discloses that “[t]he supplemental heat is automatically controlled to provide heating to a sealing area to prevent condensation from forming. *Id.* at code (57).

Figure 1 of Carter is reproduced below.

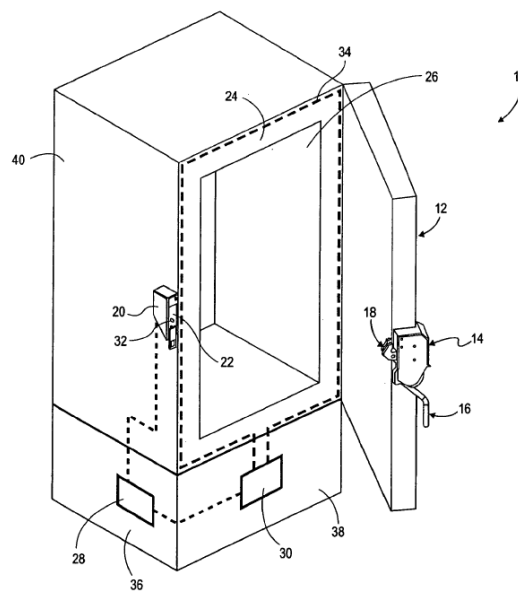


FIG. 1

Figure 1 “is a perspective view illustrating supplemental heat system components incorporated into a refrigerator or freezer.” Ex. 1004, 1:30–32. Refrigerator/freezer 10 includes door 12 having sealing surface 24, which in a closed position, retains and maintains an operating temperature within compartment chamber 26 of the refrigerator/freezer, and prevents ambient temperatures from breaching into compartment chamber 26. *Id.* at 3:55–4:2. Carter explains that condensation is most likely to develop along sealing surface 24, and desires to prevent or eliminate the formation of condensation in this area. *Id.* at 4:13–17. Along these lines, Carter evaluates thermal conditions using sensors monitoring external surface temperature of the freezer/refrigeration equipment and other variables such as ambient temperature, and the ambient relative humidity. *Id.* at 4:18–22. Carter discloses collecting and evaluating sensor data, so that the surface heat is automatically activated when a set condition is approached or reached. *Id.* at 4:22–25. The components that perform these functions include control unit 28, switching unit 30, sensor assembly unit 32, and heating unit 34, which are mounted “along the refrigerator or freezer equipment at a lower side surface 36, a lower front surface 38, a side surface [of] cabinet surface 40 and along the sealing surface 24, respectively.” *Id.* at 4:41–43.

Carter discloses that assembly unit 32 has surface temperature sensor 42, ambient temperature sensor 44, and ambient relative humidity sensor 46, and that the combined readings of these sensors “will determine whether it is necessary to supply supplemental heat to the sealing surface 24 of the refrigerator or freezer.” *Id.* at 5:1–20. Carter’s sensors monitor the cabinet surface temperature with respect to the dew point and when the cabinet surface temperature is less than the dew point plus 2° C, “the control unit 28 enacts the switching unit 30 to activate supplemental heat 62 to the sealing

surface 24 of the refrigerator or freezer equipment 10 via the heating unit 34.” *Id.* at 5:35–53.

2. *Analysis of Independent Claims 1 and 14*

Independent claims 1 and 14 are similar except for two limitations. First, claim 1 recites, Element [1.d], “housing means,” which is not recited in claim 14. Second, claim 1 recites Element [1.c] “a control unit . . . for activating the display case frame/door heater,” whereas claim 14 recites Element [14.c] “control means for . . . activating and deactivating the frame/door heater.” Pet. ix, xiii–xiv.

Petitioner provides a clause-by-clause analysis of claim 1 mapping each element or limitation of claim 1 to what Petitioner asserts is the corresponding disclosure in Carter. *Id.* at 11–26. It does the same for each claim in Ground 1A. *Id.* at 26–35.

Throughout its analysis of the claims in Ground 1A, Petitioner cites to the written description and drawings of Carter and to the Declaration testimony of Dr. Henze for evidentiary support. *See, e.g., id.* at 11 (citing Ex. 1003 ¶¶ 79–81), 26 (citing Ex. 1004, 1:1–11, 2:22–31, 2:35–43, 3:40–53, 4:44–55, 6:30–49, Abstract). We need not repeat Petitioner’s detailed, comprehensive analysis.

Patent Owner’s arguments for denying institution focus on the assertion that “the Petition fails to show ‘the display case frame’ and ‘the refrigerated display case.’” Prelim. Resp. 20–21 (citation modified). Patent Owner also asserts “because there is no display case frame in Carter,” “Petitioners conflate a surface of Carter with a display case frame, removing or ignoring the words ‘display case; from the claims, treating any ‘frame’ as equivalent. Without fully addressing the words of the claims, not only are the claims not taught, they cannot be rendered obvious.” *Id.* at 27. Patent

Owner concludes the “Petition failed to show all elements of the claims and address all of the words of the claims.” Prelim. Resp. 21.

As discussed above in our claim construction analysis, based on the record before us, we disagree.

As asserted by Petitioner, “Carter explains that the above-discussed *refrigerated case* can be used for ‘housing specimens requiring subjection to certain operating temperatures for one of a variety of reasons,’ such as ‘to ensure that it doesn’t spoil.’” Pet. 13 (citing Ex. 1004, 4:3–12) (emphasis in original text). Petitioner also asserts that a “POSITA would have been motivated to apply Carter’s *apparatus* to the well-known use case of *refrigerated display cases* that store retail food items in an environment where ‘undesirable condensation can occur.’” *Id.* (citing Ex. 1003 ¶ 81) (emphasis in original text).

Dr. Henze testifies that, “[t]hough Carter does not expressly teach putting the contents within the *refrigerated case* on *display*, a POSITA would have been motivated to apply Carter’s *apparatus* to the well-known use case of *refrigerated display cases* that store retail food items in an environment where ‘undesirable condensation can occur.’” Ex. 1003 ¶ 81 (citing Ex. 1004, 1:15–2:32; and further indicating *see supra* §VI.B.1 (explaining that condensation control systems were commonly employed on refrigerated display cases used in retail food stores)) (emphasis in original text).

Patent Owner also asserts that “Petitioner attempts to justify combining or modifying Carter by first misstating the field of the ’181 Patent as relating to the field of “remediat[ing] condensation build up[sic].” Prelim. Resp. 22 (citing Pet. 37) (alterations in original). According to Patent Owner, “Petitioner fails to indicate that this is taken out of context

and fails to indicate that the full statement of the field identified in the '181 Patent is “remediat[ing] condensation build up in refrigerated display cases.” *Id.* (citing Ex. 1001, 1:6–8) (alteration in original) (emphasis in original text). Prelim. Resp. 22. This argument is essentially an argument that Carter is not analogous prior art, without using the term “analogous” and without any substantive analysis based on the applicable law for determining whether a reference is analogous art, as discussed in Section III.D.1.(a) of this Decision. In effect, Patent Owner asserts that a “refrigerated display case,” as claimed in the '181 patent, is not analogous to a “refrigerated case,” as disclosed in Carter. Based on the record before us and our analysis above, and for purposes of this initial Decision to institute an IPR proceeding, we disagree.

Patent Owner also asserts that we should deny institution because of “the strategy employed here by Petitioner of burying its arguments in an expert declaration.” Prelim. Resp. 43. Patent Owner asserts “the Petition’s consistent citation to voluminous portions of the [Henze] Declaration . . . runs afoul of the particularity and specificity required of supporting evidence under our governing statute and rules.” *Id.* at 44.

Dr. Henze’s Declaration is 182 pages, which includes 254 paragraphs, not including Appendix A, which is Dr. Henze’s CV. It includes a substantial number of illustrations. It is comprehensive.

The fundamental role of expert testimony is that “the expert’s scientific, technical, or other specialized knowledge will help the trier of fact [here, the Board] to understand the evidence or to determine a fact in issue.” Fed. R. Evid. 702(a). The testimony must be “based on sufficient facts or data” (*id.* at 702(b)); must be “the product of reliable principles and methods” (*id.* at 702(c)); and must reflect “a reliable application of the

principles and methods to the facts of the case” (*id.* at 702(d)). We determine, based on the record before us, that Dr. Henze’s Declaration testimony meets these requirements. He provides, as required, the facts and data to support his testimony. Indeed, Rule 702 and our rule requires him to do so. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). Expert testimony that “merely repeats, verbatim, the conclusory assertion for which it is offered to support,” or that “does not cite to any *additional supporting evidence* or provide any *technical reasoning* to support” the testimony is entitled to little weight. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15 (PTAB Aug. 24, 2022) (Precedential) (emphasis added).

On the record before us, we do *not* determine that Petitioner has buried arguments in an expert declaration, as Patent Owner asserts. Prelim. Resp. 43.

Based on the arguments and evidence in the record before us, we determine, for purposes of this Decision, Petitioner has established a reasonable likelihood that independent claims 1 and 14 are unpatentable Carter.

3. *Dependent Claims 2 and 15–18*

Dependent claim 2 depends from claim 1 and dependent claims 15–18 depend from claim 14. Petitioner provides a clause-by-clause analysis of where each element in dependent claims 2 and 15–18 is disclosed in Carter. Pet. 26–27, 32–35.

Patent Owner does not address specifically the dependent claims. *See generally* Prelim. Resp.

We have reviewed Petitioner’s evidence and arguments, and for purposes of this Decision, based on the evidence and arguments before us, we determine for the reasons stated in the Petition (*see* Pet. 26–27, 32–35) that the evidence establishes a reasonable likelihood that Petitioner will prevail in establishing that dependent claims 2, and 15–18 are not patentable based on Carter.

*E. Ground 1B – Claims 1–7 and 14–18
in View of Carter, Beatenbough, and King*

Petitioner asserts claims 1–7 and 14–18 would have been obvious in view of Carter, Beatenbough, and King. Pet. 35–63. We first summarize the disclosures in Beatenbough and King.

1. Beatenbough (Ex. 1006)

Beatenbough is titled “System For Maintaining Refrigeration Doors Free of Frost and Condensation.” Ex. 1006, code (54). Beatenbough discloses a device that continuously monitors the room temperature and humidity and calculates from this sensed data the dew point, which “is then use to control the time periods of electrical consumption to a minimum.” *Id.* at 1:23–27.

Figure 2 of Beatenbough is reproduced below.

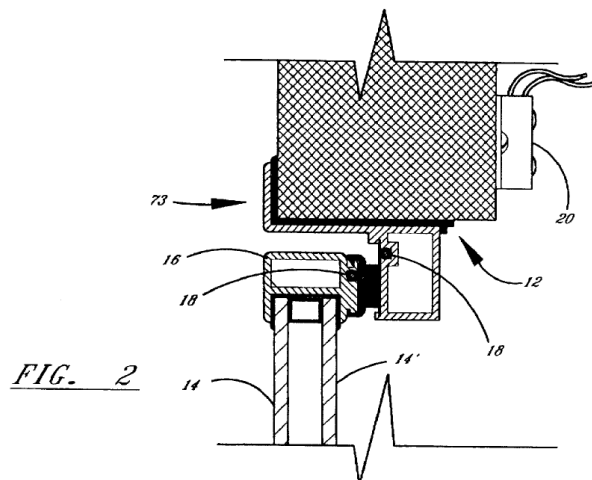


Figure 2 is a sectional cutaway of the heating elements within the door. Ex. 1006, 2:42–43. The refrigeration/freezer door is supported in metal door jamb 12 and includes a glass area having two glass panes 14, 14' mounted in metal frame 16. *Id.* at 2:63–65. Door jamb 12 and door frame 16 include a plurality of resistance wires 18, and glass pane 14' is coated with a very thin transparent electrically conductive layer for heating the surface of the glass. *Id.* at 2:66–3:2. “Relay 20, which connects with control device C, provides electrical energy for heating resistant wires 18 and the coating at 14' which in turn heat the doors preventing the formation of condensation and frost.” *Id.* at 3:2–6. The humidity and temperature of the room is determined by sensors and provided to a control panel, which uses the temperature and humidity readings to compute the dew point. *Id.* at 4:36–39. The control panel controls that portion of each pulse that is active or hot based on dew point. *Id.* at 3:51–58.

2. *King (Ex. 1005)*

King is titled, “Integrated Glass Fog Sensor Unit.” Ex. 1005, code (54). King “relates to an automotive windshield fog sensor. More particularly, this invention relates to an integrated glass fog sensor unit terminated on a flex circuit.” *Id.* at 1:5–6. King uses centralized “sensors necessary to predict fogging conditions.” *Id.* at 2:10–11. The specific context of a preferred embodiment of the disclosed glass fog sensor unit is a vehicle windshield. *Id.* at 1:50–54. The *claimed* invention in King, however, is *not* limited to a vehicle or a windshield.

Figure 2 of King is reproduced below.

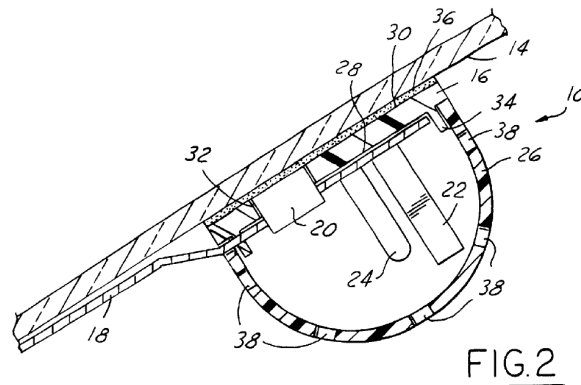


Figure 2 is “a cross-sectional view of the integrated glass fog sensor unit.” *Id.* at 2:25–26. Integrated glass fog sensor unit 10 has thermal barrier tray 16, multi-conductor member 18 embodied as a flex circuit, glass temperature sensor 20, ambient air temperature sensor 22, relative humidity sensor 24, each within protective dome 26, and wherein “glass temperature sensor 20 is in thermal contact with the glass surface 14 in order to measure the temperature at surface 14.” *Id.* at 2:40–50.

The parties disagree as to whether King is analogous art.

Petitioner provides an analysis that concludes King is analogous art based on the applicable test discussed in Section III.D.1.(a) of this Decision (as to whether Carter is analogous art). Pet. 36–37 (citing Ex. 1003 ¶¶ 147–149).

Dr. Henze testifies “a POSITA would have understood that King’s disclosure of an integrated sensor package for use in a system that prevents “fog”—a manifestation of the condensation phenomenon—falls within the ’181 patent’s broad technical field.” Ex. 1003 ¶ 147. Dr. Henze also testifies:

King is reasonably pertinent to the problem(s) addressed by the ’181 patent. King and the ’181 patent similarly address the design problem of provisioning a housing for a sensor package

including a surface temperature sensor, an ambient air temperature sensor, and a relative humidity temperature sensor. In both King and the '181 patent, the design problem involves mechanically supporting, electrically connecting, and thermally isolating the sensors. King is therefore reasonably pertinent to at least one of the problems that the '181 patent's inventors were trying to solve.

Ex. 1003 ¶ 148 (citations omitted).

Patent Owner asserts “King clearly operates in the automotive field, indicating in the technical field section that ‘[t]his invention relates to an automotive windshield fog sensor,’ and is entitled[sic] ‘Integrated Glass Fog Sensor Unit.’ So, King provides an automotive windshield fog sensor. This plainly makes King non-analogous art.” Prelim. Resp. 36. We disagree

We recognize that King’s application of the preferred embodiment is from a different field than display cases. That alone does not make it a non-analogous reference. As stated above in our discussion of Carter, “[w]hen a work is available in one field, design incentives and other market forces can prompt variations of it, *either in the same field or in another.*” *KSR*, 550 U.S. at 401 (emphasis added).

Patent Owner also states that Petitioner’s challenge in Ground 1B is “confusing” because it presents alternatives for the location of the sensors, whether on the door/frame surface or on the glass of the door, that are different from the assertions in Ground 1A. Prelim. Resp. 36–37. The references in Ground 1B are different from the reference in Ground 1A. These are alternative Grounds that may be applied, for example, in specific claim constructions that have yet to be finalized. Neither Patent Owner’s “confusion” nor providing alternative grounds in a petition make a reference non-analogous.

3. *Analysis of Claims 1, 2–7, and 14–18*

Petitioner provides a clause-by-clause analysis of each of the challenged claims in Ground 1B. Pet 43–63 (citing supporting testimony of Dr. Henze).

Patent Owner argues generally that “Petitioner provides scant analysis in multiple places throughout the Petition.” Prelim. Resp. 41–45. We disagree.

As discussed above, Petitioner provides extensive discussion of the proposed grounds, supported by citations to the evidence. *KSR* does not require that a combination only unite old elements without changing their respective functions. *KSR*, 550 U.S. at 416. Instead, *KSR* teaches that “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” *Id.* at 421. And it explains that the ordinary artisan recognizes “that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420. *KSR* does not support a theory that a person of ordinary skill can only perform combinations of a puzzle element A with a perfectly fitting puzzle element B. *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1219 (Fed. Cir. 2016).

Based on the record before us at the current initial stages of this proceeding, we determine that Petitioner’s evidence and arguments establish a reasonable likelihood of prevailing in establishing that the challenged claims in Ground 1B are not patentable.

4. *Motivation to Combine*

Patent Owner also asserts the Petition fails to discuss “why it would have been obvious to modify which reference of Carter, Beatenbough, and King with a teaching of the other references.” Prelim. Resp. 38. We

disagree. Petitioner provides a detailed discussion, citing Dr. Henze's testimony for evidentiary support, explaining the various motivations to combine various references.

Petitioner states, for example, that:

The Carter-Beatenbough-King Combination represents the predictable and expected result of applying in the context of Beatenbough's refrigerated display case with condensation control capabilities: (a) Carter's complementary teachings on triggering heater activation/deactivation based on door/frame surface temperature; and (b) King's complementary teachings on an integrated sensor package suitable for implementing the Carter-Beatenbough condensation control scheme. From a POSITA's perspective in 2005, integrating the complementary teachings of Carter, Beatenbough, and King would have involved nothing more than applying known solutions to known problems and achieving predictable outcomes. The fundamental aspects of Beatenbough's disclosure would remain intact, bolstered by the beneficial teachings of Carter and King in a way that the POSITA would reasonably expect to succeed.

Pet. 37–38 (citing EX. 1003 ¶ 150).

Petitioner also explains that “Carter's heater activation technique and Beatenbough's variable pulse width technique for heater operation rely on a shared operating variable—a dew point value derived from ambient temperature and relative humidity sensor readings.” *Id.* at 40 (citing Ex. 1004, 5:31–54; Ex. 1006, 3:51–4:34; Ex. 1003 ¶ 156).

Additionally, Petitioner explains why and how a person of ordinary skill would apply King's integrated sensor package teachings for implementing the Carter-Beatenbough condensation control scheme. Pet. 41–42.

Based on the arguments and evidence in the record before us, we determine, for purposes of this Decision, Petitioner has established a

reasonable likelihood that Claims 1, 2–7, and 14–18 are not patentable based on the references in Ground 1B.

F. Grounds 1C–E

Based on our determinations on Grounds 1A and 1B, we need not reach Grounds 1C, 1D, and 1E, which address only dependent claims 8, 19, and 20 that are not also covered by Grounds 1A and 1B.

IV. CONCLUSION

We have determined that there is a reasonable likelihood that Petitioner will prevail on at least one challenged claim. Accordingly, we institute an *inter partes* review on all challenged claims on each asserted ground. A decision to institute is “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition.” *PGS Geophysical*, 891 F.3d at 1360.

Our review of the Petition under 35 U.S.C. § 314 is not to determine whether an individual asserted fact is indisputable or whether a preponderance of the evidence supports Petitioner. Our review is to determine whether the totality of the information presented in the Petition and Preliminary Response shows that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. “The ‘reasonable likelihood’ standard is a somewhat flexible standard that allows the Board room to exercise judgment.” Patent Trial and Appeal Board Consolidated Trial Practice Guide at 53 (Nov. 2019), available at <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf>.

This is a decision to institute an *inter partes* review under 35 U.S.C. § 314. Our determinations at this stage of the proceeding are

preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Any final decision will be based on the record as fully developed during trial, including all arguments and evidence in the Patent Owner's Response,¹¹ or submitted otherwise during trial, as permitted by our rules.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review is instituted as to claims 1–20 of the '181 patent on each ground set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '181 patent shall commence on the entry date of this Decision, and notice is hereby given of the institution of a trial.

¹¹ See *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016) (explaining that a patent owner waives an issue presented in its preliminary response if it fails to renew the issue in its response after trial is instituted).

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Patent 7,207,181 B2
FOR PETITIONER:

Kenneth Darby
Kenneth Hoover
FISH & RICHARD P.C.
kdarby@fr.com
hoover@fr.com

FOR PATENT OWNER:

Robert Ziemian
Ian Rainey
Theodore Foster
HAYNES AND BOONE, LLP
robert.ziemian.ipr@haynesboone.com
ian.rainey.ipr@haynesboone.com
ipr.theo.foster@haynesboone.com