

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ANTHONY INC.

Petitioner

v.

CONTROLTEC, LLC

Patent Owner

Patent No. 7,207,181

Issue Date: April 24, 2007

Title: REFRIGERATION UNIT CONDENSATION PREVENTION

Inter Partes Review No. IPR2025-00559

PATENT OWNER'S CORRECTED¹ SUR-REPLY

¹ Corrected according to the Board's email order dated May 19, 2026

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PATENT OWNER'S EXHIBIT LIST

EX.2001	Anthony corporate history webpage, https://www.anthonyintl.com/Aboutus/History.aspx
EX.2002	U.S. Patent No. 4,261,179 to Dageford
EX.2003	U.S. Patent No. 5,778,147 to Kim
EX.2004	Declaration of John "Weeb" Bunch under 37 C.F.R. § 1.68
EX.2005	Photographs of ControlTec LLC's AS-20 Anti-Sweat Controller case
EX.2006	Maintenance fee report for U.S. 7,207,181
EX.2007	WIPO(PCT) Application No. WO2006093751A2 to Murry
EX.2008	International Search Report for Application No. WO2006093751A2
EX.2009	Written Opinion of the International Searching Authority for Application No. WO2006093751A2
EX.2010	Information Disclosure Statement filed in U.S. Patent Application No. 12/337,981 on March 17, 2009.
EX.2011	Patent Assignment, Reel 023084, Frame 0117 (assigning U.S. Patent Application No. 12/337,981 to Anthony International).
EX.2012	Patent Assignment, Reel 027144, Frame 0103 (confirming Anthony International as a DBA of Anthony, Inc. and that U.S. Patent Application No. 12/337,981 was assigned to Anthony Inc.)
EX.2013	Declaration of Charles M. Jones
EX.2014	Declaration of Michael Pollock
EX.2015	Anthony Complete Infinity 60 Series Installation Manual - https://www.anthonyintl.com/docs/default-source/2022-documents/99-25726-i001-rev-a-_infinity-60-series-complete-installation-manual.pdf
EX.2016	https://www.anthonyintl.com/Solutions/door-selection-guide

EX.2017	https://www.anthonyintl.com/docs/default-source/2025-documents/why-anthony-tri-fold-flyer.pdf
EX.2018	https://www.anthonyintl.com/AboutUs/History.aspx
EX.2019	Transcript of Deposition of Dr. Gregor P. Henze (Dec. 11, 2025)
EX.2020	ASHRAE Psychrometric Chart #1, copyright 1992
EX.2021	U.S. Department of Energy Office of Scientific and Technical Information, Investigation of Energy-Efficient Supermarket Display Cases, Dec. 2004, available at https://doi.org/10.2172/885840 .
EX.2022	U.S. Department of Energy, Guide for the Retrofitting of Open Refrigerated Display Cases with Doors, Nov. 2012, available at https://www1.eere.energy.gov/buildings/commercial/pdfs/cbea_open_case_retrofit_guide.pdf
EX.2023	https://www.anthonyintl.com/docs/default-source/service-support-documents/in-0051-energy-controller-installation-instruction-all-model-frames4085b55740c861768229ff0000ead2ac.pdf?sfvrsn=874dd48d_2
EX.2024	Curriculum vitae of Michael Pollock
EX.2025	Withdrawn
EX.2026	Withdrawn

I. INTRODUCTION

ControlTec, LLC (“Patent Owner”) respectfully submits this Sur-Reply to address new arguments, new evidence, and logical deficiencies in Petitioner’s Reply. Rather than confining itself to rebutting arguments raised in Patent Owner’s Response, the Reply introduces an entirely new 48-page Supplemental Declaration of Dr. Henze (EX.1061), along with a host of new arguments, theories, and case law citations that either were not raised in the Petition (Paper 2) or have been materially expanded upon beyond the scope of the original filing. The Board should disregard these impermissible new arguments and new evidence. Even setting aside the procedural defects, the Reply’s substantive arguments are riddled with logical errors, mischaracterizations, and internal contradictions that fail to rehabilitate the Petition’s deficiencies.

This case is about condensation control in refrigerated display cases. From the field of the invention (EX.1001, 1:6-8), to the Summary of the Invention (EX.1001, 2:14-17, 2:32-35, 2:40-46, 2:55-57, 2:64-66, 3:9-12, 3:13-17, 3:19-25, 3:26-29, 3:34-39, 3:57-60, 4:16-20), to the Detailed Description (EX.1001, 5:14-17), to every embodiment of the claimed invention (EX.1001, 5:14-17), the ’181 Patent is focused on refrigerated display cases. In fact, every claim specifically recites refrigerated display cases in the preamble. *See* EX.1001, 9:29:30, 10:33-34, and 11:20-21. All the claims require a refrigerated display case and many of the

claims delve into the specific features of such cases and how the invention is tailored to them.

Petitioner—itself well versed in refrigerated display cases, as its entire business depends on them and it is a direct competitor of Patent Owner—argues for invalidation of the '181 Patent by pinning its case on Carter and King. However, neither Carter nor King is in the field of refrigerated display cases. Petitioner also relies on an expert—Dr. Henze—with virtually no experience with refrigerated display cases and presents only cursory analysis of the claim elements specific to refrigerated display cases.

These failures are dispositive. The Petition cannot support a finding that the '181 Patent is unpatentable. The Board may support this conclusion by finding any of the following:

1. POSITA/ Expert qualification. Petitioner's POSITA definition omits required practical experience in the field of the invention. The Board should include at least two years' experience with refrigerated display cases—an approach routinely adopted, and something the Dr. Henze is entirely lacking. *See, e.g., Best Med. Int'l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1354-55 (Fed. Cir. 2022). Under *Kyocera* and Rule 702, Dr. Henze's opinions should be excluded or, at minimum, given little weight.

See Kyocera Senco Indus. Tools, Inc. v. Int'l Trade Comm'n, 22 F.4th 1369, 1376–77 (Fed. Cir. 2022).

2. Deactivation algorithm. Carter does not disclose—or render obvious—the '181 Patent's deactivation technique; thus claims 8–20 are nonobvious. Dr. Henze's "floating offset" construct is a post hoc fabrication, not an "unusually simple" fill-in, and cannot substitute for a missing limitation under *DSS Tech. Mgmt., Inc. v. Apple Inc.*, 885 F.3d 1367, 1374 (Fed. Cir. 2018) (cautioning against reliance on "common sense" to supply absent claim elements).
3. Refrigerated-display-case context and "adapted for." The Petition treats Carter as if its teachings drop into refrigerated display cases without addressing the preambles or the "adapted for" limitations in claims 1 and 8. Adding Beatenbough does not cure this; the required adaptations and refrigerated-display-case context remain unaddressed.

Therefore, Patent Owner respectfully requests that the Board uphold the patentability of the challenged claims.

II. THE PETITION FAILS BECAUSE DEFINITION OF A POSITA IS INCORRECT AND DR. HENZE IS NOT A POSITA

Dr. Henze insists that his definition of a person of ordinary skill in the art ("POSITA") should control. EX.1061, ¶16. In doing so, he makes extreme

statements that minimize the value of understanding specialized systems—
statements that are easy for him to make given that he has no knowledge of and has never worked with such systems. He asserts: “To suggest that the physics of a display case frame are so distinct as to require further specialized refrigerated display case experience is to suggest that the laws of heat transfer and psychrometrics change based on the equipment’s chassis. But that is definitely not the case.” EX.1061, ¶19, graph 19. This is hyperbole. The question is not whether refrigerated display cases operate under different laws of nature; it is who qualifies as a POSITA for purposes of evaluating the ’181 Patent.

Dr. Henze’s position is also inconsistent with his own prior testimony. In IPR2016-00294 and IPR2016-00335, Dr. Henze was a testifying expert. The patent at issue in those proceedings, USRE44815E1, related to “cooling inlet air to a gas turbine,” as described in the field of invention. *See* USRE44815E1, col.1:27-28. Similar to the present IPR, every claim recited this field, providing for a “method of chilling inlet air to a combined cycle gas turbine plant.” *See* USRE44815E1, col.29:21-22.² In those proceedings, Dr. Henze agreed that a POSITA have not only a Bachelor’s degree in Mechanical Engineering or a related discipline along with 4-7 years of related industry experience, but also at least two years of

² *See also* col.30:58-59. col.30:24-25; col.31:27-28, col.32:31-32, col.33:31-32; col.34: 1-2; col.34:38-39; col.34:60-61; col.35:47-48; col.36:25-26; col.36:57-58.

practical experience relating to the design and operation of chilled water systems including thermal energy storage.

This demonstrates that in a closely analogous technological context, Dr. Henze himself endorsed a POSITA definition requiring not just a general engineering degree with years of experience, but also specific experience in the design of the technology forming the corpus of the invention: practical experience relating to the design and operation of chilled water systems including thermal energy storage. That definition aligned closely with the field of the invention and the claim preambles in those proceedings—just as Patent Owner's proposed definition aligns with the field and claims here. Surely the design and operation of chilled water systems are not so unique to suggest that the laws of heat transfer and psychrometrics change in that context.

Dr. Henze even appeared critical of the opposing party's POSITA definition in those proceedings, noting that a person having the opposing party's proposed level of skill would have no experience with gas turbines or TIC. Although the level of ordinary skill was not seriously contested in that case, Dr. Henze's commentary suggests he believed a POSITA should possess practical experience with both aspects of the field of invention—both the cooling system and the specific application to gas turbines. His position in this proceeding is irreconcilable with that prior testimony.

Dr. Henze further frames the problem of display case condensation as “generic in nature,” asserting that those who work in the field do not possess a superior scientific methodology. EX.1061, P. 18. But this discounts established case law in the area of requiring consideration of the type of problems encountered in the art. *See* MPEP § 2141.03(I); *In re GPAC*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). The types of problems encountered in the art of refrigerated display cases are not those requiring a “superior scientific methodology” of the kind Dr. Henze might claim as an academic researcher. Advancements in refrigerated display cases are not driven by esoteric research into potential new theories of how water molecules behave. As Mr. Pollock explained, a POSITA would be focused on the practicalities of implementing technology in refrigerated display cases—the very subject matter Dr. Henze discounts and with which he is demonstrably unfamiliar.

Dr. Henze’s lack of practical knowledge is vividly illustrated by his own testimony, in which he suggested implementing a chilled mirror sensor for measuring condensation in refrigerated display cases. EX.2019, 52:8–20. He apparently was unaware that such sensors cost anywhere from thousands to tens of thousands of dollars—wholly impractical for refrigerated display cases, where the cost of the infringing device sold by Petitioner is approximately \$300. Yet Dr. Henze considered a chilled mirror sensor appropriate for implementing in a reference like Carter. EX.2019, 60:7–22. A POSITA working in the field of

refrigerated display cases would never suggest such an approach.

In his Supplemental Declaration, Dr. Henze also claims for the first time that he “led a grant application that analyzed and enhanced commercial refrigeration systems in retail settings.” EX.1061, ¶¶30–31. This assertion contradicts his prior testimony and does not even identify the grant application in question. This testimony should be stricken. Regardless, a grant application—the outcome and substance of which are unknown—does not constitute the practical experience that should be required of a POSITA in this field.

The Board should determine that a POSITA have at least two years of experience working with refrigerated display cases. *Axonics Modulation Techs., Inc. v. Medtronic, Inc.* is instructive. IPR2020-00715, Paper 31 at 12, 14 (PTAB Sept. 13, 2021). In *Axonics*, the field of invention and the specification were specific to the field of invention, and a POSITA was defined as having to have specific knowledge in that area. *Id.* This mirrors Dr. Henze’s own prior position that general HVAC experience is insufficient and that a POSITA should have at least two years of practical experience in the relevant specialized technology. *Avail Medsystems, Inc. v. Teladoc Health, Inc.*, IPR2022-00444, Paper 10 at 25-27 (PTAB July 21, 2022) (adopting a POSITA definition requiring “at least two years of research or work experience in designing or engineering teleconferencing systems, such as those used in telemedicine.” It excluded an expert’s testimony

because, although the expert had advanced degrees in electrical engineering and extensive experience with medical devices, he “lack[ed] specific experience researching or engineering teleconferencing systems.”). Here, because the field of invention, the specification, and every claim are directed to refrigerated display cases, the POSITA definition should require practical experience with such cases.

Under *Kyocera*, Dr. Henze's testimony is entitled to no weight. To the extent the Board considers Dr. Henze's testimony at all, the Board should significantly discount it in light of his failure to understand the specifics of the '181 Patent invention, particularly as those specifics relate to the features of refrigerated display cases. *See Centricut, LLC v. Esab Grp., Inc.*, 390 F.3d 1361, 1368–70 (Fed. Cir. 2004).

III. THE PETITION FAILS BECAUSE CARTER DOES NOT TEACH OR MAKE OBVIOUS THE DEACTIVATION AS CLAIMED IN THE '181 PATENT.

Petitioner characterizes Patent Owner as refusing to engage with “the underlying factual basis of the Petition's obvious modification theory on heater deactivation.” Reply, 3. This is incorrect. The core facts are straightforward: the deactivation technique taught by Carter is not the same as in the '181 Patent; the concept of a “floating offset” is not found in any supporting reference; and “floating offset” is a creation of Dr. Henze that is anything but “unusually simple.”

It is undisputed that Carter does not teach the same deactivation technique as

the '181 Patent. If it did, none of the mathematical analysis provided by Dr. Henze would be necessary. Dr. Henze confirms that some of the terms used in his analysis, such as “floating offset,” are not found in Carter or the '181 Patent. EX.2019, 63:17–19. He describes “floating offset” as his choice of words. EX.2019, 45:17-18. He also cannot identify anywhere in the voluminous references cited—more than 35 references—where ambient temperature is described as dew point plus a floating offset. EX.2019, 67:5–10.

DSS Tech. Management, Inc., is directly on point. *Id.* at 1374. There, the Federal Circuit overturned an unpatentability finding where the obviousness analysis required modification of a reference with no basis found in the reference or any other cited art. *Id.* The Court analyzed “the role of ‘common sense and common knowledge’ in the obviousness inquiry” and identified three critical caveats:

- First, “common sense is typically invoked to provide a known motivation to combine, not to supply a missing claim limitation.” *Id.*
- Second, courts “have invoked common sense to fill in a missing limitation only when ‘the limitation in question was unusually simple and the technology particularly straightforward.’” *Id.*
- Third, courts “repeatedly warn that references to ‘common sense’—whether to supply a motivation to combine or a missing limitation—

cannot be used as a wholesale substitute for reasoned analysis and evidentiary support, especially when dealing with a limitation missing from the prior art references specified.” *Id.*

Here, common sense is being used to fill in a missing limitation. That invocation fails because the limitation is not “unusually simple” and the technology is not “particularly straightforward.” Dr. Henze had to construct mathematical analysis to justify the substitution—analysis premised on a term and a relationship of his own invention.

Dr. Henze created the term “floating offset” and the relationship “ambient temperature equals dew point plus floating offset,” which appears nowhere in the voluminous references cited, or in any other source identified by Dr. Henze. Dr. Henze confirms this, stating: “ambient temperature is always equal to dew point temperature plus what I call a floating offset.” EX.2019, 63:17–19. When asked if he could point to any other source for this equation, he indicated that he could not. EX.2019, 67:5–10. Mr. Pollock testified that this is not how he would describe what is going on in Carter and that Dr. Henze’s analysis is inaccurate. EX.2014, ¶¶64–66. When qualified experts disagree on the characterization of a reference, the teaching at issue is not “unusually simple.”

As a practical matter, Carter always deactivates the heater at the ambient temperature—that is the plain teaching of the reference. The ’181 Patent, by

contrast, deactivates the heater at a temperature that varies according to actual humidity conditions. Dr. Henze's characterization of this difference as "insubstantial" (EX.1003, ¶124) is not accurate given that the two systems actually work differently. As Mr. Pollock explains, "the ambient temperature is solely based on the dry bulb temperature of the air, whereas dew point is a multivariate condition including ever changing relative humidity as well as barometric (atmospheric pressure etc.) conditions." EX.2014, ¶65. Carter's deactivation is based on a single variable, whereas the '181 Patent's deactivation is inherently multivariate.

Because the "floating offset" is Dr. Henze's fabrication with no identifiable source, and because common sense cannot supply a missing limitation unless it is "unusually simple and the technology particularly straightforward," *DSS Tech. Management, Inc.*, 885 F.3d at 1374, the Petition fails to establish that claims 8 and 14 are unpatentable.

IV. THE COMBINATION OF CARTER, BEATENBOUGH, AND KING FAILS

The combination of Carter, Beatenbough and King is deficient. For element 1.a, Petitioner first places King's sensor against Beatenbough's glass. Pet. 46. Petitioner then further modifies this sensor placement by locating it against the frame as purportedly taught by Carter. *Id.* The problem, however, is that Carter does not teach a display case frame. Dr. Henze also misinterprets—or does not

understand—the use of the term “frame” in the context of refrigerated display cases. EX.2014, ¶21. Specifically, Carter describes a “door latch cover assembly.” EX.1004, 5:4–7; Fig. 1. By contrast, refrigerated display cases ordinarily lack such a latch cover assembly. *See, e.g.*, EX.1006 (Beatenbough) (depicting a refrigerated display case without a door latch cover assembly). The Petition does not explain to reconfigure Carter to monitor the display case door or frame in this different platform, nor how Carter’s sensors and controls would be adapted for the specific frame/door monitoring functions recited in the claims.

Absent a reasoned explanation—supported by evidence—of the modifications necessary to adapt Carter’s system to the claimed display case structures and functions, the Petition fails to establish unpatentability.

The Petition also states in conclusory fashion that it would have been an obvious alternative to locate a “sensor unit” like King’s against the display case frame to monitor frame temperature. Pet., 43-46. But the Petition provides no explanation regarding how the sensor unit would be adapted for “monitoring temperature of one of the display case door or display case frame.” EX.2014, ¶48. The Petition identifies no modifications beyond merely moving the sensor. *Id.* Because the Petition does not address these claim requirements, it fails on this basis as well.

Claims 1 and 8 both include the phrase *adapted for*. EX.1001, 9:32-34, 36-38. The Federal Circuit has held that “adapted to” connotes a configuration or design arranged for a particular purpose, not mere capability. *See In re Giannelli*, 739 F.3d at 1378–80. Carter cannot teach how the sensor is adapted for the display case frame because Carter does not teach a display case frame or a display case door.

The Petitioner must “make [its] case in [the] petition,” including a specific and credible explanation of how and why a POSITA would modify the prior art to satisfy each claim requirement, particularly limitations requiring adaptation to a defined function. *See Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367–69 (Fed. Cir. 2016). The Petition never explains what structural or control changes would be made to configure the prior art so that the claimed temperature sensing units would be adapted for monitoring the display case door or the display case frame, as Claims 1 and 8 require. The Petition fails on this basis as well.

V. THE REPLY IMPROPERLY INTRODUCES NEW EVIDENCE

The Reply relies extensively on a Supplemental Declaration of Dr. Henze (EX.1061), which is new. Under 37 C.F.R. § 42.23(b), a reply may only respond to arguments raised in the corresponding opposition or Patent Owner's response. New evidence submitted with a reply must be limited to responding to arguments in the

Patent Owner's response and may not be used to raise entirely new theories of invalidity or to shore up deficiencies that existed in the original Petition.

Dr. Henze's Supplemental Declaration consists of 48 pages in which he offers extensive new analysis on topics including: (a) a detailed rebuttal to Mr. Pollock's charts comparing Carter's and the '181 Patent's deactivation algorithms (EX.1061, ¶¶36–45); (b) new arguments about Dr. Henze's professional experience with refrigerated display cases, including a grant application that was never mentioned in the original Declaration (EX.1003) or the Petition (EX.1061, ¶¶30–31); and (c) new detailed opinions on why the HVAC&R field encompasses the problems of the '181 patent, with extensive new analysis of building condensation, chilled beams, and other HVAC systems not discussed in the Petition. EX.1061, ¶¶17–29.

The Supplemental Declaration's scope goes far beyond responding to Patent Owner's arguments. Much of it constitutes new, affirmative analysis that should have been presented in the original Petition and Declaration, or that impermissibly expands the grounds for invalidity.

VI. THE REPLY IMPERMISSIBLY RAISES NEW ARGUMENTS

a. New Arguments Regarding Dr. Henze's Qualifications

The Petition's discussion of Dr. Henze's qualifications was limited to a brief statement of the proposed level of ordinary skill and a reference to Dr. Henze's

background as described in his original Declaration. EX.1003. The Reply, however, devotes an entire multi-page section to arguing that Dr. Henze has “adequate experience with refrigerated display cases,” citing for the first time a “grant application that analyzed and enhanced commercial refrigeration systems in retail settings.” Reply, 24. This grant application was never mentioned in the original Petition or Declaration. The Reply also introduces for the first time several case law authorities not cited in the Petition³ to support arguments about expert qualifications that were never made in the Petition. Reply, 21, 23.

The substance of these arguments goes well beyond rebuttal. Petitioner is affirmatively bolstering its case with evidence and legal theories it chose not to include in its Petition. Had Petitioner believed Dr. Henze's qualifications needed this level of support, it should have presented these arguments at the outset so that Dr. Henze could be examined concerning these contentions during deposition.

b. New Arguments Regarding Carter's Heater Deactivation

The Petition presented two theories regarding heater deactivation: (i) Carter's express disclosure is equivalent to the '181 patent's algorithm; and (ii) a skilled artisan would have been motivated to modify Carter to use a second preselected setpoint. The Reply now argues that Patent Owner's Response “fixates

³ Including *Jetaire Aerospace, LLC v. Aersale, Inc.*, *Red Rhino Leak Detection, Inc. v. Anderson Mfg. Co., Inc.*, and *AliveCor, Inc. v. Apple Inc.*

on the Petition's equivalent disclosure theory but fails to rebut the obvious modification theory," characterizing the modification theory as "independently sufficient" and "unrefuted." Reply, 3-4.

This framing is incorrect. Patent Owner's Response challenged both theories and explained why neither theory adequately accounts for the '181 Patent's dual, user-selectable setpoint algorithm. The Reply's attempt to pivot away from the equivalent disclosure theory and elevate the modification theory as a standalone basis for obviousness is a tacit concession that the equivalent disclosure theory—which the Petition presented prominently—cannot withstand scrutiny.

Moreover, the Reply's defense of the equivalent disclosure theory introduces entirely new analysis from Dr. Henze's Supplemental Declaration (EX.1061, ¶¶36–51) that was not part of the Petition. This new analysis includes: (a) a detailed critique of Mr. Pollock's charts as suffering from "selection bias," with specific numerical counterexamples purporting to show that changing setpoint values or relative humidity values can produce scenarios where the two algorithms deactivate at the same time (EX.1061, ¶¶44–45); (b) new reliance on a 2004 Oak Ridge National Laboratory study (EX.1024) to establish "standard rating conditions" for refrigerated display cases (EX.1061, ¶49); and (c) new arguments that Carter's algorithm constitutes "dew-point-based hysteresis control." EX.1061,

¶50. None of these arguments or citations appeared in the Petition or in Dr.

Henze's original Declaration.

c. New Arguments Regarding Sensor Adaptation

The Reply introduces new arguments and analysis from EX.1061 (¶¶52–64) regarding how King's sensor unit would be “adapted for” the claimed monitoring functions when combined with Carter and Beatenbough. This includes new discussion of infrared thermographic imaging techniques for sensor placement optimization (EX.1061, ¶62) and new analysis of the Sensirion sensor package's adaptability across multiple applications (EX.1061, ¶59). These new opinions go well beyond the analysis presented in the Petition and original Declaration. Petitioner introduces them now precisely because the original Petition was deficient.

VII. THE REPLY CONTAINS SIGNIFICANT LOGICAL ERRORS

a. The “If Obvious to Dr. Henze, Then Obvious to Anyone” Fallacy

The Reply argues that “[i]f the claims are obvious to Dr. Henze”—who 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.” Reply, 25. This argument inverts the legal standard for obviousness. The question is not whether someone outside the relevant art would find the claims obvious from their perspective, but whether a

hypothetical person of ordinary skill in the art would have found the claimed invention obvious. A person lacking the specific knowledge and experience of a POSITA might perceive a problem as simpler than it actually is, precisely because they lack appreciation for the practical complexities involved. The relevant inquiry is always from the perspective of the correctly defined POSITA, not from someone with less relevant experience who may underestimate the difficulty of the problem. Different levels of ordinary skill can lead to different obviousness conclusions, but the relevant inquiry is always from the perspective of the correctly defined POSITA—not from someone with less relevant experience.

**b. The Contradiction in Dismissing and Then Defending the
Equivalent Disclosure Theory**

The Reply tells the Board that the “obvious modification theory is unrefuted and independently sufficient” such that “the Board need not address Patent Owner’s attacks on Carter’s equivalent disclosure.” Reply 4. Yet, the Reply devotes several pages to defending that very theory with new evidence and arguments. If the modification theory were truly independently sufficient and unrefuted, there would be no need to shore up the equivalent disclosure theory with new supplemental testimony. This contradiction suggests that Petitioner itself lacks confidence that the modification theory can stand alone.

c. The “Cherry-Picked Values” Accusation Is Itself Selective

The Reply accuses Mr. Pollock of relying on “cherry-picked setpoint values and relative humidity values that the ’181 patent neither claims nor discloses.”

Reply 5. But the Reply’s own counterexamples in EX.1061 are equally selective—and far more divorced from the real-world conditions under which refrigerated display cases actually operate. Dr. Henze’s supplemental analysis demonstrates that by choosing different setpoint values (e.g., “dew point plus 24.5°F” or “dew point plus 20°F”), one can make the two algorithms appear to deactivate at the same time. EX.1061 ¶44. But these examples are engineering artifacts, not evidence of functional equivalence.

Dr. Henze posits a setpoint of “dew point plus 24.5°F” at 70°F ambient and 50% relative humidity (where dew point is approximately 50°F). Under that scenario, the ’181 Patent’s algorithm would deactivate the heater only when the surface temperature reaches approximately 74.5°F—*above* the ambient air temperature itself. No competent HVAC&R engineer would select a setpoint that commands the heater to continue running until the frame surface exceeds the surrounding air temperature, because doing so would waste the very energy that

the '181 Patent's dual-setpoint architecture is designed to conserve.⁴ The scenario is self-defeating and would never be deployed in practice.

Dr. Henze's alternative approach—changing relative humidity to 85.7% to produce convergence using Mr. Pollock's original 4.5°F setpoint—is equally unrealistic. Dr. Henze himself acknowledges that the industry-standard rating condition for refrigerated display cases is “75°F dry-bulb temperature and a relative humidity of 55 percent.” The 2002 ASHRAE Handbook similarly identifies the standard ambient condition as “75°F dry bulb and 64°F wet bulb (55% rh, 57.5°F dew point).” An environment at 85.7% relative humidity is far outside the standard indoor conditions of a grocery store or retail setting where refrigerated display cases are deployed. Dr. Henze effectively concedes this point elsewhere in his Supplemental Declaration by dismissing Mr. Pollock's near-100% humidity scenario as lacking support and noting that “the typical environment for a refrigerated display case is indoors at well below 100% relative humidity.”

Dr. Henze's counterexamples prove the opposite of what he intends: they demonstrate that the two algorithms converge *only* under conditions so extreme—a setpoint nearly five times larger than any practical value, or a humidity level more than 30 percentage points above industry-standard conditions—that no POSITA

⁴ In Petitioner's own system, dew point plus four degrees Fahrenheit is the default. EX.2023, p. 11.

would design around them. Mere convergence of operating behavior in some fraction of all operating conditions is not the same as having the same operational algorithm. This confirms that across the range of real-world operating conditions actually encountered in refrigerated display case environments, the algorithms behave materially differently, precisely as Mr. Pollock's analysis demonstrated.

d. The Reply Conflates “Analogous Art” With “Same Field of Endeavor”

The Reply argues that King is analogous art because it shares the same “function and structure” as the '181 patent—both involve sensor packages for condensation control. Reply 14-15. But sharing a general function does not automatically place two references in the same field of endeavor. The field of endeavor inquiry must be grounded in the specific context of the patent at issue. The '181 Patent's specification identifies its field as “remediating condensation build-up in refrigerated display cases.” King's field is automotive windshield fog sensing. That both involve “condensation” at an abstract level does not make them analogous any more than a submarine and an airplane are in the same field because both involve “transportation.”

Even under the “reasonable pertinence” prong, the Reply fails to account for the significant differences in the design problems faced by automotive windshield applications and refrigerated display case applications. These include different thermal environments, different mounting constraints, different airflow patterns,

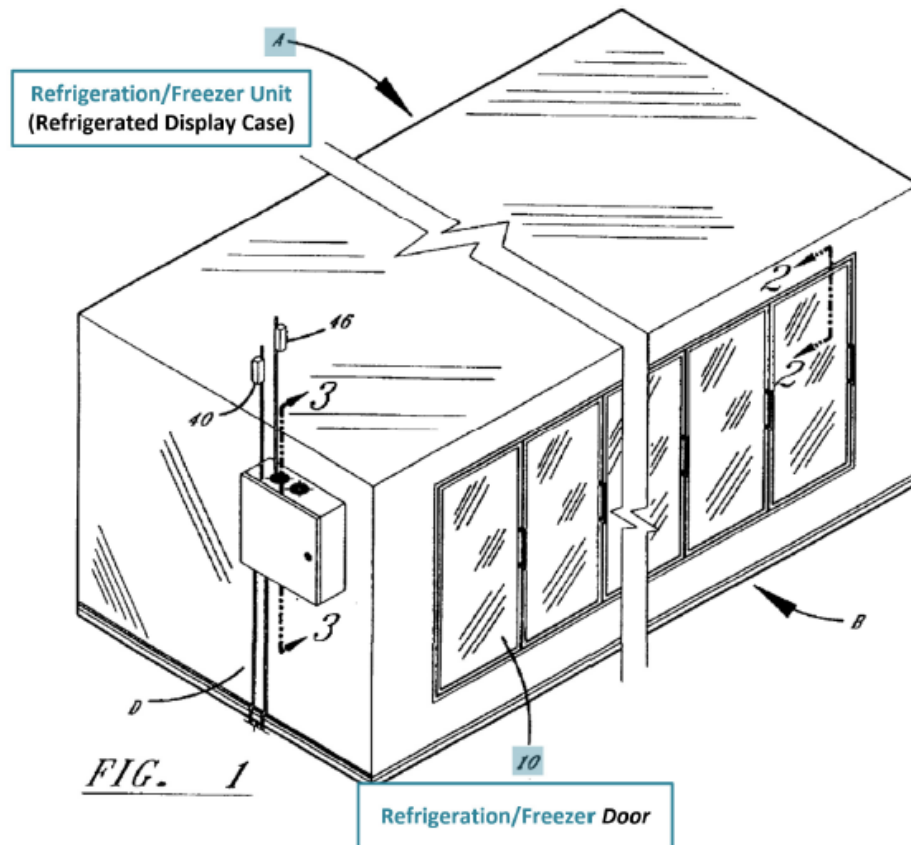
and fundamentally different user interaction profiles. The Reply's broad assertion that "sensor packaging" is a "general problem where the same solution can be employed in many different contexts" would effectively eliminate the analogous art requirement altogether, which the law does not permit.

VIII. THE REPLY FAILS TO CURE THE PETITION'S CORE DEFICIENCIES

a. No Reference Discloses a "Refrigerated Display Case" With the Claimed Architecture

The Reply's response to Patent Owner's argument that no reference discloses a "refrigerated display case," a "display case frame," or a "display case frame/door heater" is to point to Beatenbough. But this merely confirms Patent Owner's point. Beatenbough has always been in the Petition as a secondary reference in Grounds 1B–1E; it was never the primary reference. The fundamental problem remains: the Petition's primary reference, Carter, does not disclose a refrigerated display case, and the Reply does not dispute this. This is particularly damaging to Ground 1A, which relies on Carter *alone* for Claims 1–2 and 14–18. Because Carter is relied upon for teaching sensor placement on the frame or door of a refrigerated display case—yet does not itself include a frame or door of a refrigerated display case—it cannot fairly be said to teach this limitation.

The sensors denoted by reference 40 and 46 in Beatenbough are located on the side of the case as shown in Fig. 1 (below)⁵, not the frame or door, so Beatenbough cannot cure this deficiency. Instead, when discussing sensor placement, the Petition refers to Carter and *not* Beatenbough. Pet. 46.



EX1006, Figure 1 (annotated).

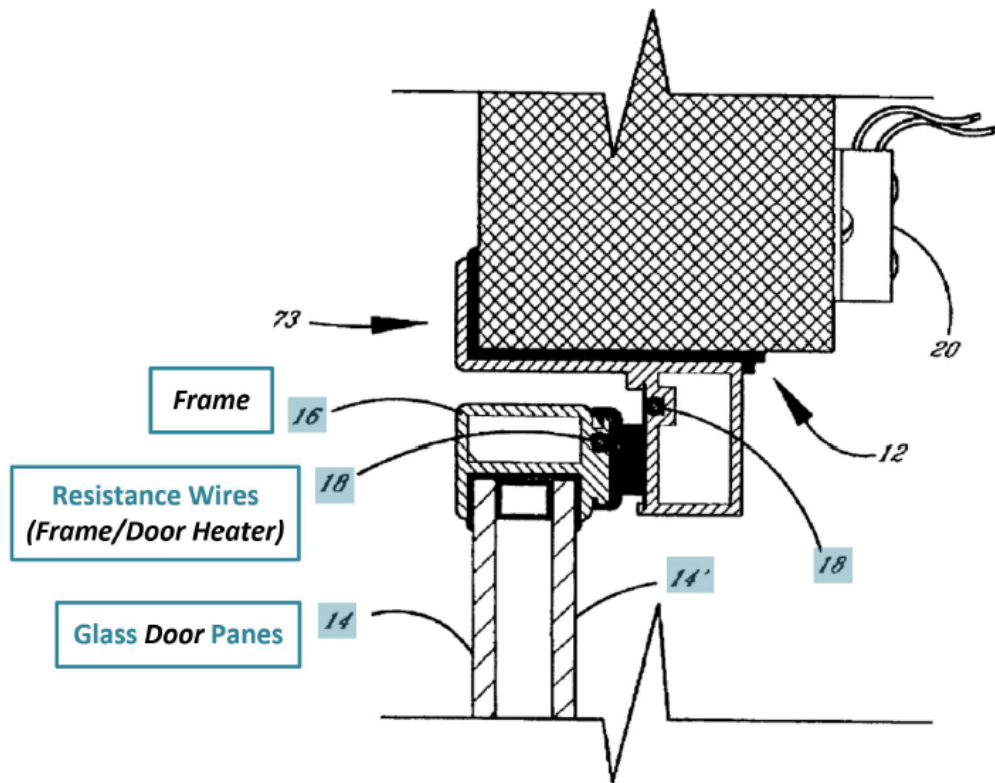
The Petition's assertion that "the only difference between a refrigerated display case and a refrigerated case is a glass door" (Reply 8) trivializes the

⁵ Beatenbough does indicate that sensors are "mounted centrally of the refrigeration unit A", however, it is not clear what is meant by this and the Petition never cites to or explores this portion of Beatenbough. EX.1006, 3:28-29.

structural, thermal, and functional distinctions that the '181 Patent's claims and specification recognize. A refrigerated display case is not simply a refrigerator with a window. It is a customer-facing retail unit with transparent doors that are repeatedly opened and closed, creating unique thermal cycling; glass-and-metal frame assemblies with distinct heat transfer characteristics; and specific design requirements for visibility, accessibility, and sensor placement in high-traffic environments. The '181 Patent's claims are specifically directed to this context, and the claims derive antecedent basis for "display case frame" and "display case frame/door heater" from the preamble's "refrigerated display case." Carter's "refrigerator or freezer equipment" disclosure, which describes monitoring "the external surface temperature of freezer/refrigeration equipment," does not supply these claim-critical elements.

The Petition continues to resist the known meaning of the term "frame" by attempting to depict the structure in Carter a "frame." Beatenbough clearly understands this difference. In Beatenbough, unlike in Carter, what the Petition points to as a "frame" is actually a frame (part 16). EX.1006., 2:66. Much like Fig. 9, 11, and 12 of the '181 Patent, the inventors took the time to reference this specifically.

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EX1006 (Beatenbough), Figure 2 (annotated)

Because the Petition relies on Carter for sensor placement, it fails on this basis as well.

b. The Reply Does Not Address the § 112(f) Structural Equivalence Requirement

Patent Owner's Response explained at length that the challenged claims include multiple means-plus-function limitations—including “processing means,” “control means,” “housing means,” “data storing means,” and “means for wirelessly accessing”—each of which must be evaluated under § 112(f) by identifying the corresponding structure in the specification and then determining

whether the prior art discloses the same or an equivalent structure. The Reply does not meaningfully engage with this requirement. Instead, it continues to assert that Carter's control scheme achieves a "buffer value" similar to the '181 Patent's algorithm. But "similar results" is not the legal standard under § 112(f). The corresponding structure for the "processing means" and "control means" is not simply "a microprocessor"—it is a microprocessor executing a specific algorithm with two distinct, user-selectable setpoints above dew point, one for activation and a different one for deactivation. Carter's algorithm uses a fixed "dew point + 2°C" constant for activation and an ambient-temperature-equals-surface-temperature comparison for deactivation. These are structurally different algorithms: the '181 Patent's algorithm uses the same type of comparison (frame temperature versus dew point plus setpoint) for both activation and deactivation, while Carter uses two different types of comparisons (dew point plus constant for activation; ambient temperature for deactivation). The Reply's insistence that these differences are "insubstantial" elides the structural analysis that § 112(f) requires.

c. The Objective Indicia Arguments Remain Unrebutted in Substance

The Reply attacks Patent Owner's objective indicia arguments but the Reply's response is itself deficient in several respects. First, Dr. Henze's new opinions (EX.1061, ¶¶65–73) on secondary considerations constitute new expert testimony that was not part of the Petition and should not be considered. The

Petition itself contained **no** discussion of secondary considerations—not even a preemptive argument that no secondary considerations existed. Introducing nine paragraphs of expert rebuttal testimony on a topic the Petition never addressed is not responsive to Patent Owner's arguments. Moreover, both the Reply and Dr. Henze's new opinions conveniently ignore a dispositive fact: more than twenty years ago, Patent Owner and Petitioner agreed to jointly develop the very technology embodied in the '181 Patent as a condition of a settlement agreement between the parties. Having accepted and exploited the benefits of that collaboration during that agreement, Petitioner cannot credibly now contend that the technology lacks commercial value. *See Diamond Scientific Co. v. Ambico, Inc.*, 848 F.2d 1220, 1224-27 (Fed. Cir. 1988); *Minerva Surgical, Inc. v. Hologic, Inc.*, 594 U.S. 559, 576 (2021).

IX. CONCLUSION

For the foregoing, the Board should: (1) exclude or disregard the new arguments and new evidence introduced in Petitioner's Reply that exceed the proper scope of a reply brief; (2) recognize the logical errors and internal contradictions that undermine the Reply's substantive positions; and (3) find that Petitioner has failed to demonstrate by a preponderance of the evidence that the Challenged Claims are unpatentable. The Petition's grounds should be rejected,

and the Challenged Claims should be confirmed. Patent Owner requests that the Board find the Challenged Claims not unpatentable.

Respectfully submitted,

Dated: May 26, 2026
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CERTIFICATE OF WORD COUNT

Under 37 C.F.R. § 42.24(b)(1), the undersigned attorney for the Patent Owner declares that the argument section of Patent Owner's Corrected Sur-Reply (Sections I-IX) has 5,577, according to the word count tool in Microsoft Word™.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that a true and correct copy of the foregoing was served on the Petitioner as detailed below:

<i>Date of service</i>	May 26, 2026
<i>Manner of service</i>	Electronic Email: IPR43789-0259IP1@fr.com ; PTABInbound@fr.com
<i>Documents served</i>	<i>PATENT OWNER'S CORRECTED SUR-REPLY</i>
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