

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ANTHONY INC.,
Petitioner,

v.

CONTROLTEC, LLC,
Patent Owner.

Case IPR2025-00636
Patent 7,421,847

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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EXHIBITS

EX1001	U.S. Patent No. 7,421,847
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EX1005	U.S. Patent No. 6,422,062 (King)
EX1006	U.S. Patent No. 7,240,501 (Bunch)
EX1007	U.S. Patent No. 6,502,409 (Gatling)
EX1008	U.S. Patent No. 5,396,796
EX1009	U.S. Patent No. 5,778,689
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	RESERVED
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	RESERVED
EX1026	RESERVED
EX1027	Contemporary Control Systems Inc., Introduction to Control, Vol. 2. Issue 2 (2001)
EX1028	Shivakumar Raman & Paul H. Cohen, <i>Remote sensing for on-line temperature estimation in machining: A basic framework</i> , 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 RESERVED
- EX1042 RESERVED
- EX1043 Refrigeration Monitor and Case Control Installation and Operation Manual (Rev 4 08-12-99)
- EX1044 UltraSite 32 User's Guide (Rev 3 9-28-99)
- EX1045 Order to Stay Proceedings, *ControlTec, LLC v. Anthony, Inc. et al.* 1:24-cv-00883 (DDE)

- EX1046 Joint Status Report Regarding Order to Stay Proceedings (Document 21), *ControlTec, LLC v. Anthony, Inc. et al.* 1:24-cv-00883 (DDE)
- EX1047 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)
- EX1048 Time to Milestones Report: Delaware District, Docket Navigator (retrieved May 4, 2025)
- EX1049 District Report Delaware District Court in Patent Cases (January 2000–January 2025), LegalMetric (excerpt)
- EX1050 Federal Court Management Statistics–Profiles, Administrative Office of the U.S. Courts (December 31, 2024)
- EX1051 Declaration of John Roche
- EX1052 Settlement Agreement and Release (redacted)
- EX1053 U.S. Patent No. 7,207,181
- EX1054–60 RESERVED
- EX1061 Supplemental Declaration of Dr. Gregor P. Henze
- EX1062 Transcript of Video Deposition of Mr. Michael A. Pollock
- EX1063 U.S. Patent No. 4,127,765
- EX1064 Emerson Climate Technologies, Installation Instructions: Control Link ACC Anti-Condensate Controller System (2008)
- EX1065 Hussmann Corporation, Optional Anti-Condensate Heater Controller for Reach-in Glass Doors (2016)
- EX1066 Greenwise Energy Solutions, Anti-Sweat Heater Control for Glass Display Doors, retrieved from

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- EX1067 Anthony International, Anthony Parts Book, retrieved from https://web.archive.org/web/20120828090825/http://www.anthonyintl.com/Libraries/Product_Literature/Partsbook-073012.sflb.ashx (2013)
- EX1068 Tyler Refrigeration, Installation & Service Manual: Glass Door Merchandisers (ARDCO) (2004)
- EX1069 Supermarket Energy Technologies, Door Miser | Anti-Sweat Controls, retrieved from <https://web.archive.org/web/20180424150643/http://www.supermarketenergytech.com/product/door-miser/> (2018)
- EX1070 Appendix A to Subpart R of Part 431 - Uniform Test Method for the Measurement of Energy Consumption of the Components of Envelopes of Walk-In Coolers and Walk-In Freezers (as of June 26, 2017)
- EX1071 ControlTec, LLC v. Anthony Doors, Inc., Case No. 1:06-cv-00295-MSK-MEH, Defendant's Response in Opposition to Motion for Preliminary Injunction (D. Colo)
- EX1072 Maintenance Fee Statement ('847 patent)

I. INTRODUCTION

The '847 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, adopts overly narrow claim interpretations, and attempts to exclude plainly analogous prior art. 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 '847 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 and Bunch

1. The '847 Patent's Condensation Anticipating Features Are Obvious in View of Carter's Control Logic

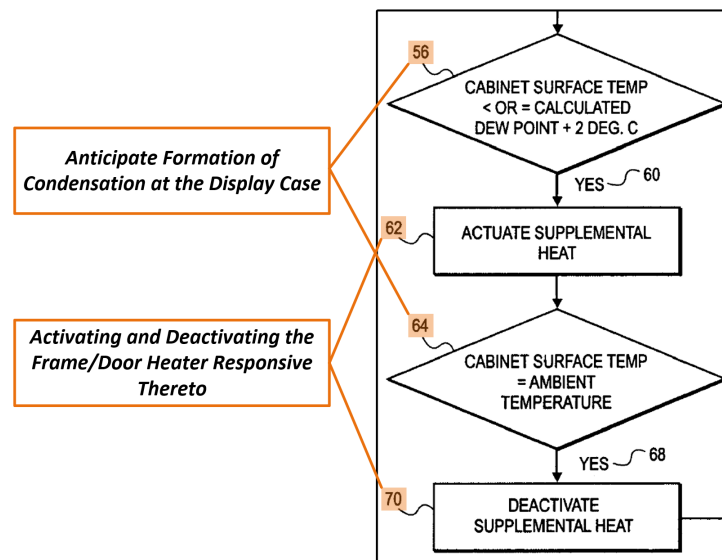
i. Patent Owner's Case Rises and Falls With Its Implicit Narrowing Construction

Patent Owner's complaint that "Carter makes no use of the dew point reference at shut-off" fails at the threshold. POR 21; *see also generally* 21–34, 47. While their scope encompasses *dew point-based* heater deactivation, claims 1–15 and 17–20 do not require it.¹ For example, independent claim 8 broadly recites that

¹ Only dependent claim 16 recites dew point-based heater deactivation.

(i) condensation is “anticipate[d]” by “utilizing monitored case frame temperature, ambient air temperature and relative humidity,” and (ii) heater activation and deactivation are “responsive thereto.” Carter satisfies both requirements.

Indeed, everyone agrees that Carter’s control scheme activates the heater when condensation is anticipated from surface/ambient temperatures and relative humidity. *See* Pet. 12–15; POR 21 (conceding “Carter triggers heat at dew point + constant”). And, as illustrated below, heater *deactivation* in Carter is inextricably linked to the anticipating and activating steps as part of the same causal (“responsive”) control loop. *See* Pet. 14–15; EX1004, 5:55–63; EX1003 ¶¶81–82.



EX1004, Figure 3 (annotated). In Carter’s control loop, heater deactivation is the programmed response to the conclusion of a state where the system anticipates condensation. EX1061 ¶¶32–37; *see also id.* ¶¶38–40 (addressing, *inter alia*, Patent Owner and Mr. Pollock’s unrealistic 100% humidity scenario).

Patent Owner's insistence on dew-point-based deactivation imposes an implicit construction that categorically limits all of the Challenged Claims to a single disclosed embodiment. But "reading a [dew point] limitation from the written description into the claims" is "one of the cardinal sins of patent law." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1319–20 (Fed. Cir. 2005) (cleaned up). In both the '847 patent and its predecessor US 7,207,181, when the patentee meant to claim such algorithmic details, it did so with express functional language and/or means-plus-function claiming. EX1001 ('847), cl. 16; EX1053 ('181), cl.1, cl.8, cl.14. The patentee chose to forgo such limitations and claim more broadly in '847 patent claims 1–15 and 17–20. Patent Owner should be held to that choice in this IPR.

ii. The Petition's Carter Analysis Applies Even Under Patent Owner's Erroneous Construction

Carter's disclosure sustains an obviousness conclusion even under Patent Owner's flawed narrowing construction. As the Petition explains, "Carter's heater deactivation algorithm and the '847 patent's [disclosed] algorithm for heater deactivation are substantially similar" and not patentably distinct. Pet. 15–17 (citing EX1003 ¶¶86–91). Both employ "a buffer value to ensure that the frame temperature of the display case is far enough away from the dew point to prevent anticipated condensation without excessive on-off cycling of the heater." Pet. 17.

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 '847 Patent.” POR 21–25. But these charts are irrelevant because they were derived from cherry-picked setpoint values and relative humidity values that the '847 patent neither claims nor discloses. POR 24; EX1061 ¶¶41–51; *see also id.* ¶¶52–53; EX1062, 263:25–269:19; *see also id.* 235:4–237:13, 246:8–19, 250:8–22.

Patent Owner’s charts are also unimportant because the Petition affirmatively argues that a skilled artisan would have been motivated to modify Carter by using a preselected setpoint above dew point for triggering heater deactivation, just like the '847 patent’s disclosed embodiment. Pet. 17 (citing EX1003 ¶¶92–94). The skilled artisan would have pursued this approach to “achiev[e] a more flexible control system, e.g., one more adaptable to different climates and conditions.” *Id.*

Patent Owner refuses to engage with the underlying factual basis of the Petition’s motivation theory on heater deactivation. *See generally* POR 21–34, 47. 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.* 29, 33. 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 ¶¶92–94. “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.* ¶94. 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 also a 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. Employing that same technique to turn the heater *off* is the very definition of obviousness. *Id.*

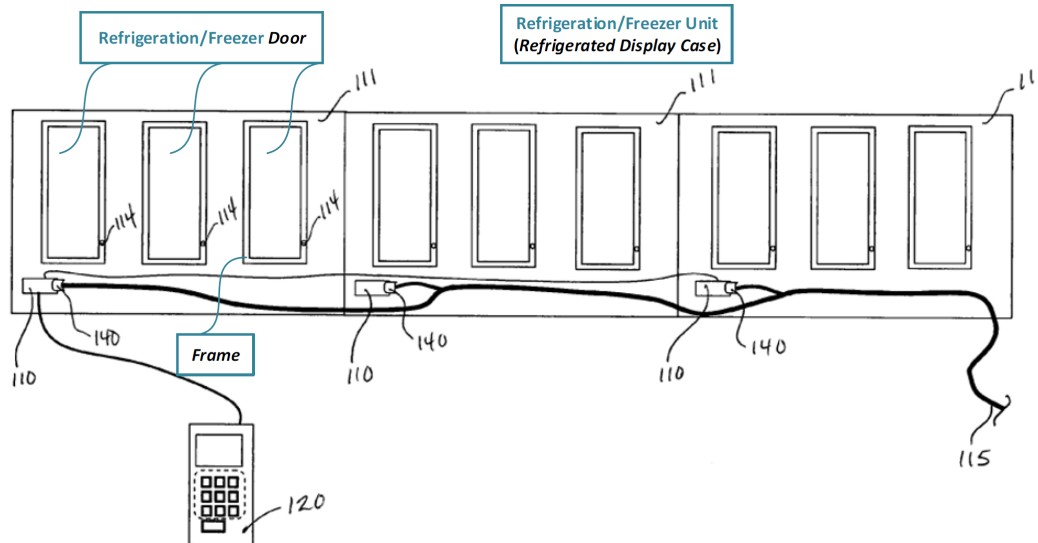
Patent Owner also complains that “Carter does not disclose the ’847 Patent’s data handling features.” POR 25. But “data handling features” are not recited in or otherwise implicated by any of the Challenged Claims. Nor is “inherency” at issue here. *See* POR 30–34. The Petition relies on Carter’s express teachings and the predictable modifications that a skilled artisan would have been motivated to pursue.

2. Bunch’s Refrigerated Display Case Renders Patent Owner’s Misplaced Critique of Carter Irrelevant

i. Carter-Bunch (Ground 1B)

Bunch resolves Patent Owner’s critique that Carter lacks “a refrigerated display case, a display case frame, or a display case frame/door heater.” POR 35; *see also generally* 34–37, 13–14 (arguing “[t]he preambles are limiting”). The

Petition identifies precisely where Bunch discloses these features. *See* Pet. 32–33 (citing/quoting EX1006, Abstract, 1:14–16, 2:8–35, 2:55–58, 4:26–44, Figure 1).



EX1006, Figure 1 (annotated).

Patent Owner does not dispute these mappings to Bunch and instead takes aim at the Petition’s motivation-to-combine analysis. *See* POR 37–42. To begin with, Patent Owner miscasts the Carter-Bunch Combination as “a wholesale change in Bunch’s principle of operation.” POR 37–38. Not so.

The Combination preserves and promotes Bunch’s guiding principle of “prevent[ing] condensation” by providing “[a] control unit [that] is set so that the heater is on prior to the formation of condensation.” EX1006, 2:23–25, 2:55–58. To wit, Carter shares Bunch’s goal of “prevent[ing]” condensation before it starts via the controlled application of “supplemental heat.” EX1004, 4:62–67; Pet. 28. In this regard, a skilled artisan would have seen a sensor-driven control scheme like

Carter’s as a “predictable improve[ment]” over the pre-set duty cycles that Bunch describes, which Patent Owner does not deny. Pet. 30–31; EX1003 ¶¶115–117; *see also id.* ¶111, ¶¶113–114; EX1061 ¶56.

Patent Owner also misfires by suggesting that Bunch categorically “eschews ambient triggers” like the one Carter teaches. POR 39 (citing EX1006, 1:24–43); *see also id.* 41 (alleging “Bunch teaches away”). The passage in Bunch that Patent Owner cites is discussing a particular preexisting solution where “when the humidity goes above a given level, the heater is turned on, often regardless of whether condensation is actually present.” EX1006, 1:36–39. But that’s not how Carter works. Just like the ’847 patent, Carter activates the heater when the surface temperature of the refrigerated case drops below a preselected setpoint above dewpoint. EX1004, 5:31–54; POR 21 (admitting same); EX1061 ¶¶54–55.

Nor does Patent Owner detract from the Carter-Bunch Combination by contending that creating such a system in the real world “demands reengineering Bunch’s logic, hardware, and system behavior.” POR 39–40. Such modifications were plainly “within [the skilled artisan’s] technical grasp” and thus “the product not of innovation but of ordinary skill.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007); EX1003 ¶119 (cross-referencing *id.* ¶¶33–60); EX1061 ¶¶57–58. “[A] person of ordinary skill is also a person of ordinary creativity, not an automaton, so the fact that it would take some creativity to carry out the combination does not

defeat a finding of obviousness.” *GE v. Raytheon Techs. Corp.*, 983 F.3d 1334, 1352 (Fed. Cir. 2020) (quoting *KSR*).

Patent Owner’s final gambit is to contend that using Carter’s “sensor assembly unit” with Bunch’s refrigerated display case ignores “the structural realities of a multi-case display line” and that the Petition is “silent on where and how the ambient sensors are mounted and what air they sample in a display case environment.” POR 48–50. This argument fails for at least three reasons.

First, these sensor-mounting details are phantom limitations. For example, Patent Owner insists that Carter falls short because its localized sensors do not measure “*true ambient aisle air*.” POR 49. The words “true” and “aisle,” however, appear nowhere in the Challenged Claims. The claims simply require monitoring “ambient air temperature and relative humidity outside the display case.” EX1001, 10:6–8. Carter satisfies this element explicitly by disclosing an “ambient temperature sensor 44” mounted on an exterior surface of the case. EX1004, 5:1–20, Figures 1–2; Pet. 11–12.

Second, even if Carter’s sensor assembly could not be physically integrated with Bunch’s display case, the test for obviousness does not require prior art to be “bodily incorporated” or “physically combinable.” *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (quote omitted); *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985).

Third, the sensors in Carter’s sensor assembly unit were ubiquitous, and a skilled artisan would have readily identified suitable mounting locations on Bunch’s display case. *See* EX1003 ¶¶34–41; EX1061 ¶¶59–62.

ii. Carter Alone (Ground 1A)

The Petition relies on Carter alone in Ground 1A because the only material difference between the art and the claims is the adjunct noun “display.” The Petition does not attempt to “retrofit” Carter via “expert gloss” (POR 34), as Patent Owner contends, and 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. 10). *See* EX1003 ¶¶67 (referencing *id.* ¶¶34–41).

Lacking any evidence-backed response to the Petition’s motivation rationale, Patent Owner retreats to its pre-institution position that Carter somehow lacks a “frame” and “solve[s] entirely different problems” than those addressed by the ’847 patent. POR 35–36; *see also id.* 25. The Board should again reject these recycled arguments. *See* ID 15–16. The ’847 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 fact that Carter does not use the word “frame” does not mean that Carter’s disclosed freezer/refrigeration system does not have a frame.” ID 16; *see also* EX1003 ¶¶66; EX2019, 144:1–146:3

(Dr. Henze: “the frame [in Carter] holds the door”). Likewise, although Patent Owner protests otherwise, Carter is directed to solving problems addressed by the ’847 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.”² EX1001, 2:32–37, *compare with* EX1004, 1:1–2:67.

3. Patent Owner and Its Expert Misinterpret the Prior Art: Carter’s Housing Promotes Sensor Accuracy and Renders Obvious Thermal Isolation (Claims 3, 9–10, 19 Only)

Carter renders obvious the ’847 patent’s broad “thermally isolating” limitations by integrating the sensor assembly into a housing (door latch assembly) to “produce more accurate” readings. Pet. 17–24; EX1004, 5:12–15; POR 47 (conceding the enclosure “improve[s] readings”). Because thermally isolating sensors from extraneous heat sources or heat sinks was a common practice to improve accuracy, a skilled artisan would have understood that Carter’s housing thermally isolates the dew point sensors from the refrigerated case and the surface sensor from ambient air. *See generally* EX1003 ¶¶95–105.

Patent Owner and its expert, Mr. Pollock, do not dispute that thermal isolation was a routine practice that is fundamental to Carter’s accuracy goal. POR 47–48.

² Patent Owner also claims that the ’847 patent “endeavors to maintain product visibility,” but that concept is not stated or implied by the specification. POR 36.

Instead, ignoring this key context, Mr. Pollock misinterprets Carter’s Figure 2 and alleges that it shows the dew point sensors contacting surfaces of the case frame or sensor housing. EX2037 ¶54. But a skilled artisan would not have interpreted Figure 2 that way because the alleged contact would undermine the accuracy Carter sought to achieve. *See* Pet. 19–20 (citing EX1004, 5:1–20; EX1003 ¶¶97–100).

Patent Owner’s final remark is not only unproven but also irrelevant. It does not matter whether Carter’s localized sensor measurements “defeat[] the possibility of monitoring conditions for the *glass front* [of a] refrigerated display case.” POR 48. The claims require and the prior art teaches monitoring the “*frame*.” *See* EX1001, cl.1 (“monitoring case frame temperature”), cl.8 (similar).

4. Bunch Teaches “Updatable Parameters,” and Patent Owner Fails to Prove Otherwise (Claims 7, 20 Only)

Patent Owner misses the mark on claims 7 and 20 by focusing on the wrong part of the specification. POR 52–53 (citing EX1001, [2]:27–32). The ’847 patent’s disclosure regarding “constantly updating *data*” from the sensors is irrelevant because sensor data is not commensurate with the “control *parameters*” recited in claims 7 and 20. *Id.* The more relevant disclosure on parameters simply says that “set points” and “other values” are “updatable in real time.” EX1001, 9:2–5. Patent Owner does not argue that Bunch teaches anything different. *See* Pet. 42–43 (citing, *e.g.*, EX1006, 2:10–16, 3:27–67, Figure 1)).

B. The Carter-Bunch-King Combination Provides an Alternative Route to Obviousness on the Claimed “Thermally Isolating” Features (Ground 1C)

1. 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 ’847 patent’s broad field of endeavor and reasonably pertinent to the sensor-packaging problem that the ’847 patent addresses. Pet. 52–53 (EX1003 ¶¶161–166). Patent Owner tries to exclude King by reducing both the ’847 patent’s field and problem to the narrow realm of refrigerated display cases. POR 42–43. But that is exactly what the law prohibits. *See Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010) (instructing to “construe the scope of analogous art broadly”); *see also In re Deminski*, 796 F.2d 436, 437–42 (Fed. Cir. 1986); *see also id.* at 437–42 (focusing on “function and structure”); *In re Bigio*, 381 F.3d 1320, 1325–26 (Fed. Cir. 2004) (analyzing “structural similarities”).

Like the ’847 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, 6:51–67, 7:32–47. King therefore constitutes analogous art, even though its sensor unit is used for preventing condensation on a windshield instead of a case door or

frame. *See* EX1001, 1:48–54 (conceding that “condensation control” techniques are not limited to refrigeration and “utilized in a variety of applications”); EX1003 ¶163.

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 28. Patent Owner is thus wrong to suggest that the skilled artisan would confine their search for a solution to the inventors’ sensor-packaging problem to refrigerated display cases and nothing else. POR 42–43. Doing so would improperly “rule out all [of the] art” in different fields. *Donner Tech.*, 979 F.3d at 1360. Sensor packaging is a general problem where the same solution can be employed in many contexts. *E.g.*, EX1003 ¶¶45–47; EX1032.

2. Patent Owner’s Substantive Arguments Against King’s Disclosure Are Easily Debunked

Beyond its misplaced analogous art complaint, Patent Owner quibbles with various aspects of King’s disclosure and the combination with Carter-Bunch. POR 43–45, 53–57. None are persuasive.

For one, Patent Owner contends that “[m]erely pointing to King’s integrated housing adds nothing material to the claim limitations.” POR 43–44 (“untethered to any claimed limitation”). King, however, serves an important role by mooting Patent Owner’s criticisms of Carter with even more detailed thermal-isolation disclosures. *See* Pet. 53–63.

Next, Patent Owner argues that King’s dome-and-tray housing “risks corrupting [Carter’s] ambient readings by housing the ambient sensors in a localized enclosure.” POR 43–44 (“undermine measurement fidelity”); *see also id.* 53–54 (“impeding airflow”). This argument is unfounded and not credible. Enclosing ambient sensors in a housing is not unique to King—it is also taught by Carter and even disclosed as a preferred embodiment in the ’847 patent. EX1004, 5:1–20; EX1001, 6:29–8:26. Besides, King solves Patent Owner’s “airflow” problem (POR 44) by providing “apertures of sufficient size and number so that the ambient air temperature sensor and the relative humidity sensor located within dome are *exposed to true ambient air temperature and humidity values*” (EX1005, 2:61–67 (reference numerals omitted)).

Finally, Patent Owner claims that King’s sensing unit would not fulfill its thermal isolating function if deployed on the Carter-Bunch refrigerated display case instead of an automotive windshield. *See* POR 54–57; Pet. 56–63 (explaining how King’s “protective dome, flex circuit, and thermal barrier tray (taken together or individually) thermally isolate the sensing units”). But it defies logic to suggest that merely changing the mounting location would suddenly render King’s unit inoperable. EX1061 ¶¶63–68. Even if “some alteration[s]” are required to physically create the Carter-Bunch-King Combination, such details are unclaimed

and plainly within the capabilities of a skilled artisan. *Raytheon*, 983 F.3d at 1352; *see also* EX1003 ¶¶42–50, ¶¶167–174; EX1061 ¶¶66–68.

C. Patent Owner Cannot Rebut the Petition by Attacking Gatling Individually (Ground 1D)

The crux of Patent Owner’s complaint on Ground 1D is that Gatling’s teachings about logging and wirelessly transmitting data focus on product/internal case temperatures rather than data derived by an anti-sweat control system like that of the Carter-Bunch Combination. *See generally* POR 45–46, 57–60. But obviousness “cannot be overcome by attacking references individually where the [asserted ground] is based upon the teachings of a combination of references.” *Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019) (cleaned up). Patent Owner falters by leaving the *combination* of Gatling with Carter-Bunch un rebutted. *See* Pet. 64–68 (cross-referencing, *e.g.*, *id.* 25–26, 39–40).

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

Patent Owner proposes an ends-oriented level of skill designed to exclude Dr. Henze as an expert by requiring two years’ “professional experience” specifically with “refrigerated display cases.” POR 14; EX1062, 206:20–23. Yet nothing about the underlying science or technology behind the ’847 patent is unique to the applied setting of display cases. Dr. Henze is a highly qualified, endowed engineering

professor with “extensive experience in academia and research” in the HVAC&R field. ID 5 n.6. He is amply qualified to render 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. 4–5. 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, ¶¶162–163; 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 ’847 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 14), 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”); *see also Shelcore, Inc. v. Durham Indus., Inc.*, 745 F.2d 621, 625 (Fed. Cir. 1984); *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); *Hologic, Inc. v. Minerva Surgical, Inc.*, 764 Fed. Appx. 873, 878–879 (Fed. Cir. 2019).

“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) (“type of problems encountered in the art”). Here, the relevant “scientific and engineering principles” for the condensation problems of the ’847 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); *see also* EX1001, 1:49–52 (“a variety of applications”), 1:61–65; EX1061 ¶¶21–24 (explaining that the ’847 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.

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 18–20 (citing EX2019, 163:10–167:14). But even Patent Owner’s expert agreed that those specific experiences are not required or dispositive. *See* EX1062, 220:13–221:16; *see also id.* 147:8–15. What matters is that 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. *See* EX1062, 207:17–208:23.

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

Even without Dr. Henze’s testimony, the record evidence and the Petition still prove that the ’847 patent’s claims are obvious. The prior art and corroborating evidence establish that the claims cover the routine incorporation of standard condensation prevention techniques into a familiar environment where condensation exists. And if the claims are obvious to Dr. Henze—who Patent Owner says lacks adequate experience—then they would surely be obvious to an engineer with “at least two years’ professional experience working with refrigerated display cases.” POR 14; *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.”).

E. Patent Owner’s Unsupported Objective Indicia Arguments Cannot Save the Challenged Claims

Objective indicia do not “corroborate non-obviousness.” POR 60. Far from it. First, Patent Owner fails to show a nexus between the alleged indicia and the ’847 patent’s claims. Second, Patent Owner fails to substantiate the alleged indicia with credible evidence. Either deficiency is independently fatal.

1. Patent Owner Has Not Established Nexus

To begin with, Patent Owner does not establish “a presumption of nexus” based on “the ControlTec AS-20 controller.” POR 68; *Fox Factory, Inc. v. SRAM*,

LLC, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (“coextensive”). Despite stating that this product “implements the precise elements the petition challenges,” Patent Owner has no evidence to prove it. POR 68. Other than the ’847 patent itself, which does not mention the AS-20, Patent Owner’s only other pin citation is two unhelpful paragraphs in the Pollock Declaration (EX2037 ¶¶65–66). As Mr. Pollock conceded during deposition, he never “reached any opinions about whether any specific products meet any of the limitations of the claims in the ’181 or ’847 patents.” EX1062, 67:17–25 (“No, I wasn’t asked to do that.”).

Patent Owner also fails to establish nexus-in-fact “apart from [the] presumption.” POR 68–69; *see also In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996) (“direct result of the unique characteristics of the claimed invention”). Patent Owner provides no evidence that “customers and competitors prized the specific claimed capabilities.” POR 69 (citing EX2029). The cited conference presentation only vaguely references dew point-based anti-sweat systems—not any specific anti-sweat products or claim features. EX2029 at 13, 18; EX1061 ¶76 (discussing same). And Patent Owner again cites no evidence to establish that the AS-20 product practices any ’847 patent claim. *See* EX1061 ¶¶73–75.

Lack of evidence aside, Patent Owner cannot establish a “nexus to the merits of the claimed invention” because the ’847 patent’s claim features were not “novel.” *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011); *see generally* POR 60–73 (§VII).

As Dr. Henze explains, a preexisting dew point-based anti-sweat system from a competitor called Altech Controls satisfies every element of the only claim Patent Owner specifically identified (claim 8). EX1061 ¶¶77; *see also id.* ¶¶61. And the Altech system was just one of many. *E.g.*, EX1024 at 34 (a 2004 DOE-funded investigation discussing “anti-sweat heater controls...capable of cycling the door heaters based on either door-temperature or ambient-dew-point measurement”).

Because there is no nexus, Patent Owner’s alleged objective indicia “deserve[] no weight.” *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1220 (Fed. Cir. 2016).

2. The Board Should Reject Patent Owner’s Unsubstantiated Claims of Success, Long-Felt Need, Praise, and Copying

Although the nexus deficiency is independently fatal, Patent Owner also lacks credible evidence of the alleged objective indicia.

Commercial success. It is untrue that ControlTec and Anthony have been the only “major providers of anti-sweat systems in the United States” for “the past twenty years.” POR 61 (citing EX2004); *see also id.* 69–70. The market was saturated with anti-sweat systems from a wide range of providers throughout this timeframe. *See* EX1064 at 1; EX1065 at 3; EX1066 at 1; EX1067 at 83; EX1068 at 17; EX1061 ¶¶67 (discussing EX1021–22), ¶¶77. Indeed, Patent Owner’s declarant, Mr. Bunch, founded a company called Supermarket Energy Solutions that markets yet another anti-sweat controller called the “Door Miser” and claims to have “over 25,000 units installed.” EX2004 ¶3; EX1069 at 1.

Industry praise. Patent Owner’s putative “praise” is similarly unsupported. For one, Patent Owner cites an engineering report on its AS-20 product as evidence of “rapid adoption...by sophisticated supermarket operators” (POR 71–72 (citing EX2030)), but that report merely describes a single test conducted on a single case at a single site—“Dan’s Food Store in Salt Lake City, UT” (EX2030 at 6). And Patent Owner’s cited industry presentation only generally refers to the benefits of dew point-based anti-sweat systems, a product category predating ControlTec’s patents. POR 71 (citing EX2029). The report does not praise ControlTec, its products, or any specific claim features. EX1061 ¶¶76 (discussing EX2029).

Long-felt need. Patent Owner again cites the Pollock Declaration, which contains no substantive discussion of this issue, cites no objective evidence, and even implies that Mr. Pollock never considered it. POR 72–73 (citing EX2037 ¶¶65 (“*To the extent evidence is presented* of...long-felt but unresolved need...those considerations would further support nonobviousness.”)); EX1061 ¶¶70–72, ¶79.

Copying. Patent Owner’s copying theory is even worse. POR 61–68, 70–71. Here too, Patent Owner turns to Mr. Pollock, who somehow concludes that Petitioner “copied” the ’847 patent *solely* based on purported similarities between the ’847 patent and a later-filed patent assigned to Hill Phoenix, Inc. EX2037 ¶¶66; POR 66–67. But the inventors of the Hill Phoenix patent reside in India and assigned their rights to a different legal entity than Petitioner. *See* EX2035 at (72)–(73).

There is no shred of evidence that these overseas inventors were even aware of a Wyoming-based small-entity like ControlTec, its patents, or its products. *See* EX1037 at 1; EX1072 at 1.

Next, Patent Owner mischaracterizes Petitioner Anthony's voluntary compliance reporting to the DOE. *See* POR 64–66. It is patently false that “[t]he DOE *mandated* that Anthony (1) ‘modify a basic [*anti-sweat controller*] model to bring it into compliance...’” POR 65 (quoting, with modifications, EX2027 at 4). The mandatory action was that Petitioner “must provide upon DOE request specific monthly numbers for the units of [certain] basic models.” EX2027 at 4. Modifying the “basic models” was optional. *Id.* (“*may* elect to modify”). What’s more, the basic models that Petitioner could electively modify were “display door[s].” *Id.* at 1–4. Patent Owner’s insertion of the word “anti-sweat controller” is not in the Notice. *Compare* POR 64–66, *with* EX2027 at 4.

The Notice refers to “display *door* basic models” because the compliance issue arose from instances where customers requested doors “*without* anti-sweat controllers.” EX2027 at 1–2. Energy consumption miscalculations were another issue, resulting in some “display doors” not meeting standards “*even if* sold with anti-sweat heat controllers.” *Id.* The idea that the DOE Notice caused Anthony to “modif[y] its energy controller” is misleading conjecture. POR 65. The only

document Patent Owner cites as putative support is an installation manual, which identifies no such modification. *See generally* EX2028.

Nor would a controller modification have had any effect on DOE compliance. For one, the DOE’s energy consumption calculations assess anti-sweat controllers as a binary “With” or “Without” factor, and do not distinguish between control schemes. EX1070 at 3–4 (discussing “percent time off” values for “anti-sweat heaters”). The DOE regulations also do not, as Patent Owner misstates, strictly “*require[]*” anti-sweat controllers to reduce energy consumption “in a quantity corresponding to the relative humidity.” POR 64 (citing 10 C.F.R. §431.306). Alternatively, compliant controllers can “reduce the energy use of the antisweat heater in a quantity corresponding...to the condensation on the inner glass pane.” 10 C.F.R. §431.306(b)(4); *see also* EX1006, 3:15–26 (Bunch describing a sensor to “detect[] when condensation starts to form”). In short, there are no DOE regulations that would have “dr[iven] many manufacturers...to alter their anti-sweat controllers in a manner that utilizes ControlTec’s [putative] innovations[.]” POR 12.

The simple truth is that Petitioner had no reason to copy the ’847 patent or the AS-20 product. POR 62–64. As discussed, controlling anti-sweat heaters based on dew point was not new, and it was certainly *not* something Petitioner learned from Patent Owner. *See* EX2034 (*Petitioner’s* then-vice president of engineering explaining a dew point-based control scheme involving three sensors *to Patent*

Owner's Brad Geuke in 2004). Many such products existed in the marketplace in the 2004–2005 timeframe, and the parties' business dealings ceased in part because the AS-20 was overpriced compared to these contemporaneous alternatives. EX1071 at 6 (“Anthony continually advised Energex [now ControlTec] that the proposed pricing was not competitive because similar products in the market place (Altech Controls Corporation part number 57000 and CPC (Emerson) part number 810-6121) were available in [a lower] \$125 to \$140 range.”); EX1061 ¶¶67, ¶¶77 (discussing the dew point-based Altech anti-sweat system); EX1021; EX1022.

* * * *

Because Patent Owner offers no credible objective indicia and no nexus, the Board should give these arguments no weight. The Challenged Claims are obvious.

Respectfully submitted,

Dated April 29, 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 C.F.R. §42.24

Under the provisions of 37 C.F.R. §42.24(d), the undersigned hereby certifies that the word count for this Petitioner's Reply to Patent Owner's Response totals 5,542 words, which is less than the 5,600 allowed under 37 C.F.R. §42.24(c)(4).

Respectfully submitted,

Dated April 29, 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 C.F.R. §42.6(e)(4), the undersigned certifies that on April 29, 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