

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HUM INDUSTRIAL TECHNOLOGY, INC.
Petitioner

v.

PATENT OWNER RAIL COMPANY, INC.
Patent Owner

Case IPR2023-00538
Patent No. 9,365,223

Before JAMES P. CALVE, KEVIN W. CHERRY, and MICHAEL L. WOODS,
Administrative Patent Judges.

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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Petitioner respectfully submits this Reply to Paper No. 20, Patent Owner's Response ("POR") and in further support of Paper No. 10, Corrected Petition for *Inter Partes* Review of U.S. Patent No. 9,365,223 ("Petition").

I. CLAIM CONSTRUCTION

In the Decision Granting Institution of *Inter Partes* Review (Paper No. 15) ("Decision"), the Board correctly found that "no express claim construction is necessary for any claim terms." Decision, 16. In particular, the Board declined to adopt Patent Owner's proposed construction of "housing" as "an enclosure."

To the extent Patent Owner has maintained that "housing" means "an enclosure," (*see* POR, 4), Petitioner addresses the proposed construction below.

A. "housing"

"Housing" is a broad term, and its plain and ordinary meaning is not limited to "an enclosure."¹ EX1033, ¶ 4. In support of its proposed construction, Patent Owner cites to the preferred embodiments disclosed in the specification. POR, 4. Courts, however, have repeatedly warned against limiting the scope of a patent term to the preferred embodiments. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005). Additionally, the '223 Patent expressly states that the notes may be housed in "alternative housings," which are not limited to any particular

¹ While the Board need not provide an express construction, the plain and ordinary meaning of "housing" is "one or more parts that covers, encloses, supports, or protects other components." EX1033, ¶ 5.

extended portion **17** *contains* a power source **18**, an analog/signal conditioning means and analog to digital conversion means and an associated microprocessor unit **19** and a communications unit **20**.” *Id.* (emphasis added). A PHOSITA would understand that LeFebvre’s instrumented pad *encloses* the electronic components that are contained and embedded within it. It is, in other words, *a housing*—even under Patent Owner’s narrow construction.

2. Patent Owner’s arguments are not consistent with the claim language.

In its attempt to distinguish LeFebvre, Patent Owner raises several arguments that are not based upon the actual language of claim 2–4 and 27–30.

First, Patent Owner argues that “coating something with a polymer does not constitute a ‘housing.’” POR, 8. But nothing in the claim language limits the material used to construct the housing. And nothing in the specification indicates that the housing cannot comprise a polymer. To the contrary, the specification expressly discloses at least one embodiment where the housing is comprised of a polymer. EX1001, 4:5–10 (housing may comprise “a UV rated polymer, e.g., a polycarbonate/ABS blend”).

Second, Patent Owner argues that the “housing” requires “that the components are both protected and removable.” POR, 8. But nothing in the claim language requires that the components are removable. And nothing in the specification indicates that the housing must be designed or configured to permit

removal of the components. To the contrary, the specification expressly discloses that the housing may be filled with a “potting material” to “maintain, encapsulate and environmentally seal the components within.” EX1001, 4:10–22. Components that are encapsulated and environmentally sealed with potting material are not removable. EX1033, ¶ 7.

Third, Patent Owner argues that the claimed “housing” must be capable of being mounted in different locations, unlike LeFebvre’s “pad.” POR, 9–10. But the claim language requires only that the housing is mountable “on a railcar,” a condition that LeFebvre clearly satisfies. Nothing in the claim language specifies a particular mounting location, or that the housing must be movable between different locations on the railcar.

Finally, Patent Owner argues that LeFebvre does not disclose electrical circuitry positioned within the housing because “adapter pad 16 and extended portion 17 are separate components that do not collectively form a single housing.” POR, 13. But—as the Board correctly recognized in its decision to institute trial—nothing in the claim language requires a housing that is free of internal partitions or divisions, or that is constructed from a single unitary body. *See* Decision, 37. In any event, this argument is based on a misreading of LeFebvre’s disclosure. Reference number 17 refers to the *portion* of the instrumented pad that extends

outwardly—it is an “extended portion” of instrumented pad 16.² EX1005, ¶ [0021].

3. The '223 Patent does not exclude or distinguish LeFebvre's instrumented pads.

As both parties have noted, the '223 Patent describes an “*embodiment of the invention*” wherein

“one or more notes may be housed in alternative housings or built into the railcar itself. In one such embodiment, notes can be built into the form of an adapter pad similar to the type shown in U.S. Pat. Nos. 7,698,962 and 7,688,218...which could be adapted for use with the present invention.”³

EX1001, 15:18–24 (emphasis added). Patent Owner's argument is based on a misreading of this disclosure. *See* POR, 8. LeFebvre's adapter pad is neither distinguished nor disparaged—it is expressly described as an “*embodiment of the invention*” disclosed in the '223 Patent.

In the alternative, if Patent Owner's interpretation is correct, then the '223 Patent states that “notes may be housed in alternative housings” without providing any guidance with respect to the form, materials, or construction of alternative housings. This is an implicit admission that the selection of alternative housings is

² Even if pad 16 and extended portion 17 were considered to be separate parts, they are directly attached to one another and form a single physical structure. Sensors positioned within the main body of pad 16 are directly connected to the power source and electronic components in the extended portion 17. EX1005, ¶ [0021].

³ U.S. 7,688,218 (EX1015) issued from the cited LeFebvre publication (EX1005).

obvious, within the skill of a PHOSITA, and can be accomplished without undue experimentation. *See Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1339 (Fed. Cir. 2020) (“[I]t is appropriate to rely on admissions in a patent’s specification when assessing whether that patent’s claims would have been obvious.”).

4. Selecting an appropriate housing is routine, predictable, and obvious.

While LeFebvre discloses a particular type of housing formed from a cast or injected molded elastomeric polymer, a PHOSITA would have understood that a wide variety of different housing configurations were possible. EX1003, ¶ 84; EX1033, ¶ 6. For example, a PHOSITA would have understood that the shape, size, or material of the housing could be changed (e.g., to accommodate mounting the sensor device in a different location on the railcar) without affecting the operation of the sensors or electronic circuitry contained within the housing. *Id.*

Accordingly, even if the term “housing” were construed to require something other than the preferred embodiments disclosed by LeFebvre, the selection of an alternative housing would have been obvious to a PHOSITA (e.g., to accommodate mounting the sensor in a different location), and could have been carried out without a reasonable expectation of success. EX1003, ¶ 86; EX1033, ¶ 6.

B. Claims 5–10, 18, 20, 21, 26, 31, and 32: LeFebvre determines actual failures and uses statistical analysis to predict potential or

imminent failures.

Patent Owner’s arguments with respect to claims 5–10, 18, 20, 21, 26, 31, and 32 are a rehash, largely *verbatim*, of the arguments presented in Patent Owner’s Preliminary Response (Paper No. 11) (“POPR”). *Compare* POR, 14–20 *with* POPR, 40–45. The Board correctly found that LeFebvre discloses every limitation of independent claim 5, including specifically Limitations 5(i), 5(j), and 5(k) challenged by Patent Owner.⁴ Decision, 42–45 (citing EX1005, ¶¶ [0036], [0056]–[0066], [0095]).

Patent Owner criticizes the Petition’s “reliance on the same disclosures in LeFebvre for both ‘heuristics’ and ‘statistical analysis.’” POR, 14. The cited portions of LeFebvre, however, disclose exactly what the claim language requires.

Claim 5 requires that “said communication management unit *applies heuristics* to analyze data collected from said one or more sensor units...to predict potential or imminent failures *based on a statistical analysis* of said collected data.” More succinctly, claim 5 requires the use of heuristics that are *based on* statistical analysis. And that is exactly what LeFebvre discloses: heuristics that use statistical techniques to analyze data and identify potential or imminent failures.

⁴ Patent Owner argues only that dependent claims 6–10, 18, 20, 21, 26, 31, and 32 are patentable for the same reasons as independent claim 5, and has not otherwise identified any features of these claims that would patentably distinguish the cited references.

The Board correctly found that LeFebvre’s system uses statistical analysis. Patent Owner argues, essentially, that each individual technique disclosed in LeFebvre is *not* “statistical analysis.” POR, 16–18. Patent Owner, however, does not state what “statistical analysis” means. The plain and ordinary meaning of “statistical analysis” is quite broad—a branch of mathematics dealing with the collection, analysis, interpretation, and presentation of masses of numerical data—and encompasses many of the data analysis techniques disclosed by LeFebvre. EX1033, ¶ 9. For example, a PHOSITA would understand that identifying “periodicities” in a “time series” (¶ [0054]), calculating “long term trends” (EX1005, ¶ [0058]), performing “frequency spectrum analysis” (¶ [0059]), and detecting high amplitude loads that repeat periodically (¶ [0060]) are all methods of statistical analysis. EX1033, ¶¶ 9–10. Additionally, LeFebvre expressly discloses that its sensor units engage in statistical sampling of sensor data. EX1005, ¶¶ [0034]–[0035]; EX1033, ¶ 11.

Finally, the Board correctly found that LeFebvre uses its heuristic methods—which include statistical analysis, as discussed above—to detect potential failures. *See, e.g.*, EX1005, claim 12 (“logic circuitry for periodically addressing each sensing device on the railcar and for communicating values derived by said sensors to a remote location, said values being communicated only upon *a determination by the logic circuitry that the values are indicative of a*

potential operating failure”); claim 21 (“identifying vibration levels *indicative of potential failure*”); claim 22 (“each microprocessor being programmed to a periodically active state *to scan the sensed data for indications of potential failure*”).

With respect to Limitation 5(g), the Board correctly found that LeFebvre discloses “collecting data from said sensor at periodic intervals.” Decision, 41–42; EX1005, ¶¶ [0034]–[0035]. Patent Owner and its expert admit that “[REDACTED]” EX2010, ¶ 48; POR, 19. Petitioner’s expert, Mr. Ricca, agrees. EX1033, ¶ 12. And as the Board correctly found and explained in detail, LeFebvre’s system meets the limitations of both claims. Decision, 41–42.

C. Claims 1, 13–17, and 22–25

Patent Owner’s remaining arguments directed to Grounds 1–3 are simply a rehash—largely *verbatim*—of the same arguments presented in the POPR. The Board has considered, and rejected, all of these arguments already:

- Ground 1, Claims 23 and 25: Compare POR, 20–22 with POPR, 45–47. The Board correctly found that LeFebvre discloses every limitation of claim 23 and dependent claim 25, including specifically Limitation 23(a) challenged by Patent Owner. Decision, 45.
- Ground 2, Claims 13–17, 22, and 24: Compare POR, 22–23 with POPR, 47–

49. Patent Owner argues only that these dependent claims are patentable for the same reasons as the independent claims from which they depend, and has not otherwise identified any features that would patentably distinguish the cited references. The Board correctly found that LeFebvre in view of Barone discloses every limitation of these claims. Decision, 46.

- Ground 3, Claims 1 and 24: Compare POR, 24 with POPR, 49–50. The Board correctly found that LeFebvre in view of Denny and Provasnik discloses every limitation of claims 1 and 24. Decision, 46.

III. ARMITAGE IS PRIOR ART TO THE '223 PATENT

A. Armitage is entitled to a priority date of May 11, 2010.

Armitage (EX1006) claims priority to Provisional Application No. 61/333,428, which was filed on May 11, 2010. (EX1034) (“Armitage Provisional”). Claim 1 of Armitage is supported, for example, by paragraphs [0002], [0007], and [0009] of the Armitage Provisional. Armitage is therefore prior art under § 102(e) as of its provisional filing date.

The portions of Armitage relied upon in the Petition are supported by corresponding disclosure in the Armitage Provisional, as shown in the table below.

Armitage (EX1006)	Armitage Provisional (EX1034)
Abstract	¶ 0002
¶ 0004	¶ 0002
¶ 0012	¶ 0007
¶ 0014	¶ 0009
¶ 0016	¶ 0012

¶ 0019	¶ 0018
¶ 0020	¶ 0019
¶ 0025	¶ 0011
¶ 0026	¶ 0011
¶ 0027	¶ 0014
¶ 0028	¶¶ 0014, 0025
¶ 0029	¶ 0015
¶¶ 0033, 0034	¶ 0010
¶ 0035	¶ 0012
¶ 0038	¶ 0019
¶ 0039	¶ 0018
¶ 0041	¶ 0016
¶ 0042	¶ 0015
¶ 0043	¶ 0016
¶ 0044	¶ 0016
¶ 0049	¶ 0032
¶ 0054	¶ 0025
¶ 0059	¶ 0037
Figure 1	Figure 1
Figure 5	Figure 2

In an IPR there are “two distinct burdens of proof: a burden of persuasion and a burden of production.” *Dynamic Drinkware v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–1327 (Fed. Cir. 2008)). While the burden of persuasion is borne by the petitioner, “the burden of production, or the burden of going forward with evidence, is a shifting burden, ‘the allocation of which depends on where in the process of trial the issue arises.’” *Id.* at 1379 (quoting *Tech. Licensing*, 545 F.3d at 1327).

Here, Petitioner bore the initial burden of production to come forward with invalidating prior art. That burden is satisfied by the Petition: Armitage is *prima*

facie prior art under § 102(e) because its U.S. filing date (May 11, 2011) is prior to the '223 Patent's U.S. filing date (March 15, 2013). *See Dynamic Drinkware*, 800 F.3d at 1379 (Petitioner satisfied initial burden of production by arguing the prior art anticipated the asserted claims under § 102(e)(2)). Following the Petition, the burden shifted to Patent Owner to come forward with evidence that the challenged claims "are entitled to the benefit of a filing date (constructive or otherwise) prior to the filing date of [the prior art]." *Id.* at 1380. Patent Owner raised this argument in its POR, which shifted the burden of production back to Petitioner. Petitioner may now rebut the argument, including by showing that the prior art is entitled to an earlier filing date (e.g., by introducing rebuttal evidence). *Dynamic Drinkware*, 800 F.3d at 1379-80; *Tech. Licensing Corp.*, 545 F.3d at 1327-28.

B. Patent Owner has not met its burden to produce evidence of prior conception, which must be evaluated on a claim-by-claim basis.

Conception is evaluated on a claim-by-claim basis and requires a showing that the inventors conceived of *every feature* of the invention defined in each claim. *Slip Track Sys., Inc. v. Metal-Lite, Inc.*, 304 F.3d 1256, 1263 (Fed. Cir. 2002) ("Conception must include every feature or limitation of the claimed invention."); *Cumberland Pharma. Inc. v. Mylan Inst. LLC*, 846 F.3d 1213, 1218 (Fed. Cir. 2017) (collecting cases).

There are 29 challenged claims at issue in this proceeding, including four independent claims each having distinct limitations. The Patent Owner Response,

however, does not contain any claim chart, table, or argument that addresses the *actual language* of any challenged claim. Instead, the Patent Owner Response contains only a conclusory statement that “the Challenged claims were conceived prior to May 2010, i.e. prior to the Armitage filing,” for which it cites the Shamos Declaration (EX2010) and the Martin Declaration (EX2013). POR, 26. Patent Owner’s conclusory argument is improper for at least three reasons.

First, the Martin Declaration—the only testimony offered by a named inventor—fails to address or even recite the claim language at issue. While Mr. Martin describes at length the intensive research and development work that occurred from early 2010 through late 2011, his testimony does not relate those developments to any specific claims or limitations. For example, the phrase “statistical analysis”—a key claim limitation—does not even appear in the Martin declaration.

Because it does not address the claim limitations, the Martin Declaration does not establish that the inventors had a “definite and permanent idea of [a] complete and operative invention” that satisfied *every limitation* of *any* challenged claim prior to Armitage’s priority date. *See Dawson v. Dawson*, 710 F.3d 1347, 1352 (Fed. Cir. 2013). For example, it is entirely unclear when—or if—the inventors understood their invention to include “heuristics” commensurate with the scope of what is now claimed by the ’223 Patent (claims 5, 16, 25, 26). And

because conception is a mental act that takes place within the inventor’s mind, “a noninventor’s testimony cannot supply the missing pieces” that Mr. Martin failed to provide in his declaration. *In re Jolley*, 308 F.3d 1317, 1325 (Fed. Cir. 2002).

Second, the declaration of Dr. Shamos—a non-inventor—also fails to include a claim-by-claim analysis of conception. The Shamos Declaration includes an attached claim chart designated as Appendix A, which Dr. Shamos incorporates by reference. EX2010 at ¶ 66. The chart contains (1) a first column with the challenged claim limitations, and (2) a second column with excerpts and quotations from exhibits. But the claim chart does not include any substantive analysis, from Dr. Shamos or anyone else, explaining **how** the provided excerpts satisfy the corresponding claim limitations. In the absence of any analysis or explanation, the actual relationship between the claim terms and the cited evidence is unclear. Specifically, it is not clear **which** excerpts presented in the right-hand column allegedly correspond to **which** claim limitation presented in the left-hand column.

For example, with respect to claim 5, the chart appears to cite the same disclosure in support of both “heuristics” and “statistical analysis”—a position that, elsewhere in its brief, Patent Owner alleges to be improper. *Compare* EX2010, App. A, at 25–26 (citing the same disclosure as evidence of both “heuristics” and “statistical analysis”) *with* POR at 15 (criticizing Petitioner for same). But because Appendix A is presented without any supporting argument, analysis, or

explanation, it is not clear which portions of the cited evidence are allegedly “heuristics,” or “statistical analysis,” or both.

Patent Owner’s burden of production required it to clearly show that every limitation of each challenged claim was conceived of prior to Armitage’s priority date—and it failed to do so. It should not fall upon Petitioner, nor the Board, to “play archeologist with the record for arguments that might have been made” had Patent Owner chosen to present them in its brief. *3M Co. v. Evergreen Adhesives, Inc.*, 860 F. App’x 724, 725 (Fed. Cir. 2021) (internal citation omitted). *See Taurus IP, LLC v. DaimlerChrysler Corp.*, 726 F.3d 1306, 1323 (Fed. Cir. 2013) (affirming summary judgment of invalidity over a 102(e) prior art reference where Patent Owner “failed to demonstrate how Appendix A satisfies all the limitations recited in claims 16 and 27, as necessary to demonstrate conception” prior to the reference’s effective date).

Third, Patent Owner’s reliance on Appendix A to the Shamos declaration amounts to an improper incorporation by reference. “Arguments must not be incorporated by reference from one document into another document.” 37 C.F.R. § 42.6. *See 3M*, 860 F. App’x at 725 (upholding denial of request for rehearing where argument “was not advanced in the briefing and is referenced only through citation to the expert reports”); *Cisco Sys., Inc. v. C-Cation Techs., LLC*, IPR2014-00454, Paper 12 at 7–10 (PTAB Aug. 29, 2014) (informative) (“*Cisco*”); *id.* at 10

(refusing to consider arguments improperly incorporated by reference from an expert declaration). Moreover, by stashing essential elements of its argument in an 89-page appendix to an expert declaration, Patent Owner improperly circumvented the word count limitation applicable to its brief. *Cisco* at 10; *Microsoft Corp. v. DataTern, Inc.*, 755 F.3d 899, 910 (Fed. Cir. 2014) (“It would be fundamentally unfair to allow a party to use incorporation to exceed word count.”). The Board should disregard the incorporated material.

C. Patent Owner’s proposed conception date of March 2010 cannot be correct.

Conception is “the formation in the mind of the inventor of a *definite and permanent* idea of the complete and operative invention *as it was thereafter applied in practice.*” *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed. Cir. 1986) (quoting 1 *Robinson on Patents* 532 (1890)) (emphasis added). “At that point, ‘all that remains to be accomplished, in order to perfect the art or instrument, belongs to the department of construction, not creation.’” *Dawson*, 710 F.3d at 1352 (quoting 1 *Robinson* 532).

“An idea is definite and permanent when the inventor has a specific, settled idea, a particular solution to the problem at hand, not just a general goal or research plan he hopes to pursue.” *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994). “The idea must be definite and permanent in the sense that it involves a specific approach to the particular problem at hand. It must also

- In June and July 2011, the inventors made fundamental changes to the manner in which the sensor units collect data. Specifically, in order to save power and bandwidth, the nodes were reconfigured to report data only at periodic intervals, which necessitated fundamental changes to the heuristics used to detect and predict failures. *See* EX2146, 8–10; EX2147, 16; EX2150, 10–11.
- In July 2011, the team at UTRGV proposed *for the first time* that some types of analysis could be carried out on the sensing units themselves, rather than on a server. EX2151, 13–19 (“[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] EX2152, 1 (“[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED].”).

In sum, essential features of the claimed systems and methods—including the manner in which the system collects data, applies heuristics, and raises alarms—were still unsettled as late as July 2011, and just two algorithms will need to send Temperature Average, Number of samples, and Standard Deviation every 6

hours to the CMU

Each independent claim of the '223 Patent requires one or more of these features, meaning that *none* of the challenged claims could have been conceived prior to these developments.

Claim(s)	Limitation Not Conceived Prior to Armitage
5, 16, 25, 26	“wherein said communication management unit applies heuristics”
3, 6, 7, 9, 13, 15, 16, 19–22, 28	“an alarm condition” / “alarm” / “alarms”
1, 5, 8, 9, 23, 29, 31	“periodically awakening” / “periodic intervals”
2, 5	“monitoring parameters or conditions of the railcar” / “monitoring an operating parameter of said railcar”

Second, Patent Owner’s argument appears to be based upon an erroneous view of what is needed to prove conception. Much of what Patent Owner refers to as “reduction to practice” is, in fact, evidence that the inventors had not yet completed their conception of the claimed invention.

“Conception is complete only when the idea is so clearly defined in the inventor’s mind that only *ordinary skill* would be necessary to reduce the invention to practice, *without extensive research or experimentation.*” *Dawson*, 710 F.3d at 1352 (quoting *Burroughs*, 40 F.3d at 1228). “Quite apart from

reduction to practice, conception requires that the inventor know how his definite and permanent idea of the complete and operative invention . . . is hereafter to be applied in practice.” *Dawson*, 710 F.3d at 1356 (cleaned up).

This was, plainly, not the case in March 2010. Following Patent Owner’s proposed conception date, teams of highly skilled researchers continued to work diligently—for nearly 18 months—before finally arriving at “[REDACTED]” in August 2011. EX2013, ¶ 52. Far from requiring only “ordinary skill,” the development process was intellectually demanding and required sustained, intense effort over a long period. *See, e.g.*, EX2051, 2 (“[REDACTED]”
[REDACTED]
[REDACTED] Essential features of the system—corresponding directly to claim limitations in the ’223 Patent—were completely reworked as late as June and July 2011. It was not until August 2011 that the inventors finally [REDACTED] EX2013, ¶ 52.

In view of this evidence, the *earliest* date at which the inventors could have had “a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice” was August 2011. *Dawson*, 710 F.3d at 1356 (cleaned up). Prior to that date, the inventors did not have a complete, operative design for a railcar monitoring system. At most, they had “a general goal or

research plan” to *develop* such a system, which is insufficient to establish priority. *Burroughs*, 40 F.3d at 1228.

D. Patent Owner’s alleged conception and reduction to practice of a single embodiment is insufficient to disqualify Armitage

Even if Patent Owner had conceived of its temperature monitoring system before Armitage’s priority date—which, as discussed above, it did not—that still would not establish priority to the *much broader* invention claimed in the ’223 Patent.

To antedate a reference cited under § 102(e), “the patent owner must show that it reduced to practice at least as much as ‘the reference shows of the claimed invention’ before the reference’s publication date.” *Mylan Pharma. Inc. v. Merck Sharp & Dohme Corp.*, 50 F.4th 147, 154 (Fed. Cir. 2022) (quoting *In re Clarke*, 356 F.2d 987, 991 (CCPA 1966)). “[A]ntedating affidavits must contain facts showing a completion of ‘the invention’ commensurate with the extent the invention is shown in the reference.” *Clarke*, 356 F.2d at 992.

All of the development work cited in the Martin Declaration and associated exhibits involved a system for monitoring a single parameter: bearing temperature. There is no evidence that the inventors conceived of embodiments comprising different types of sensors, nor is there evidence that the inventors worked diligently to reduce such embodiments to practice.

Armitage, in contrast, discloses a system that monitors a wide range of

conditions, including bearing temperature, vibration, and noise, among others. For example:

- “The information monitored could include undercarriage element temperature, ambient temperature, vibration, noise, among other information.” EX1006, ¶ [0025].
- “The fault condition could include conditions such as hotbox conditions, dragging equipment, wheel impact or sliding wheel conditions, high car or shifted load conditions, hot wheel conditions, door opening, tank level, humidity, temperature, shock, bearing temperature, vibration signatures, truck tracking deviations, among other conditions.” EX1006, ¶ [0027].

At best, Patent Owner conceived and reduced to practice a single embodiment—a system for monitoring bearing temperature—that is insufficient to support the broad scope encompassed by the challenged claims. Armitage, in contrast, discloses a fully formed railcar monitoring system that can measure a variety of parameters to detect a variety of potential or actual fault conditions. Patent Owner therefore cannot show that it conceived or reduced to practice “at least as much as the reference shows of the claimed invention,” *Merck*, 50 F.4th 154, and thus cannot remove Armitage as prior art for this additional reason.

IV. GROUND 4–6

Patent Owner’s remaining arguments directed to Grounds 4–6 are simply a

rehash—largely *verbatim*—of the same arguments presented in the POPR. The Board has considered, and rejected, all of these arguments already:

- Ground 4, Claims 2, 3, and 26–28: *Compare* POR, 52–53 *with* POPR, 50.

The Board correctly found that Armitage discloses every limitation of claims 2, 3, and 26–28. Decision, 60–61.

- Ground 5, Claims 4, 29, and 30: *Compare* POR, 53 *with* POPR, 50. Patent

Owner argues only that these dependent claims are patentable for the same reasons as the independent claims from which they depend, and has not otherwise identified any features that would patentably distinguish the cited references. The Board correctly found that Armitage in view of LeFebvre discloses every limitation of these claims. Decision, 60.

- Ground 5, Claims 5–10, 13–18, and 20–22: *Compare* POR, 53–61 *with*

POPR, 51–58. The Board correctly found that Armitage in view of LeFebvre discloses every limitation of claim 5, including specifically Limitations 5(g), 5(i), 5(j), and 5(k) challenged by Patent Owner. Decision, 51–59; EX1005, ¶¶ [0034]–[0035]; EX1006, ¶¶ [0027]–[0030], [0042]–[0045], [0055]. A PHOSITA would understand that LeFebvre’s power management techniques are fully compatible with “continuous” monitoring of railcar components as understood by a PHOSITA. EX1033, ¶ 13. In fact, LeFebvre (correctly) describes its own system as “continuously monitoring” the condition of the

railcar. EX1005, ¶¶ [0004], [0006].

- Ground 5, Claims 23 and 25: *Compare* POR, 61 *with* POPR, 58. The Board correctly found that Armitage in view of LeFebvre discloses every limitation of claims 23 and 25. Decision, 60.
- Ground 6, Claims 1 and 24: *Compare* POR, 62–64 *with* POPR, 58–61. The Board correctly found that Armitage in view of LeFebvre, Denny, and Provasnik discloses every limitation of claims 1 and 24. Decision, 61.

V. SECONDARY CONSIDERATIONS

“For objective evidence of secondary considerations to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention.” *ClassCo, Inc., v. Apple, Inc.*, 838 F.3d 1214, 1220 (Fed. Cir. 2016) (citation omitted). “[T]he patentee bears the burden of showing that a nexus exists.” *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (citation omitted). Here, Patent Owner has not provided any evidence of a nexus between the alleged indicia of nonobviousness and the specific limitations of the challenged claims, and thus has not met its burden.

Patent Owner’s alleged evidence of industry praise is a single internal email from an executive at Patent Owner, sent to other Patent Owner employees. It does not indicate that the invention received praise from the industry (i.e., anyone

outside the company), and does not tie any such praise to specific, claimed features of the system.

Patent Owner's "copying" argument is an improper attempt to litigate its infringement case in the context of an IPR. To the extent they are relevant, Patent Owner has not tied any particular statements or features in the cited exhibits to any particular claim limitations, much less provided evidence that any device or system described in the exhibits satisfies every limitation of any challenged claim.

VI. CONCLUSION

Petitioner respectfully submits that claims 1–10, 13–18 and 20–32 have been proven obvious by at least a preponderance of the evidence.

Respectfully submitted,

Dated: January 26, 2024

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CERTIFICATE OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. § 42.24(d) that the foregoing document includes, as indicated by the word count of the word-processing system used to prepare the document (excluding the Cover, Table of Contents, Table of Authorities, Table of Exhibits, signatures, and Certificates of Service and Word Count), fewer than 5,600 words and specifically includes 5,476 words.

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CERTIFICATE OF SERVICE

I hereby certify that on this 26th day of January, 2024, the foregoing was served via electronic mail to the attorneys of record for the '223 Patent at the following address:

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