

Oral Argument on Behalf of Patent Owner ControlTec, LLC

IPR2025-00636 / U.S. Patent No. 7,421,847

Anthony, Inc. v. ControlTec, LLC

Refrigeration Unit Condensation Prevention

'847

U.S. Patent

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Case Overview

The Patent

U.S. Patent No. 7,421,847

"Refrigeration Unit Condensation Prevention"

Novel anti-sweat system for refrigerated display cases using dew-point sensing and dual setpoint hysteresis to anticipate and prevent condensation while conserving energy.

The Parties

Patent Owner: ControlTec, LLC

Petitioner: Anthony, Inc.

Anthony is a direct competitor that previously co-developed this technology with ControlTec under a settlement agreement.

The Proceeding

IPR2025-00636

Response filed: January 21, 2026

Sur-Reply filed: May 18, 2026

Counsel: R. Ziemian, Haynes and Boone

The '847 Patent Innovation

Anti-Sweat Heater Control System

01

Dew-Point Sensing

Measures actual ambient temperature and humidity to calculate dew point in real time, anticipating condensation before it forms.

02

Case-Specific Control

Each refrigerated display case independently controlled based on its own environmental conditions—no one-size-fits-all approach.

03

Dual Setpoint Hysteresis

Both activation AND deactivation referenced to dew point. Uses multivariate inputs (temperature + humidity) for precise control.

04

Energy Savings

Targets dew point + small margin (~4.5°F gain) vs. legacy "always on" or ambient-based systems that waste energy heating to ambient temperature.

Key Arguments Overview

Patent Owner's five independent grounds for upholding patentability

POSITA Definition & Expert Qualifications

Dr. Henze has zero experience with refrigerated display cases—fails *Kyocera* standard

Carter's Control Logic Deficiencies

Carter lacks dew-point-referenced deactivation; uses ambient temperature instead

Preamble Limitations

Claims require "refrigerated display case" with frame/door heater; Carter discloses generic freezer equipment

Prior Art Combinations Fail

Carter+Bunch changes Bunch's principle of operation; King is non-analogous; Gatling is inapplicable

Objective Indicia of Non-Obviousness

~90% market share, copying by Anthony, industry praise, long-felt need

POSITA Definition

Required Qualifications

- Bachelor's degree in ME or EE
- 2+ years working with refrigerated display cases
- Practical experience with anti-sweat heater systems and controls

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

Dr. Henze: Zero Qualifying Experience

- Never designed a refrigerated display case
- Never worked on anti-sweat heater controls
- Never published about refrigerated display cases

Deposition: EX.2019, 163:10-167:14

Dr. Henze is Not Qualified

Key Deposition Admissions (EX.2019)

- Never designed, worked on, or published about refrigerated display cases
- Contradicts his own prior POSITA definitions in IPR2016-00294
- Suggested chilled mirror sensor—a laboratory instrument unsuitable for commercial display cases—revealing lack of practical knowledge
- His expertise is HVAC controls, NOT refrigerated display cases

Legal Standard

Under *Kyocera*, an expert who does not meet the agreed POSITA definition cannot provide reliable testimony on what a POSITA would or would not find obvious.

***Kyocera Senco Indus. Tools Inc. v. Int'l Trade Comm'n*, 22 F.4th 1369, 1377 (Fed. Cir. 2022):**

“If an expert does not meet the POSITA definition, their testimony is unreliable.”

Carter Lacks Claimed Control Logic

CARTER (Prior Art)

Activation: Dew point + constant offset

Deactivation: When surface temp = ambient temp

Problem: Deactivation is NOT responsive to anticipation of condensation—it is a simple temperature comparison unrelated to dew point. Deactivation is NOT responsive to monitored case frame temperature, ambient air temperature and relative humidity.

'847 PATENT (Claimed)

Activation: Dew-point-referenced setpoint

Deactivation: Dew-point-referenced hysteresis setpoint

Key: BOTH activation and deactivation are responsive to anticipation of condensation (multivariate: temp + humidity).

Energy Comparison

Carter wastes energy; '847 Patent conserves it

Carter

16°F

Temperature gain (heats surface to ambient)

*Wastes energy at low humidity;
insufficient at high humidity*

'847 Patent

4.5°F

Temperature gain (targets dew point + small margin)

*Precise, adaptive control responsive
to actual condensation risk*

Carter's fixed-offset approach provides no energy savings over legacy systems—the '847 Patent's dew-point-referenced hysteresis is fundamentally different.

“Floating Offset” is Fabricated

Dr. Henze invented terminology that appears nowhere in the prior art

Not in Carter

The term "floating offset" appears nowhere in Carter's patent specification or any cited reference.

Dr. Henze Admits

"Floating offset" is his own "choice of words"—not language from any prior art document.

Legal Prohibition

DSS Tech. Management, Inc. v. Apple Inc., 885 F.3d 1367, 1374 (Fed. Cir. 2018): Common sense cannot supply a missing claim limitation.

Implication

Petitioner's entire theory of Carter's deactivation relies on expert-invented characterization, not actual disclosure.

Improper Reliance on Inherency

The Missing Limitation

- Carter teaches activation in anticipation of condensation
- Carter teaches deactivation based on temperature condition only (surface = ambient)
- **Missing: deactivation "responsive to anticipation of condensation"**
- This missing limitation cannot be supplied by inherency or common sense

Controlling Authority

LBT IP I LLC v. Apple Inc., 2023 U.S. App. LEXIS 14376 (Fed. Cir. 2023)

A claim limitation that is not necessarily present in the prior art cannot be treated as inherent. The mere possibility is insufficient.

Parallel: Carter's deactivation at ambient is not inherently "responsive to anticipation of condensation."

Carter Does Not Teach Deactivation in Anticipation of Condensation

Claim 8 recites:

“utilizing monitored case frame temperature, ambient air temperature and relative humidity to anticipate formation of condensation at the display case and activating and deactivating the frame/door heater responsive thereto”

Claim 1 recites:

“processing said first and second output data at said display case to anticipate formation of condensation at the display case and activating and deactivating the frame/door heater responsive thereto; and”

Carter

Carter’s “surface = ambient” deactivation is agnostic to humidity; all three variables must inform both activation AND deactivation

Implication

Petitioner's entire theory of Carter's deactivation fails.

Deep Dive into Deactivation

The Original Petition must make the case

- Claim 8, element 8.c: “Next, when **condensation** is no longer **anticipated**—e.g., “[i]f the cabinet surface temperature is equal to the ambient temperature”—“the control unit will **deactivate** the supplemental **heat**.” EX1004, 5:55–63, Figure 3. Thus, both **activating** and **deactivating** of the **frame/door heater** occur **responsive to anticipating formation of condensation**. EX1003, ¶¶81–82.” Pet. 14-15
- Claim 1, element 1.c: “As discussed at §V.B.2, the Combination employs Carter’s condensation control scheme in the context of Bunch’s refrigerated display case. The Combination thus renders obvious Element[1.c] for at least the same reasons presented above at Element[8.c] of Ground 1A regarding Carter. EX1003, ¶124...” Pet. 36.

Carter is solely relied on for Deactivation

Carter does not suggest deactivation in anticipation of condensation.

Carter does not teach deactivation responsive to humidity, temperature, and frame temperature.

Deep Dive into Deactivation

1

Claimed Deactivation is not taught.

Petitioner claims that deactivating at ambient temperature is equal to “anticipate formation of condensation at the display case and activating and deactivating the frame/door heater responsive thereto.”

This is an impermissibly broad reading of the claim.

2

Petitioner’s illogic extends too far.

Imagine a device that turns on the heater when the refrigerator is turned on and shuts off the heater when the refrigerator is turned off. When the refrigerator is on, condensation is anticipated under this logic. When the refrigerator is off, condensation is not anticipated.

3

Deactivation is not responsive or in anticipation of.

This is not what is meant by “anticipated” in the claims.

This is also not “responsive” to “monitored case frame temperature, ambient air temperature and relative humidity.”

Deep Dive into Deactivation

Patent Owner's five independent grounds for upholding patentability

Petitioner claims that deactivating at ambient temperature is equal to “anticipate formation of condensation at the display case and activating and deactivating the frame/door heater responsive thereto.”

This is an impermissibly broad reading of the claim.

Imagine a device that turns on the heater when the refrigerator is turned on and shuts off the heater when the refrigerator is turned off. When the refrigerator is on, condensation is anticipated under this logic. When the refrigerator is off, condensation is not anticipated.

This is not what is meant by “anticipated” in the claims.

It is not in anticipation of condensation because it has no relationship to the humidity.

This is also not “responsive” to “monitored case frame temperature, ambient air temperature and relative humidity.”

There is not relation or responsiveness to relative humidity.

Deep Dive into Deactivation

Patent Owner's five independent grounds for upholding patentability

Imagine a device that turns on the heater when the refrigerator gets to a certain temperature that is too high for condensation to occur and shuts off the heater at another temperature that is higher. When the refrigerator gets close to the temperature that is too high for condensation to occur, condensation is anticipated under this logic, so the device is on. When the refrigerator gets away from this temperature, then condensation is not anticipated.

This is not what is meant by “anticipated” in the claims.

It is not in anticipation of condensation because it has no relationship to the humidity.

This is also not “responsive” to “monitored case frame temperature, ambient air temperature and relative humidity.”

There is not relation or responsiveness to relative humidity.

The floating offset is fictional

It does not appear in Carter and Dr. Henze fabricated it.

Using a floating offset, any constant can be said to be equal to a measure that actually has a varying mathematical formula.

The floating offset removes the variability of deactivation as it relates to humidity and therefore is not in anticipation of condensation or responsive to humidity.

Deep Dive into Deactivation

- Carter's deactivation point is essentially the deactivation point in the second scenario.
- If the floating offset manipulation is true, then a device that turns on at a certain temperature that is too high for condensation to occur would also meet this aspect.
- Imagine a device that turns on the heater when the refrigerator is turned on and shuts off the heater when the refrigerator is turned off. When the refrigerator is on, condensation is anticipated under this logic. When the refrigerator is off, condensation is not anticipated.
- In this logic, the dew point is determined and then a variable (a "floating offset") is added to the dew point, so the device always turns on at the same temperature.
- This addition of the floating offset is a fantasy and makes it so the activation is not "responsive" to "monitored case frame temperature, ambient air temperature and relative humidity."

Deep Dive into Deactivation

- In either case, where the activation is taught to be a constant temperature where below which condensation might occur and deactivation is at a constant temperature above which condensation would not occur is not what is meant by in “anticipation” of condensation and is not responsive to the dewpoint metrics, since the floating offset factors these out.
- It also will not lead to an efficient system which is the entire point of the device.

Deep Dive into Deactivation

- Carter does not teach deactivating according to dew point and frame temperature.
- The Petition never claims it does.
- The Petition never claims substituting the activation method by applying a different offset to it for deactivation.
- The claimed deactivation is not taught because:
 - It is not in anticipation of condensation.
 - The deactivation is not responsive to dew point and frame temperature
 - The illusory “floating offset” intentionally erases any dependence on dew point.

Preamble Limitations

Claims require "refrigerated display case" with frame/door heater

'847 Patent Claims Require:

- Refrigerated display case
- Frame surrounding a door
- Heater adjacent to the frame
- Anti-condensation/anti-sweat function

Carter Discloses Only:

- Generic "freezer" or "refrigeration equipment"
- No display case frame or door described
- No frame-adjacent heater
- Different application context entirely

Preambles Are Limiting

Shoes by Firebug LLC v. Stride Rite, 962 F.3d 1362 (Fed. Cir. 2020): Preambles that provide antecedent basis for claim terms and give "life, meaning, and vitality" to the claims are limiting.

Carter-Bunch Combination Fails

Ground 1B: Claims 1-20

- Bunch uses time-based duty cycles with local moisture override
- Replacing with Carter's ambient algorithm changes Bunch's principle of operation
- Bunch teaches away from ambient-based triggers
- Requires wholesale reengineering of Bunch's system

Legal Standards

Henny Penny Corp. v. Frymaster LLC

938 F.3d 1324 (Fed. Cir. 2019)

A combination that changes the principle of operation is impermissible.

In re Gurley

27 F.3d 551 (Fed. Cir. 1994)

A reference that teaches away from a combination cannot support obviousness.

King is Non-Analogous Art

Ground 1C: Claims 3, 9-10, 19

- | | | |
|----|----------------------------------|--|
| 01 | Different Field | King is an automotive windshield fog sensor—not refrigerated display case technology. |
| 02 | Different Environment | Automotive cabin conditions (vibration, rapid temperature changes) bear no resemblance to grocery refrigeration. |
| 03 | Different Constraints | Dome-and-tray packaging designed for automotive use is ill-suited for commercial display cases. |
| 04 | Doesn't Cure Deficiencies | Even if analogous, King cannot fix Carter-Bunch's failure to teach dew-point-referenced deactivation. |

Claim 3: Reducing Data Inaccuracy

"reducing data inaccuracy by thermally isolating units utilized for monitoring"

Why King's Dome Fails Here

- King's barrier designed for automotive cabin—prevents cold windshield from biasing ambient sensors
- '847 Patent requires accurate measurement of true aisle ambient conditions AND frame/door temperature
- '847 Patent uses case-appropriate structures (airflow gaps/voids) maintaining exposure to aisle air—NOT enclosing sensors in a dome
- Transplanting King's dome risks creating localized micro-environment, impeding airflow, and compromising ambient measurement
- No display-case implementation identified that preserves accurate ambient sampling

Key Deficiency

Petition does not explain how King's automotive enclosure would reduce data inaccuracy in the display case context rather than introduce it.

*TriVascular, Inc., 812 F.3d at 1068:
hindsight-driven combination inadequate.*

Claim 9: Isolating Dew Point Sensor

"thermally isolating said dew point sensing unit from variations in temperature of the display case frame or display case door"

The Dual Requirement

Dew point sensor must be:

- Exposed to true aisle air for accurate dew point reading
- Thermally isolated from frame/door temperature to avoid bias

King's dome with apertures is designed for windshield glass—not display case frame/door.

Petition never shows how on-case dome preserves aisle-air exposure AND dew-point accuracy on a display case.

Carter Makes It Worse

Carter intentionally localizes sensors at the sealing surface:

"the door latch cover assembly 20 also helps localize the measurements"

— EX.1004, 5:11-14

This is the OPPOSITE of monitoring true ambient conditions—it couples the sensor TO the frame rather than isolating it.

Claim 10: Isolating Temperature Sensor

"thermally isolating said temperature sensing unit from variations in temperature of ambient air"

The Dilemma Petition Cannot Solve

- Surface temperature sensor MUST be in good thermal contact with frame/door surface
- Must respond accurately to surface temperature dynamics
- Must NOT be insulated by an enclosure that introduces thermal lag or measurement bias
- King's glass sensor sits in a hole to maintain windshield contact (EX.1005, 2:48-50)—but Petition identifies NO display-case-specific implementation
- No showing that dome-and-tray on a case frame/door would BOTH preserve responsive surface coupling AND thermally isolate from ambient air

'847 Patent's Approach

Case-specific thermal design and sensor placement—not grafting an automotive dome onto a refrigerated display case.

Metalcraft of Mayville, Inc. v. The Toro Co., 848 F.3d 1358, 1367 (Fed. Cir. 2017).

Claim 19: Output Data Inaccuracy

"reducing output data inaccuracy by thermally isolating units utilized for monitoring"

Same Analysis as Claim 3—Petition Has Not Shown:

- Adapting King's automotive dome-and-tray to a supermarket setting reduces output data inaccuracy in the manner claimed

Petition relies on general propositions about "thermal isolation" WITHOUT addressing:

Aisle-Air Exposure

Requirements for true ambient measurement unaddressed

Airflow Patterns

Supermarket aisle airflow dynamics ignored

Cold Proximity

Bias from proximity to cold components not analyzed

Sensor Lag

Thermal lag introduced by on-case domes not considered

Gatling Fails

Ground 1D: Claims 2, 11-13, 17

What Gatling Actually Teaches

- Wireless product-temperature monitoring
- Refrigeration setpoint control
- Monitors food/product temperatures inside the case

What Gatling Does NOT Teach

- Ambient-condition anti-sweat heater control
- Dew point sensing or humidity-based control
- Heater activation or deactivation logic

Key Distinction

Gatling monitors different data (product temperature) for a different control loop (refrigeration setpoints).

It has nothing to do with ambient-condition anti-sweat heater control—the subject of the '847 Patent claims.

Sur-Reply: Procedural Issues

Petitioner's Reply exceeds proper scope under 37 C.F.R. § 42.23(b)

64-Page New Supplemental Declaration

Reply introduces massive new expert declaration that was never part of the Petition—new evidence that Patent Owner could not respond to.

New Arguments on Qualifications

Dr. Henze's grant application never previously mentioned—raised for the first time in the Reply to rehabilitate his credentials.

New Evidence on Deactivation

New theories about Carter's deactivation logic not raised in the Petition—cannot be introduced in a Reply.

Sur-Reply: Logical Errors in the Reply

1 **Inverted Legal Standard**

"If obvious to Dr. Henze, obvious to anyone"—this inverts the legal standard. Obviousness is measured from the perspective of a POSITA, not any expert.

2 **Internal Contradiction**

Petitioner dismisses the need for equivalent disclosure in one argument, then defends it in another—logically inconsistent positions.

3 **Cherry-Picked Values Accusation**

Petitioner accuses ControlTec of "cherry-picking" while relying on unrealistic conditions: dew point + 24.5°F at 85.7% RH—conditions rarely encountered in practice.

Objective Indicia of Non-Obviousness

Commercial Success

ControlTec & Anthony together hold ~90% of the U.S. anti-sweat heater control market.

Copying by Anthony

Anthony modified its controller post-DOE noncompliance, adopting an approach that mirrors the '847 Patent claims.

Industry Praise

Recognition at VEIC conference; KW Engineering independent testing confirmed efficacy and energy savings.

Long-Felt Need

Industry struggled for decades with energy-wasting "always on" anti-sweat heaters before the '847 Patent's solution.

Anthony's History of Copying

- **Co-Development**
Co-development agreement after first patent infringement lawsuit.
- **Early Termination**
Anthony attempted early termination, seeking independent use of the technology.
- **DOE Noncompliance**
141,826+ Anthony doors found noncompliant with energy regulations.
- **Copied '847 Patent**
Anthony's '393 Patent mirrors '847 claims after noncompliance.

141,826+ noncompliant doors | ~90% combined market share | '393 Patent mirrors '847 claims

Conclusion

The Petition fails on multiple independent grounds.

- Dr. Henze is unqualified under Kyocera
- Carter lacks claimed dew-point-referenced deactivation
- "Floating offset" is fabricated terminology
- Preamble limitations are not met
- Prior art combinations change principle of operation or are non-analogous
- Strong objective indicia confirm non-obviousness

The Board should
uphold
patentability of all
challenged claims.

Dr. Henze Is Not Qualified — Kyocera — Additional Discussion Points

Dr. Henze has ZERO experience with refrigerated display cases

(EX.2019, 163:10-167:14 — deposition testimony)

***Kyocera Senco Indus. Tools Inc. v. Int’l Trade Comm’n*, 22 F.4th 1369, 1377 (Fed. Cir. 2022):**

“Expert must meet the POSITA definition.”

Practical Ignorance Demonstrated:

- Dr. Henze suggested chilled mirror sensor (\$thousands—\$tens of thousands) for display cases (~\$300 product) (EX.2019, 52:8-20, 60:7-22)

See also *Centricut, LLC v. Esab Grp., Inc.*, 390 F.3d 1361, 1368-70 (Fed. Cir. 2004).

Dr. Henze's Lack of Experience — Deposition Admissions

Dr. Henze's Deposition (EX.2019, 163:10-167:14):

Q: *Have you ever designed such a device for use on refrigerated display cases?*

A: I have not.

Q: *Have you ever designed a refrigerated display case?*

A: I have not.

Q: *Have you ever designed the doors or frame units of a refrigerated display case?*

A: I have not.

Q: *Have you ever worked on refrigerated display cases?*

A: No, I have not.

Dr. Henze's Lack of Experience — Practical Consequences

Demonstrated Ignorance of the Field:

- Unable to identify where prior art adapts sensors to refrigerated display cases
- Misinterprets the term “frame” in the context of refrigerated display cases (EX.2014, ¶21)
- Suggested implementing a chilled mirror sensor for display cases (EX.2019, 52:8-20)

Chilled mirror sensors cost **thousands to tens of thousands of dollars** — the infringing device costs ~\$300

A POSITA working in the field would NEVER suggest such an approach

His “hyperbole” defense misses the point entirely — the question is not whether different laws of nature apply, but who qualifies as a POSITA

Dr. Henze Is Not Qualified — Legal Standard

***Kyocera Senco Indus. Tools Inc. v. Int’l Trade Comm’n*, 22 F.4th 1369, 1377 (Fed. Cir. 2022):**

Expert must at least meet the definition of a POSITA for the patent-in-suit.

Dr. Henze’s Irreconcilable Inconsistency:

- In prior proceedings (IPR2016-00294/00335), Dr. Henze HIMSELF endorsed a POSITA definition requiring practical experience relating to the design and operation of chilled water systems including thermal energy storage.
- His position in this proceeding is irreconcilable with his prior testimony

POSITA Should Include At Least 2 Years’ Experience with Refrigerated Display Cases:

- This approach is routinely adopted — *Best Med. Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1354-55 (Fed. Cir. 2022)
- *Centricut, LLC v. Esab Grp., Inc.*, 390 F.3d 1361, 1368-70 (Fed. Cir. 2004)

Without Specific Experience in the Field the POSITA Dissolves

- Why require specific experience in the subfield according to *Axonics*?
- The Patent calls for it
 - In the Field of the Invention: “This invention relates to frame and/or door heating to remediate condensation build-up in refrigerated display cases...”
 - In the claims preambles: “Condensation control apparatus for a refrigerated display case having at least one door, a frame and at least one frame/door heater”
 - All over the specification:
 - In the Summary of the Invention: “efficiently eliminate door and frame condensation at widely utilized commercial freezer/refrigeration display case”
 - In the Description: “commercial freezer/cooler display unit”
 - In the Abstract: “efficient elimination of door and frame condensation at widely utilized commercial freezer/refrigeration display cases”
 - Without specific experience, is there really an art to be skilled in?

Additional Discussion Points

1. A method for condensation control at a refrigerated display case having at least one door, a frame and at least one frame/door heater, said method comprising the steps of:

monitoring case frame temperature and providing first output data related thereto;

monitoring ambient air temperature and relative humidity outside the display case and providing second output data related thereto;

processing said first and second output data at said display case to anticipate formation of condensation at the display case and activating and deactivating the frame/door heater responsive thereto; and

communicating said first and second output data related to monitored case frame temperature, ambient air temperature and relative humidity and a record of display case frame/door heater activation and deactivation to a remote centralized processing location.

Additional Discussion Points

3. The method of claim 1 wherein said monitoring steps include reducing data inaccuracy by thermally isolating units utilized for monitoring.

Additional Discussion Points

8. A method for condensation control at a refrigerated display case having at least one door, a frame and at least one frame/door heater, said method comprising the steps of:

placing a temperature sensing unit in contact with the display case frame to monitor case frame temperature;

mounting a dew point sensing unit on the display case to monitor ambient air temperature and relative humidity outside the display case; and

utilizing monitored case frame temperature, ambient air temperature and relative humidity to anticipate formation of condensation at the display case and activating and deactivating the frame/door heater responsive thereto.

Additional Discussion Points

9. The method of claim 8 further comprising thermally isolating said dew point sensing unit from variations in temperature of the display case frame or display case door.

Additional Discussion Points

14. A method for condensation control at any of a plurality of refrigerated display cases, each of the display cases having at least one door, a frame and at least one frame/door heater, said method comprising the steps of:
monitoring selected parameters related to each of the display cases in the plurality of display cases and providing output data related thereto;
collecting said output data;
anticipating from said collected output data condensation formation status at any of the display cases and establishing an output indicative thereof;
establishing measures to address said condensation formation status at any of the display cases responsive to said output indicative of condensation formation status; and
compiling a record of said data and said measures.

Additional Discussion Points

19. The method of claim 14 further comprising the step of reducing output data inaccuracy by thermally isolating units utilized for monitoring.