

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ANTHONY INC.,
Petitioner,

v.

CONTROLTEC, LLC,
Patent Owner.

Case IPR2025-00559
Patent 7,207,181

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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EXHIBIT LIST

EX1001	U.S. Patent No. 7,207,181
EX1002	U.S. Patent No. 7,207,181 File History
EX1003	Declaration of Dr. Gregor P. Henze
EX1004	U.S. Patent No. 7,137,262 (Carter)
EX1005	U.S. Patent No. 6,422,062 (King)
EX1006	U.S. Patent No. 5,778,689 (Beatenbough)
EX1007	U.S. Patent No. 6,502,409 (Gatling)
EX1008	U.S. Patent No. 5,396,796 (Kotani)
EX1009	U.S. Publication No. 2005/0172649
EX1010	U.S. Prov. Appl. No. 60/569,581
EX1011	U.S. Prov. Appl. No. 60/559,113
EX1012	U.S. Patent No. 3,939,666
EX1013	U.S. Patent No. 3,696,360
EX1014	U.S. Publication No. 2005/0007136
EX1015	ACT2-CS Convenience Store Controller, Johnson Controls (1999)
EX1016	U.S. Patent No. 4,260,876
EX1017	CPC Products, Computer Process Controls (Sept. 1, 2004), https://web.archive.org/web/20040901092452/http://www.cpcus.com/products.htm

- EX1018 Altech Controls XPRT Eagle Controls Manual (Section A-B)
- EX1019 Altech Controls XPRT Eagle Controls Manual (Section C)
- EX1020 Sensirion, SHT1x/SHT7x Humidity & Temperature Sensor (revised May 2005).
- EX1021 Altech Controls AASC Anti-Sweat Heater Controller
- EX1022 Anthony Engineering Change Notice—Engineering Drawings for Altech Controls AASC Control Assembly and Altech Controls Sensors
- EX1023 Steven J. Slayzak & Joseph P. Ryan, Instrument Uncertainty Effect on Calculation of Absolute Humidity Using Dewpoint, Wet-Bulb, and Relative Humidity Sensors (National Renewable Energy Laboratory) 1998
- EX1024 David H. Walker et al., Investigation of Energy-Efficient Supermarket Display Cases, Oak Ridge National Laboratory (Dec. 2004)
- EX1025 P.H.J. van Eijk, Verifying Relay Circuits using State Machines (Utrecht University, Department of Philosophy) (1997)
- EX1026 Robert P. Benedict, P.E., Fundamentals of Temperature, Pressure, and Flow Measurements (3d ed. 1984)
- EX1027 Contemporary Control Systems Inc., Introduction to Control, Vol. 2. Issue 2 (2001)
- EX1028 Shivakumar Raman & Paul H. Cohen, Remote sensing for on-line temperature estimation in machining: A basic framework, 38 J. of Materials Processing Tech. 613 (1993)
- EX1029 U.S. Publication No. 2004/0050072
- EX1030 Sensirion, SHTxx Humidity & Temperature Sensmitter, Application Note Dew-point Calculation (revised January 2005)

- EX1031 ASHRAE Psychometric Chart No. 1 (1992)
- EX1032 Low Cost Humidity Sensor SHT10, Sensirion (Mar. 12, 2006),
https://web.archive.org/web/20060312033617/http://www.sensirion.com/en/02_sensors/00_products.htm?cat=3&category=&art=11&product=humidity%20sensor%20SHT10
- EX1033 Larry D. Wittie, Microprocessors and Microcomputers (Encyclopedia of Computer Science) (2003)
- EX1034 Ramin Faramarzi, P.E. et al., Anti-Sweat Heaters in Refrigerated Display Cases, ASHRAE J. 64 (2001)
- EX1035 U.S. Publication No. 2007/0130968
- EX1036 U.S. Patent No. 5,369,753
- EX1037 Complaint (Document 1), *ControlTec, LLC v. Anthony, Inc. et al.* 1:24-cv-00883 (DDE)
- EX1038 Stipulation and [Proposed] Order to Stay Proceedings (Document 20), *ControlTec, LLC v. Anthony, Inc. et al.* 1:24-cv-00883 (DDE)
- EX1039 American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 2002 ASHRAE Handbook: Refrigeration (excerpt)
- EX1040 U.S. Patent No. 5,778,147
- EX1041 U.S. Patent No. 3,859,502
- EX1042 U.S. Patent No. 4,862,701
- EX1043 Order to Stay Proceedings, *ControlTec, LLC v. Anthony, Inc. et al.* 1:24-cv-00883 (DDE)
- EX1044 Joint Status Report Regarding Order to Stay Proceedings (Document 21), *ControlTec, LLC v. Anthony, Inc. et al.* 1:24-cv-00883 (DDE)

- EX1045 Order of Dismissal with Prejudice and to Close Case (Document 26),
ControlTec, LLC, et al. v. Anthony Doors, Inc. 1:06-cv-00295
(D. Colo)
- EX1046 Time to Milestones Report: Delaware District, Docket Navigator
(retrieved May 4, 2025)
- EX1047 District Report Delaware District Court in Patent Cases (January
2000–January 2025), LegalMetric (excerpt)
- EX1048 Federal Court Management Statistics–Profiles, Administrative Office
of the U.S. Courts (December 31, 2024)
- EX1049 Declaration of John Roche
- EX1050 Settlement Agreement and Release (redacted)
- EX1051–1060 Reserved
- EX1061 Supplemental Declaration of Dr. Gregor P. Henze
- EX1062 Transcript of Video Deposition of Mr. Michael A. Pollock

I. INTRODUCTION

The '181 patent claims no new technology; it simply applies conventional condensation control techniques to the familiar setting of refrigerated display cases. Unable to defend the novelty of this routine integration, Patent Owner repeatedly misstates the record and attempts to exclude plainly analogous prior art. It even urges the Board to disqualify Petitioner's highly credentialed HVAC&R expert merely because his decades of experience did not focus on grocery-store refrigerators. These are not the substantive arguments of a patent owner defending a novel and nonobvious invention. They are the maneuvers of a litigant hoping to preserve a meritless patent. Because the record proves that a skilled artisan would have readily modified and combined the prior art to reach the '181 patent's putative invention, the Challenged Claims should be canceled.

II. ARGUMENT

A. Patent Owner Identifies No Flaw in the Petition: Grounds 1A–1B Rest Securely on Carter, Beatenbough, and King

1. Carter Renders Obvious the “Dual-Setpoint Algorithm” That Patent Owner Says the Claims Require

Patent Owner insists the '181 patent requires a “dual-setpoint algorithm” for activating and deactivating the door/frame heater that Carter allegedly does not disclose. POR 17–18 (discussing the “processing means” of claims 1/8 and the “control means” of claim 14), 34–39, 63–64; *see also id.* 20, 39–48. First, this

argument cannot apply to claim 1 or its dependents, which have no “deactivating” limitation. Second, Patent Owner is mistaken: Carter renders obvious the very “dual-setpoint algorithm” Patent Owner demands.

i. Heater Activation Algorithm

All parties agree that Carter discloses an algorithm where the door/frame heater is *activated* when the surface temperature drops below a preselected set point above dew point, just as the parties’ respective constructions require. *See* Pet. 4–5, 17–21 (citing EX1004, 5:21–54, Figure 3); POR 17, 34 (“Carter triggers heat at dew point + constant[.]”). The only dispute concerns *deactivation*.

ii. Heater Deactivation Algorithm

The Petition presents two independent theories on heater deactivation: (i) Carter’s express disclosure is equivalent and *insubstantially different* from the ’181 patent’s algorithm; and (ii) a skilled artisan would have been motivated to modify Carter to use a second preselected setpoint for triggering heater deactivation, yielding an algorithm *virtually identical* to the ’181 patent’s. Pet. 29–32.¹ As the Petition explains, the skilled artisan would have pursued this approach “for the purpose of achieving a more flexible control system, e.g., one more adaptable to

¹ Both theories apply to claim 14, but only the latter applies to claim 8, which more narrowly recites “a second preselected set point above set dew point value.”

different climates and conditions.” *Id.* 31–32 (citing EX1003, ¶¶130–132). Patent Owner fixates on the Petition’s equivalent disclosure theory but fails to rebut the obvious modification theory.

a. The Obvious Modification Theory

Patent Owner refuses to engage with the underlying factual basis of the Petition’s obvious modification theory on heater deactivation. *See* POR 42, 47–48. Instead, Patent Owner hides behind conclusory claims that the “Petition offers no cogent motivation,” fails to “explain how a POSITA would implement such a change,” and is “premised on hindsight.” *Id.* These critiques are baseless.

Dr. Henze’s undisputed testimony supplies the exact evidence Patent Owner says is missing. He explains that the runtime of Carter’s heater varies based on ambient conditions and cannot be adjusted by a technician in the field. EX1003, ¶¶130–132. “Thus, the POSITA would have appreciated the efficiency and operational advantages of providing a control system that allows a manufacturer, technician, or operator to select the buffer value as a set point based on existing or expected conditions.” *Id.* ¶132. In addition to the *why*, Dr. Henze explained the *how*: The skilled artisan would have known to “replace Carter’s ambient temperature target for heater deactivation with a target temperature equal to dew point plus a preselected set point” or “introduce the set point feature as a user-selectable alternative mode of operation for the control system.” *Id.* Using a preselected

setpoint to regulate Carter’s heater deactivation was not only advantageous, it was a highly predictable variation. After all, the setpoint technique is exactly what Carter used to turn the heater *on* in the first place. EX1004, 5:21–54. Using that same technique to turn the heater *off* is the very definition of obviousness. *Id.*

Because this obvious modification theory is unrefuted and independently sufficient, the Board need not address Patent Owner’s attacks on Carter’s equivalent disclosure. Pet. 29–31; POR 34–48, 63–64. Yet those attacks still fail.

b. The Equivalent Disclosure Theory

Carter discloses deactivating the heater when the surface temperature of the refrigerated case reaches the ambient temperature. Pet. 29 (citing EX1004, 5:55–63, Figure 3). As the Petition explains, because ambient temperature is higher than dew point, Carter’s expression of:

$$\textit{Surface Temp} = \textit{Ambient Temp}$$

is mathematically equivalent to:

$$\textit{Surface Temp} = \textit{Dew Point} + \textit{Floating Offset},$$

where the “floating offset” depends on the humidity of the ambient environment. *Id.* 30 (citing EX1003, ¶¶122–123). Carter’s floating offset from dew point is not substantially different from the preselected setpoint in the ’181 patent’s algorithm. *Id.* (citing EX1003, ¶129). Both “serve[] as a buffer value to ensure that the frame

temperature of the display case is far enough away from the dew point value to prevent anticipated condensation without excessive on-off cycling of the heater.” *Id.*

Patent Owner conjures the illusion of a material distinction using charts that purportedly show how “Carter deactivates late[r] in lower humidity as compared to the ’181 Patent.” POR 35–38. But these charts are irrelevant because they were derived from cherry-picked setpoint values and relative humidity values that the ’181 patent neither claims nor discloses. *Id.* 37 (“dewpoint plus 2°F” and “dewpoint plus 6.5°F”) (charting at relative humidities of 40%, 50%, and >90%); *see also* EX1061, ¶¶36–43; EX1062, 263:25–269:19; *see also id.*, 235:4–236:15. Patent Owner cannot distinguish Carter based on specific values the inventors never discovered and “that are unnecessary to perform the claimed function.” *Wenger Mfg. v. Coating Mach. Sys.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001). Worse yet, Patent Owner overlooks that changing these arbitrary values reveals scenarios where the algorithms of Carter and the ’181 patent deactivate the heater at the exact same time. *See* EX1061, ¶¶44–45; EX1062, 246:8–19, 250:8–22; *see also id.*, 236:18–237:13; *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016) (“[P]rior art that sometimes meet the claim elements are sufficient to show obviousness.”).

Patent Owner also complains that “Carter does not disclose the ’181 Patent’s data handling choices.” POR 38–39. But “data handling choices” are not necessary to perform the claimed “deactivating” function of claims 8 and 14. Both parties

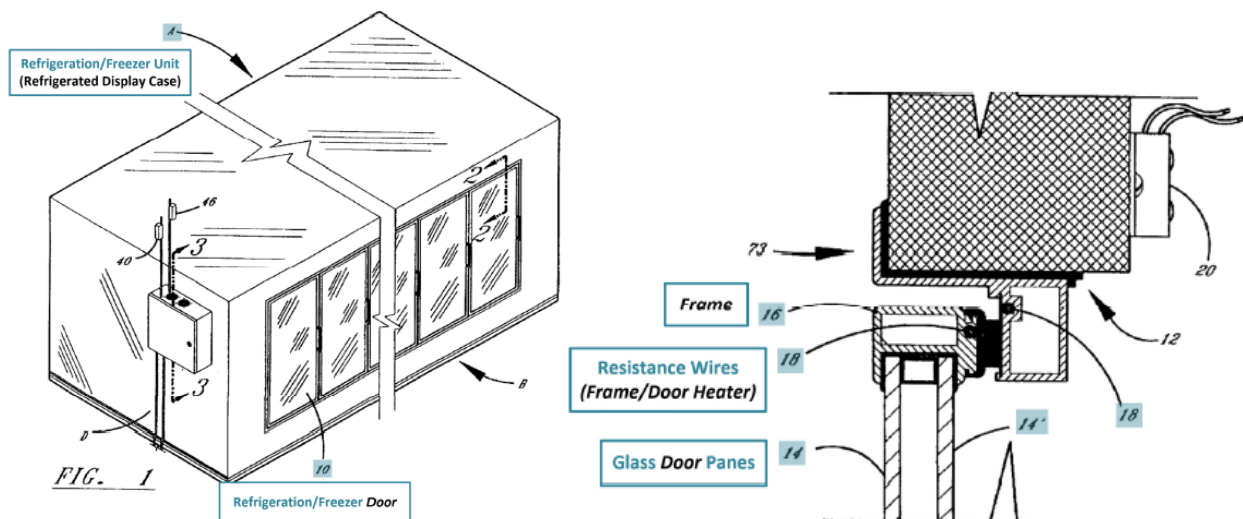
acknowledge this fact by excluding such extraneous implementation details from their claim construction analyses of the corresponding algorithmic structure. *See* Pet. 4–7; POR 17–18. While irrelevant, those details are nevertheless obvious for the reasons explained in the Petition. *See* Pet. 21 (citing EX1003 ¶¶101–102).

Patent Owner’s remaining arguments against Carter’s express disclosure fare no better. It defies common sense and basic physics to suggest that Carter’s control logic fails to activate and deactivate heat “in anticipation of condensation.” POR 39–43. Like the ’181 patent, Carter’s goal is to provide an anti-sweat system that prevents condensation without “wast[ing] unnecessary energy” by “automatically control[ling] the operation of providing supplemental heat such that it is only activated under conditions that would promote surface condensation.” EX1004, 1:63–2:31; *see also* 4:13–55, 5:21–24; Pet. 28–29. Accordingly, the control scheme deactivates the heater when the rising surface temperature reaches the ambient air temperature—a condition certain *not* to produce condensation. EX1004, 5:55–63; Pet. 28–29 (citing EX1003 ¶¶118–120); EX1061, ¶¶48–51.

Finally, Patent Owner mischaracterizes the Petition as somehow “hing[ing]” on inherency. POR 43–48. Inherency is not at issue here. The Petition relies on Carter’s express teachings and the predictable modifications of a skilled artisan.

2. Beatenbough's Refrigerated Display Case Renders Patent Owner's Misplaced Critique of Carter Irrelevant

Misstating the record, Patent Owner claims that “[t]he Petition does not identify where Carter—or *any other asserted reference*—discloses a refrigerated display case, a display case frame, or a display case frame/door heater.” POR 50; *see also generally* 49–53, 63, 12–14. Beatenbough clearly supplies these features. As shown below, Beatenbough discloses a “display type refrigeration and freezer unit[]” (refrigerated display case) with a bank of individual doors, each mounted in a “metal frame” (frame) and heated by “resistance wires” (heater). Pet. 43–44 (citing/quoting EX1006, Abstract, 1:1–2:65, 3:2–4:42).



EX1006, Figures 1–2 (annotated).

Patent Owner does not dispute the Petition’s mappings to Beatenbough, nor does it contest the Petition’s discussion on motivation-to-combine. Pet. 35, 37–41.

Thus, even if the Board adopts Patent Owner’s view on Carter (Ground 1A), the ’181 patent’s claims would still be obvious in view of Beatenbough (Ground 1B).

At any rate, Patent Owner’s critique of Carter fails. The Petition does not attempt to “retrofit” Carter via “expert gloss” (POR 49) but instead provides a clear and compelling case for why a skilled artisan “would have been motivated to apply Carter’s apparatus to the well-known use case of refrigerated display cases that store retail food items” (Pet. 13 (emphasis removed)). POR 49. “[C]ondensation control systems were commonly employed on refrigerated display cases used in retail food stores,” and the skilled artisan would have appreciated Carter’s “fundamental similarities” to such cases. EX1003 ¶81 (referencing *id.* ¶¶34–41). Implementing Carter’s teachings in this context would have provided the same advantages of “improved operational effectiveness and efficiency that Carter described.”² *Id.*

Lacking any evidence-backed response to the Petition’s motivation rationale, Patent Owner retreats to its pre-institution position that Carter somehow lacks a

² As in Carter, refrigerated cases used in the retail setting “are designed to maintain perishables at a prescribed low temperature to prevent spoilage” and would likewise benefit from “[p]reventing sealing failures caused by condensation.” EX1003, ¶81. As the Board put it, “the only difference between a refrigerated *display* case and a refrigerated case is a glass door.” ID 20; EX1062, 195:21–196:12.

“frame” and “solve[s] entirely different problems” than those addressed by the ’181 patent. POR 50–51. The Board should again reject these recycled arguments. The ’181 patent does not narrowly define or ascribe any special functional/structural characteristics to the term “frame”; nor has Patent Owner tried to construe it. As the Board aptly noted, “the ‘frame’ may be a surface surrounding an opening,” (ID 17), which Carter teaches. *See* EX2019, 144:1–146:3 (Dr. Henze explaining that “the frame [in Carter] holds the door”). Likewise, although Patent Owner protests otherwise, Carter is directed to solving problems addressed by the ’181 patent—e.g., “eliminat[ing] door damage...due to condensation” and “efficiently cycl[ing] duty time of frame/door heaters thus lowering the installation’s energy costs.”³ EX1001, 2:26–31, *compare with* EX1004, 1:1–2:67; EX1003 ¶¶79–81.

3. King’s Sensor Housing Moots Patent Owner’s Misguided Complaints About Carter

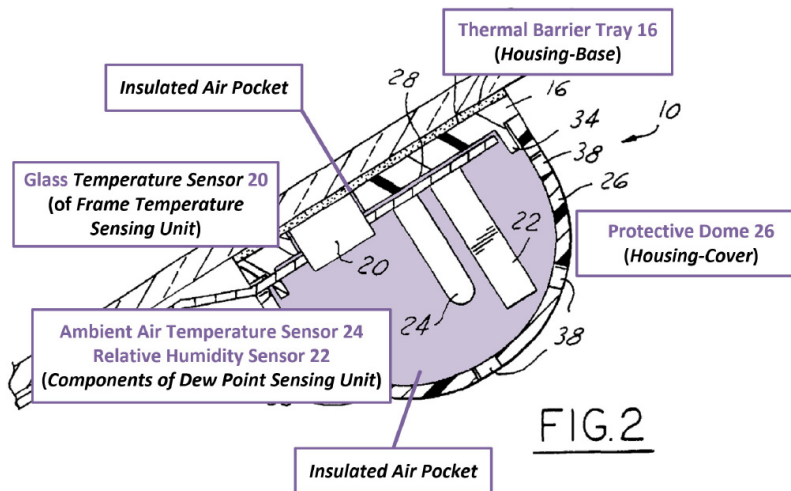
i. King Renders Obvious the Claimed “Housing Means” and “Means for Thermally Isolating”

Claims 1 and 15–16 recite “housing means” and “means for thermally isolating” the claimed sensing units. The corresponding structure for these “means” constitutes a base and a cover that, when mated together, establish insulated air

³ Patent Owner also claims that the ’181 patent “endeavors to maintain product visibility,” but that concept is not stated or implied by the specification. POR 51.

pockets around the sensors.⁴ Pet. 5–7, 9 (citing EX1001, 6:32–7:10, 7:11–62, 8:11–28). Patent Owner concedes this fact in its infringement allegations, stating: “[t]he point of the housings in the means disclosed in the ’181 Patent appear to be to provide insulating air pockets.”⁵ EX1037, 117, 134–135.

Matching the ’181 patent’s structure, King’s dome-and-tray assembly (10) features a mated base (16) and cover (26) that establish insulated air pockets around a surface temperature sensor (20) and dew point sensing components (22, 24). Pet. 54–55 (citing EX1005, 1:48–65, 2:55–3:16, Figure 2 (below); EX1003, ¶¶176–184).



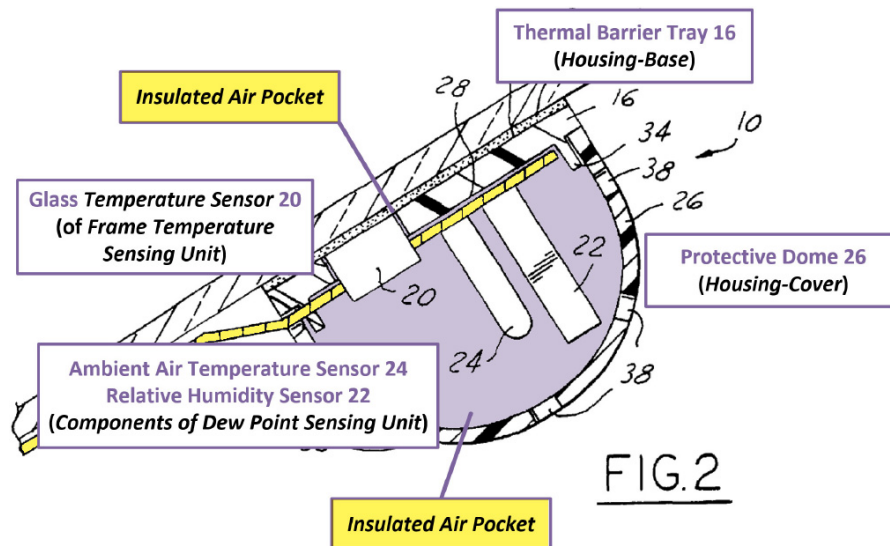
⁴ Although both parties assert that claim 1 recites sufficient structure for the “housing means,” the Petition’s analyses equally apply to a §112(6) interpretation. *See* Pet. 5–6 (claim construction), 25–26 (Carter analysis), 54–55 (King analysis); POR 18.

⁵ Although Patent Owner now identifies additional “characteristics” for claim 15, they are covered by the Petition’s analyses of Carter and King. POR 18–19.

Patent Owner's failed attempts to distinguish King repeatedly misstate King's disclosure and the Petition's analysis. *See* POR 55–56, 66–68. First, Patent Owner states that King “does not provide thermal isolation.” *Id.* 55. To the contrary, King states: “The [sensor] unit is mounted on a thermal barrier tray which serves to *thermally isolate* the ambient air temperature sensor and the relative humidity sensor from the glass surface.” EX1005, Abstract; *see also id.* 2:55–58. Thus, when integrated with the refrigerated display case of Carter-Beatenbough, King's surface temperature sensor monitors the door or frame surface, while the air temperature sensor and relative humidity sensors remain thermally isolated therefrom. *See* Pet. 50–51; *see also id.* 45–48, 51–55.

Second, the Petition does not, as Patent Owner asserts, only “point[] to King's flex circuit” (which is “not a housing means”) as the sole mechanism for “minimiz[ing] heat transfer contacts between the sensing units and the housing.” POR 55–56. The Petition explicitly states that King's sensors are secured in the housing with minimal contact via “an interface between the flex circuit and the *tray's* perimeter wall.” Pet. 51–53. It is therefore “a combination of the *tray* and the flex circuit [that] function[s] as a thermal barrier.” EX1005, 2:4–7. That is precisely why King calls this component of the housing a “*thermal barrier tray*” designed to “assure that surface temperature [] does not alter the ambient air temperature or relative humidity levels.” *Id.* 2:40–60.

Third, Patent Owner argues that King’s housing does not locate the sensor “amid insulated [air] pockets,” including “an air pocket behind the board or carrier.” POR 55–56. But the Petition details exactly where and how King’s housing—the dome and the tray—defines air pockets on both sides of the flex circuit (carrier; highlighted below). Pet. 53–55; *see also id.* 45–49. Rather than engage with the Petition’s analysis, Patent Owner ignores it.

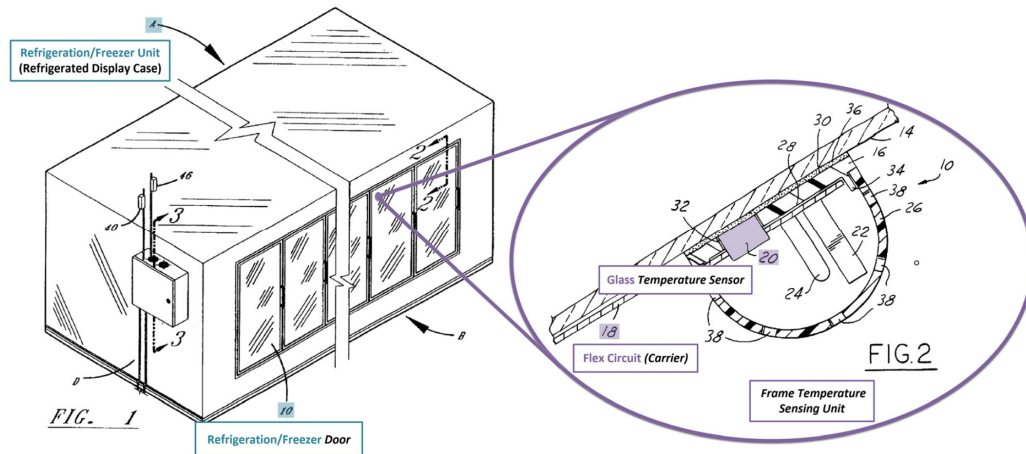


EX1005, Figure 2 (annotated).

ii. In Combination With Carter and Beatenbough, King’s Sensor Unit Is “Adapted For” the Claimed Monitoring

Unable to rebut the Petition’s motivation-to-combine analysis on King, Patent Owner pivots to arguing that there is a lack of explanation “regarding how [King’s] sensor unit would be *adapted for*” monitoring the display case door or frame temperature. POR 34 (addressing claim 1). But the Petition is explicit. The

combination places King's temperature sensing unit against the glass door or, alternatively, the frame of the Carter-Beatenbough refrigerated display case. Pet. 46; *see also generally id.* 45–48; EX1061, ¶¶52–58. In the combination, the sensor unit is located just as King illustrates. The temperature sensor (20) is exposed to and “in thermal contact with” the monitored surface and the air temperature and humidity sensors (22, 24) face the ambient environment. EX1005, 2:34–60; Pet. 45–48.



See EX1003, ¶168 (discussing visual aid).

So, yes, “[t]he Petition identifies no modifications beyond merely moving the sensor [unit].” POR 34. Beyond locating King’s sensor unit on Beatenbough’s case to monitor the temperatures and relative humidity used in Carter’s heater control scheme, no further modifications are required to establish obviousness. Patent Owner’s suggestion that merely changing the location of King’s unit would suddenly render its sensors inoperable defies logic. EX1061, ¶¶59–61. And even if “some alteration[s]” are required to physically create the Carter-Beatenbough-King

combination, such details are unclaimed and plainly within the capabilities of a skilled artisan. *GE v. Raytheon Techs. Corp.*, 983 F.3d 1334, 1352 (Fed. Cir. 2020); *see also* EX1003, ¶¶42–49; EX1061, ¶62. After all, the skilled artisan is “not an automaton.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007); *accord Facebook, Inc. v. Windy City Innovations, LLC*, 953 F.3d 1313, 1333 (Fed. Cir. 2020) (“[T]he fact that it would take some creativity to carry out the combination does not defeat a finding of obviousness[.]”).

Just as its “adapted for” argument falters as to claim 1, Patent Owner’s alleged distinction for claim 14 also falls flat. For example, claim 14 recites even more broadly that the “dew point sensing unit” is “*on* the display case to monitor...” POR 64–65. Accordingly, the Petition properly points back to the claim 1 “adapted for” analysis, which shows that King’s dew point sensing elements are located on the door or frame of the Carter-Beatenbough case. Pet. 62 (citing *id.* 45–49).

iii. Patent Owner Cannot Evade Analogous Art Like King by Constricting the Field and Ignoring the Inventors’ Sensor-Packaging Problem

The Petition affirmatively proves that King is analogous art because it is within the ’181 patent’s broad field of endeavor (condensation remediation/control) and reasonably pertinent to the sensor-packaging problem that the ’181 patent addresses. Pet. 37 (EX1003 ¶¶145–149). Patent Owner tries to exclude King from the corpus of prior art by reducing both the ’181 patent’s field and problem to the

“unique” realm of “refrigerated display cases.” POR 58; *see also id.* 57–60, 66–67.

But that is exactly what the law prohibits.

Courts “construe the scope of analogous art broadly.” *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010) (citing *KSR*). Accordingly, a prior art reference is analogous when it shares the same “function and structure” as the patent in suit. *In re Deminski*, 796 F.2d 436, 442 (Fed. Cir. 1986); *see also id.* at 437–42; *In re Bigio*, 381 F.3d 1320, 1325–26 (Fed. Cir. 2004) (agreeing with the Board that “the structural similarities between toothbrushes and small brushes for hair” mean they share the same technical field).

That is precisely the case here. Like the ’181 patent, King’s sensor unit features a housing structure that locates and thermally isolates a surface temperature sensor, an air temperature sensor, and a relative humidity sensor—all for the functional purpose of anticipating and controlling condensation. *Compare* EX1005, 2:40–3:2, 3:20–36, *with* EX1001, 6:50–67, 7:33–48. King therefore constitutes analogous art, even though its sensor unit is described as preventing condensation on a windshield instead of a door display. *See Unwired Planet*, 841 F.3d at 1001 (“The field of endeavor of a patent is not limited to...the particular focus within a given field.”). Indeed, the ’181 patent concedes that “condensation control” techniques are not limited to refrigeration and are instead “utilized in a variety of applications.” EX1001, 1:41–47; EX1003 ¶146.

Even if we assume King is in a different field, the “reasonable pertinence” prong acknowledges that a skilled artisan will consider “art outside her field of endeavor.” *Donner Tech., LLC v. Pro Stage Gear, LLC*, 979 F.3d 1353, 1360 (Fed. Cir. 2020); *see also* ID 30. Patent Owner is thus wrong to suggest that the skilled artisan would confine their search for a solution to the inventors’ sensor-packaging problem strictly to “refrigerated display cases.” POR 58. Doing so would improperly “rule out all [of the] art” in different fields. *Donner Tech.*, 979 F.3d at 1360. Sensor packaging, including for dew-point sensing components, is a general problem where the same solution can be employed in many different contexts. *E.g.*, EX1003 ¶¶45–47 (discussing, with reference to EX1020, a Sensirion package with relative humidity and air temperature sensors); EX1032 (explaining that the same Sensirion sensor package can be applied in “High volume consumer products,” “White goods,” “Automotive,” and “Building control & HVAC”).

iv. Carter’s Sensors Are “Adapted For” the Claimed Functionality and Housed in a Door Latch Cover Assembly That Satisfies the Claimed “Means”

A skilled artisan would have understood Carter to teach or render obvious a housing in the form of a “door latch cover assembly” that “includes a base and a mated cover that together form insulated air pockets receiving temperature and dew point sensing components.” Pet. 25 (citing EX1004, 5:1–20, 6:50–56, Figures 1–2; EX1003, ¶¶112–113) (emphasis omitted); *see also generally id.* 21–26. Arguing

otherwise, Patent Owner says, “Carter’s latch cover is a generic enclosure” and “does not create insulated air pockets” because Figure 2 allegedly shows that the dew point sensing elements “contact the frame or frame-conducting surfaces rather than being held away from them.” POR 53–55. Not so.

By ignoring textual context, Patent Owner misinterprets Carter’s Figure 2. For instance, Patent Owner ignores that Carter’s express purpose in providing the door latch cover assembly (housing) is to “help[] localize the measurements of the sensor[s]” and to produce readings that are “more accurate.” EX1004, 5:12–15. Given the common knowledge that “the accuracy of humidity and temperature readings is diminished by inadvertent heat transfer,” a skilled artisan would not interpret Carter’s figures as illustrating physical contact between the dew point sensing elements and the housing or frame (sources not being measured). EX1003 ¶106 (cross-referencing *id.* ¶¶42–49); Pet. 23–24. That is why Carter only states that the components of “the sensor assembly unit 32 [are] integrated *within* the interior portion 22 of the door latch cover assembly 20” and never says or implies that these components physically touch the frame or the housing. EX1004, 5:1–20; Pet. 24.

The Petition also explains why Carter’s sensors are “adapted for” the temperature and humidity monitoring recited in claims 1 and 8. Pet. 13–16. Yet Patent Owner again faults the Petition for not detailing how Carter’s sensors would be “reconfigured” when deployed in a refrigerated *display* case. POR 30–34, 63.

But no such reconfiguration is required for the sensors to work on a similar kind of refrigerator. *Supra*, §II.A.2; EX1061, ¶¶63–64. Nor can Patent Owner import implied structural details through the broad functional phrase “adapted for.”

B. The Petition’s Grounds 1C–1E Also Withstand Scrutiny

1. Kotani Provides the Claimed Thermal Isolation Features and Is Analogous Art (Ground 1D)

Patent Owner’s discussion of Kotani is brief, unavailing, and cumulative with respect to King. For example, Patent Owner’s fruitless analogous-art argument against King fails against Kotani for substantially the same reasons. *See* POR 57–60, 69; Pet. 69; *supra*, §II.A.3.iii. As for Patent Owner’s claim that Kotani’s sensor room somehow “prevents ambient exchange,” Patent Owner again ignores or misunderstands express disclosure. POR 56. Kotani plainly states that the disclosed humidity and temperature sensors in the sensor room are “disposed in open air.” EX1008, 2:63–3:13; *see also id.* 3:37–50 (“slope 52a facilitates airflow into the sensor room”); Pet. 68–69, 73–79.

2. Patent Owner Fails to Specifically Rebut the Petition on “Means” for Storing, Wirelessly Accessing, and Remotely Updating (Grounds 1C and 1E)

Patent Owner broadly alleges that the Petition fails to adequately address the claimed “data storing means” (claims 18, 8), “means for wirelessly accessing” (claims 19, 20), and “communication control unit” (claim 8). *See* POR 60–62, 68–70. But these critiques rely on sweeping generalizations and fail to grapple with the

detailed analysis and evidence presented in the Petition. *See* Pet. 66–68, 85. As just one example, Patent Owner disparages the Petition for relying on “generic processors” and “wireless elements” in Gatling (POR 60–61), yet these are the exact corresponding structures both parties identified in the ’181 patent for “data storing means” and “means for wirelessly accessing” (Pet. 10; POR 19, 22–23). Patent Owner’s unsubstantiated objections do not undermine the Petition.

C. The Board Should Reject Patent Owner’s Overly Narrow Skilled-Artisan Definition and Adopt Dr. Henze’s Comprehensive and Corroborated Testimony

Patent Owner aims to artificially constrain the “art” to refrigerated display cases not only to avoid invalidating prior art but also to disqualify Petitioner’s expert, Dr. Gregor Henze—a highly qualified, endowed engineering professor with “extensive experience in academia and research.” *See* ID 8 n.7. Now that the Board has lauded Dr. Henze’s opinions as “comprehensive,” with “facts and data to support his testimony” (ID 25–26), Patent Owner proposes a new level of skill designed to exclude Dr. Henze by requiring two years’ “professional experience” working specifically with “refrigerated display cases.” POR at 27; EX1062, 206:20–23. In effect, Patent Owner proposes that the only “expert” capable of opining in this case is someone who has personally worked on grocery store refrigerators.

Patent Owner’s ends-oriented definition ignores the broader scientific and technical principles that govern the invalidity analysis for this patent. The ’181

patent was not first to propose adding condensation control to refrigerated display cases. Instead, the '181 patent sought to incrementally improve upon the admitted prior art. Nothing about the underlying science or technology is unique to refrigerated display cases. Thus, no hands-on experience with refrigerated display cases is necessary to evaluate whether the '181 patent proposes something new and inventive, or instead routinely employs the same basic HVAC&R techniques Dr. Henze has studied, researched, and taught his students for years. Dr. Henze is well-qualified to evaluate those issues and render his technical opinions in this case.

1. The Petition Aptly Identifies the Art & Ordinary Skill Level

Petitioner's skilled-artisan definition reflects that the relevant scientific principles come from the field of "heating, ventilating, air conditioning, and refrigeration (HVAC&R)" and are not unique to refrigerated display cases. Pet. 4. As Dr. Henze explained, "the '181 and the '847 are trying to solve condensation problems. That is squarely in the HVAC&R field." EX2019, 155:2–4; EX1003, ¶¶26–30, ¶¶145–146; EX1061, ¶¶17–24. Thus, the Board's preliminary finding was correct: HVAC&R is the "art" in which an artisan must be skilled. *See* ID 13–14.

Under Petitioner's level-of-skill proposal, there is no dispute that Dr. Henze is fully qualified. He is an expert in the field of HVAC&R with years of hands-on and academic experience with precisely the type of condensation remediation issues addressed in the '181 patent. EX1003, ¶¶4–14, Appx.A; EX1061, ¶¶18–19.

2. Patent Owner’s Proposed Narrowing of the “Art” Is Ends-Oriented and Unjustified

By insisting on experience with the singular application of “refrigerated display cases” (POR 23), Patent Owner “is unduly attempting to narrow the scope of the relevant art to exclude” Dr. Henze from testifying as an expert, notwithstanding his substantial qualifications. *Jetaire Aerospace, LLC v. Aersale, Inc.*, No. 20-CV-25144, 2024 WL 1931615, at *6 (S.D. Fla. Jan. 8, 2024). The Board should reject this maneuver. *Cf. Jetaire*, 2024 WL 1931615, at *6 (refusing to exclude a general aviation expert lacking “direct experience with aircraft fuel systems”); *Shelcore, Inc. v. Durham Indus., Inc.*, 745 F.2d 621, 625 (Fed. Cir. 1984) (holding that a district court did not err by allowing a general plastics manufacturing expert to testify on a patent about toys despite lacking toy-design experience); *Red Rhino Leak Detection, Inc. v. Anderson Mfg. Co., Inc.*, No. 17-CV-2189 (ECT/DTS), 2019 WL 4039972, at *1–3 (D. Minn. Aug. 27, 2019) (allowing testimony from an expert lacking specific “swimming pool” experience because he was “familiar with the laws of hydrodynamics”); *Hologic, Inc. v. Minerva Surgical, Inc.*, 764 Fed. Appx. 873, 878–879 (Fed. Cir. 2019) (affirming “the Board’s determination that a skilled artisan was someone who had ‘experience developing or implementing electrosurgical devices’ generally rather than uterine devices specifically”).

“In determining the relevant art for purposes of addressing issues of patent validity, the [Board] must look to the nature of the problem confronting the inventor,” not one specific use of the putative invention. *Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1375 (Fed. Cir. 2004); *see also Env’t Designs, Ltd. v. Union Oil Co. of California*, 713 F.2d 693, 696 (Fed. Cir. 1983) (identifying the “type of problems encountered in the art” as a factor for determining the ordinary skill level). Here, the relevant “scientific and engineering principles” for the condensation problems of the ’181 patent are not “specific to the application of the device” or any unique aspect of refrigerated display case design—they are from the broader field of HVAC&R. *EIS GmbH v. Novoluto GmbH*, IPR2020-00007, Paper 41 at 15–16 (PTAB Sep. 2021); EX1061, ¶¶21–24 (explaining that the ’181 patent addresses generic HVAC&R sensor and condensation problems governed by universal thermodynamic principles), ¶¶25–29 (explaining how the “specific concerns” Mr. Pollock alleged as to refrigerated display cases are, in fact, widely applicable across HVAC&R); EX1062, 80:1–18, 88:7–89:21, 99:10–100:12.

The specification confirms that the problems the ’181 patent addresses are not unique to refrigerated display cases. First, the title of the patent (“Refrigeration Unit Condensation Prevention”) is not specific to display cases. Second, the “Field of the Invention” explains that the purpose of the purported invention is “heating to remediate condensation build-up” and “operating devices and methods for activation

and deactivation of such heating.” EX1001, 1:6–10. When discussing relevant prior art, the specification notes that “[m]onitoring air temperature, relative humidity and surface temperatures to initiate condensation control events has been utilized *in a variety of applications including*”—not limited to—“refrigeration.” *Id.* 1:42-45. The patent also purports to address the “inaccuracy of temperature readings, particularly where both cold and warm environments are adjacent to one another *such as*”—again, not limited to—those “found at commercial freezer/refrigeration display cases.” *Id.* at 1:55–58. Thus, the ’181 patent focuses on the broader principle of condensation control, not the singular application of refrigerated display cases.

The structure of the claims reinforces that the ’181 patent’s focus is on general HVAC&R principles, i.e., sensing and controlled heating. Claim 1 is directed to a “condensation control apparatus” comprising “sensing unit[s],” “a control unit,” and sensor “housing”—not novel refrigerated display case components. *See, e.g.*, EX1001, 9:29–53. It makes sense that the claims focus on these non-refrigerator components, because the specification acknowledges that refrigerated display cases with anti-sweat heaters were already well-known. *See, e.g., id.*, 1:14–40. Where, as here, the “nature of the claims” does not require particularized knowledge of a particular application, that particularized knowledge is not a “prerequisite for qualifying a person of ordinary skill in the art.” *AliveCor, Inc. v. Apple Inc.*, 130 F.4th 1006, 1015–16 (Fed. Cir. 2025) (finding no error in the Board’s reliance on an

expert lacking experience in “specific, complex machine learning algorithms” but possessing expertise on the “general applicability of machine learning”).

3. Dr. Henze Has Adequate Experience With Refrigerated Display Cases

Although experience with the specific application of refrigerated display cases is not necessary, Dr. Henze possesses it. Patent Owner argues otherwise based on deliberately targeted deposition questions where Dr. Henze candidly explained that he has not “designed,” “written a paper on,” or “obtained a grant on” a refrigerated display case. POR 27–30 (citing EX2019, 163:10–167:14). But lacking those specific experiences is not dispositive because Patent Owner’s expert denied that they are required by his narrow “definition of a POSITA.” EX1062, 220:13–221:16; *see also id.*, 147:8–15. Indeed, Dr. Henze *has* studied HVAC&R in the context of refrigerated display cases, including for “a grant *application* that analyzed and enhanced commercial refrigeration systems in retail settings.” EX1061, ¶¶30–31.

Moreover, Dr. Henze’s extensive academic experience—including his master’s and PhD degrees and subsequent decades educating and researching thermodynamics, energy systems, and controls (EX1003, pp.184–186; EX1061, ¶18)—compensates for any deficiency in specific experience with refrigerated display cases. Though Patent Owner’s definition does not explicitly propose alternatives, the Board routinely finds that “a recipient of other academic degrees

may qualify as a person of ordinary skill if they have taken coursework or have experience in the pertinent technology.” *E.g., Precision Planting LLC v. Deere & Company*, IPR2019-01048, Paper 99 at 18 (PTAB Dec. 2020).

4. Even Without Dr. Henze’s Testimony, the Petition Proves That the Challenged Claims Are Obvious

Even if the Board adopts Patent Owner’s narrow definition and concludes that an endowed engineering professor and ASHRAE⁶ fellow lacks expertise to testify about well-known condensation remediation systems, the record evidence and the Petition still prove obviousness. The prior art and corroborating evidence establish that the claims cover the routine incorporation of standard condensation prevention techniques into an environment where condensation exists. What’s more, if the claims are obvious to Dr. Henze—who Patent Owner says lacks adequate experience with refrigerated display cases—then they would surely be obvious to an engineer with “at least two years’ professional experience working with refrigerated display cases.” POR 23; *see also Trs. of Columbia Univ. in City of New York v. Illumina, Inc.*, 620 F. App’x 916, 922 (Fed. Cir. 2015) (“[T]he higher the PHOSITA’s skill level, the more likely the PHOSITA would find an invention obvious.”).

⁶ American Society of Heating, Refrigerating and Air-Conditioning Engineers

D. Patent Owner Provides No Evidence or Nexus for Any Objective Indicia

Patent Owner’s terse remarks on objective indicia do not “confirm non-obviousness.” POR 70; *see also* EX1061, ¶¶65–73. The remarks cite only one paragraph of the Pollock Declaration, which in turn cites *no evidence* at all.⁷ Instead, Pollock states: “*to the extent evidence is presented* of [secondary considerations], those considerations *would* further support nonobviousness.” EX2014 ¶84. Without actual evidence of commercial success, industry adoption, or long-felt need, Patent Owner cannot begin to meet its “burden of showing a sufficient nexus between the claimed invention and any objective evidence of nonobviousness.” *WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1330 (Fed. Cir. 2018).

⁷ Mr. Pollock’s testimony is also undermined by the fact that he admittedly did not render opinions on patentability from the objective perspective of a hypothetical skilled artisan. *See* EX1062, 173:8–174:15; *see also id.*, 38:17–39:2.

Respectfully submitted,

Dated April 6, 2026

/Kenneth Wayne Darby Jr./

Kenneth W. Darby, Jr., Reg. No. 65,068

Fish & Richardson P.C.

60 South Sixth Street, Suite 3200

Minneapolis, MN 55402

T: 202-783-5070

F: 877-769-7945

Attorney for Petitioner

CERTIFICATION UNDER 37 CFR §42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petitioner's Reply to Patent Owner's Response totals 5,594 words, which is less than the 5,600 allowed under 37 CFR § 42.24(c)(4).

Respectfully submitted,

Dated April 6, 2026

/Kenneth Wayne Darby Jr./

Kenneth W. Darby, Jr., Reg. No. 65,068
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
T: 202-783-5070
F: 877-769-7945

Attorney for Petitioner

CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4), the undersigned certifies that on April 6, 2026, a complete and entire copy of this Petitioner's Reply to Patent Owner's Response and Accompanying Exhibits were provided by email, to the Patent Owner by serving the email correspondence address of record as follows:

Robert P. Ziemian
Ian Rainey
Theodore M. Foster
HAYNES AND BOONE, LLP
2801 N. Harwood Street, Suite 2300
Dallas, TX 75201

Email: robert.ziemian.ipr@haynesboone.com
ian.rainey.ipr@haynesboone.com
ipr.theo.foster@haynesboone.com

/Diana Bradley/
Diana Bradley
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
bradley@fr.com