

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HUM INDUSTRIAL TECHNOLOGY, INC.
Petitioner,

v.

AMSTED RAIL COMPANY, INC.
Patent Owner.

Case No. IPR2023-00540
Patent No. 10,137,915

PATENT OWNER'S SUR-REPLY

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I. INTRODUCTION.

Patent Owner Amsted Rail Company, Inc. (“PO”) provides this sur-reply to Petitioner Hum Industrial Technology, Inc.’s (“Petitioner”) reply. Petitioner’s arguments distort the claims and disclosures of the ’915 Patent, and the prior art. Further, Petitioner fails to show that the prior art discloses the claimed limitations and/or that a POSITA would be motivated to combine the references. Because Petitioner has not met its burden, the Board should find each challenged claim patentable.

II. PETITIONER’S GROUNDS 1-3 FAILS TO SHOW OBVIOUSNESS.

Petitioner has failed to show that the prior art discloses each claimed limitation of the independent claims, including either the filter or the filtering of the acceleration data, and has not shown an adequate motivation to combine. Therefore, Grounds 1-3 fail. In addition, Petitioner has not shown that dependent claims 25 and 28 are rendered obvious under an accurate view of the prior art.

A. Armitage Does Not Disclose the Claimed Filtering - Limitations 1(d), 30(c), or 36(d)).

Petitioner misconstrues the disclosures of the ’915 Patent and Armitage to incorrectly argue that Armitage discloses the claimed filters of the ’915 Patent. (Reply at 3-7.) Petitioner tacitly agrees with Patent Owner and the Board that sampling is not filtering. (*See* Paper 15 (“POR”) at 6-8; Paper 10 (“Institution Decision”) at 25; Paper 18 (“Reply”) at 3-7 (no longer arguing “sampling” is

filtering).) Instead, Petitioner incorrectly claims that monitoring only some vibrations and ignoring others is the same filtering.

It is undisputed that the '915 Patent collects data from the accelerometer, passes the data to one or more sensors that include a digital filter, and these sensors/digital filters select which data to analyze and which to filter. (*See* Reply, 4 (citing EX1001 at 13:17-24 and FIG. 12.)) In one example, relied upon by Petitioner, the '915 Patent discloses that accelerometer data is passed on to three separate sensors and these sensors select certain data to extract longitudinal impact data, lateral oscillation data, and vertical oscillation data, respectively. (Ex. 1001 at 13:36-56; Reply, 5.) That is, the acceleration data from the accelerometer is monitored or measured and this data is passed along to one or more sensors before being filtered by digital filters. (*See id.*)

Contrary to Petitioner's suggestions, (Reply, 6-7), Armitage does not disclose such filtering. Armitage discloses that vibrations are “*monitored along a single axis*” while “vibrations in other axes are ignored.” (EX1006, ¶45.) As Petitioner explains, “it is beneficial to consider only accelerations along the z-axis,” and therefore Armitage does not monitor accelerations along these other axes. (Reply, 7.) That is, Armitage ignores and doesn't monitor or collect data on radial acceleration, and therefore there is no need to filter out that data.

Accordingly, and as correctly found by the Board, Armitage does not teach “one or more filters configured to filter at least a portion of the accelerations” that were measured by the sensors.

B. The Claims Require Sensing of Acceleration Data Prior to Filtering.

Contrary to Petitioner’s argument, (Reply, 8-10), basic patent claiming principles require, for each of the challenged independent claims, that the sensors sense acceleration data prior to filtering. The use of the definite article, “the” means the phrase “refers back to an earlier language as an antecedent.” *ABS Glob., Inc. v. Cytonome/St, LLC*, 84 F.4th 1034, 1040 (Fed. Cir. 2023) (holding if the antecedent basis for the definite article limitation is plural or comprised of a group, “the” refers back to the plural or group, in its entirety).

Each of the independent claims requires one or more sensors configured to sense or measure accelerations and then a filter “configured to *filter at least a portion of **the** accelerations.*” (See EX1001 at 17:51-60 (Claim 1 requiring “one or more sensors configured to measure accelerations of the railcar” and, thereafter, “one or more filters configured to filter at least a portion of the accelerations”); *id.* at 20:41-47 (Claim 30 requiring sensing accelerations and then “filtering, by one or more filters, at least a portion of the accelerations”); *id.* at 22:1-8 (Claim 36 requiring sensors configured to measure accelerations and then one or more filters configured

to filter at least a portion of the accelerations”).) That is, the filtering occurs on the same acceleration data that is sensed or measured, and the filtering occurs on “at least a portion” of that same data, i.e., a subset. (*See* EX2006, ¶ 44.)

Petitioner’s argument rewrites and/or creates antecedent basis issues in the claims. If, as Petitioner claims, filtering of acceleration data does not have to occur after the sensors measure accelerations, then the antecedent basis should be reversed. That is, the one or more filters should be configured to “filter accelerations” and the one or more sensors should be configured to “measure at least a portion of the accelerations.” If the filtering occurs first, the sensors cannot measure more than is filtered. More importantly, Petitioner’s reading is not what is claimed by the ‘915 Patent; The correct reading of the claims using proper antecedent basis principles requires the filtering to occur on at least a subset of acceleration data that has been sensed or measured.

This understanding is further supported by the specification and the knowledge of a POSITA. As previously explained, “any accelerations removed by the mechanical filter of claim 26 are necessarily removed *before* they are detected by the accelerometer because that is how a mechanical filter works.” (POR, 9 (citing EX2006, ¶51.) Therefore, such accelerations filtered by the mechanical filter are not measured “accelerations of the railcar” and therefore are not within the scope of claim 1. *Id.* Petitioner does not dispute this. (*See generally* Reply.) Indeed, the

specification clearly states, “*the analyzed signal* (which is not filtered out by the mechanical filter 410 or potting material), *originates with accelerometer hardware* and is passed to one or more sensor sections...” before being filtered by digital filters. (*Id.* at 13:13-18.)

An analysis of the dependent claims further supports this understanding and Petitioner’s reliance on the language of Claim 26 does not change this analysis. Even if Claim 26 is not a draftsman error—which Patent Owner contends it is (*see* POR, 9)—the only way to square all the claims is to understand how they can include another filter, i.e., the inclusion of “a mechanical filter.” For instance, Claim 3, which also depends from Claim 1, claims “a mechanical filter... disposed to *remove* [] *undesirable accelerations before* said undesirable accelerations *reach said accelerometer.*” (EX1001 at 18:27-31 (emphasis added).) Applying antecedent basis principles, these “undesirable accelerations” are not “the accelerations” claimed in Claim 1 and, due to their removal prior to reaching the accelerometer cannot be measured or sensed by the sensors. Further, the “*a mechanical* filter” of Claim 3 must necessarily be distinct and in addition to the “one or more filters configured to filter at least a portion of the accelerations” of Claim 1. *See ABS*, 84 F.4th at 1040-41 Therefore, Claim 3 requires (1) a mechanical filter configured to remove undesirable accelerations before the undesirable accelerations reach the accelerometer sensor, (2) a sensor or accelerometer configured to sense

accelerations, and (3) one or more [other] filters configured to filter at least a portion of the accelerations. Any other reading necessarily makes one or more claim terms superfluous.

If not a draftsman error, reading Claim 26 as currently claimed requires a similar read as Claim 3. That is, Claim 26 would require that (1) a mechanical filter is one of the one or more filters, (2) the mechanical filter removes unwanted acceleration data prior to being sensed or measured by the accelerometer, because that is how mechanical filters work, (3) one or more sensors configured to sense or measure the acceleration data that reaches the accelerometer, and (4) one or more other filters configured to filter at least a portion of that acceleration data.

Accordingly, each claim requires sensing or measuring acceleration data and then filtering a portion of the acceleration data.

C. There is No Motivation to Combine Armitage and Barone.

Petitioner still has not, and cannot, sufficiently explain why or how a POSITA would combine Armitage and Barone. (*See* Reply, 10-14). Simply identifying structures or concepts known in the art is insufficient to show *why* a POSITA would combine one or more references. *See C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1351 (Fed. Cir. 1998) (showing prior art has “similar components” is by itself “insufficient”) (citation omitted); *Securus Techs., Inc. v. Glob. Tel*Link Corp.*, 701 F. App'x 971, 977 (Fed. Cir. 2017) (this “short-cut logic” would render all

combinations of elements known in the “broad field” obvious). In addition, Petitioner must sufficiently explain *how* a POSITA would combine the references to arrive at the claimed invention, as required. *Nichia Corp. v. Everlight Elecs. Co.*, No. 02:13-CV-702-JRG, 2016 WL 310142, at *62 (E.D. Tex. Jan. 25, 2016), *aff’d sub nom.*, 855 F.3d 1328 (Fed. Cir. 2017) (“It is often necessary to further explain how [a POSITA] would actually make an alleged combination or modification of prior art references.”); *ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012) (party must show “how any specific combination would operate”). “[T]his analysis should be made explicit.” *KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Petitioner has not met its burden.

Moreover, Petitioner’s arguments are primarily supported by verbatim but conclusory statements from Mr. Ricca and therefore should be disregarded. *See, e.g., Samsung Elecs. Co., Ltd. v. RightQuestion, LLC*, IPR2022-00251, Paper 17 at 23 (PTAB June 9, 2022) (declining to credit expert where “declarant makes these same statements verbatim, without more, and with no additional citations to evidence”). *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“the Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations”).

To claim a motivation to combine, Petitioner states filters were known to remove unwanted data and noise but otherwise fails to articulate a sufficient

motivation to combine the specific teachings of Barone with Armitage. (*See* Pet. at 21, 28-29; Reply at 10-11.) Petitioner has not explained or provided evidence that the system of Armitage had unwanted data and noise that needed to be removed through filtering or other data that needed to be “enhanced.” (*See generally* Pet. & Reply.) Even if it had, Petitioner fails to explain why Barone’s system would benefit the specific system of Armitage. (*Id.*) For example, Petitioner relies on Barone’s disclosures related to using high, low, and band pass filtering of acceleration data. (*See* Reply at 15-16 (citing Ex. 1007 at ¶¶ 176, 179; *see also* Pet. at 28 (citing similar).) Barone discloses using a high-pass filter to filter frequencies below 200 Hz or a band pass filter that could further limit to frequencies below 2 or 2.5kHz, amplifying this signal with a gain of 11, rectifying the signal, and then sending the rectified signal through a low pass filter to filter out frequencies above 290 or 300 Hz. (*See* Ex. 1007 at ¶ 176.) Petitioner offers no explanation as to whether or how these filters would filter out unwanted noise or data in Armitage while keeping or enhancing necessary data, e.g., data related to outlier sensor 325 in FIG. 4 of Armitage.

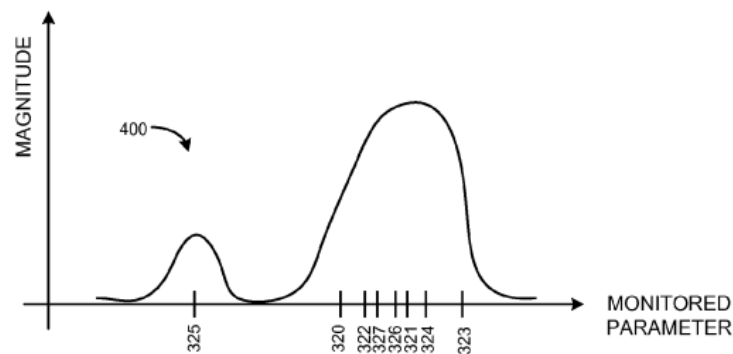


FIGURE 4

(Ex. 1007 at FIG. 4.) This is insufficient. *See In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988) (“[t]here must be a reason or suggestion in the art for selecting the procedure used.”).

Recognizing this deficiency, Petitioner claims there is no need to provide such an analysis and states it need only provide expert testimony acknowledging a “universal” motivation to combine. (Repy at 11.) Petitioner’s cases are easily distinguishable. In contrast to Petitioner’s claims, an expert relying on a generic motivation to combine must indicate precisely how and why a POSITA would have arrived at the claimed combination. *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 797 (Fed. Cir. 2021) (finding “conclusory expert testimony does not qualify as substantial evidence” but that expert testimony that “indicate[s] precisely how and why a skilled artisan would have combined the references” can be sufficient). When an expert’s testimony bears “no relation to any specific combination of prior art elements” and doesn’t “explain why a skilled artisan would have combined them “in

the way the claimed invention does,” the testimony may be considered conclusory and will not qualify as substantial evidence. *Id.* at 797–798 (distinguishing *ActiveVideo Networks, Inc.*, 694 F.3d at 1328, which relied on generic expert testimony.) In contrast, the *Intel* Court found Intel’s expert explained why a POSITA would make the combination based on specific comments in the art, what would have been substituted, exactly how it would be substituted, and what modifications or settings would be used in the new system for proper functioning. (*Id.*)

Here, Petitioner and its expert repeat the same “motivation to combine statements” that claim an advantage of the filter taught by Barone—removing unwanted data or amplifying relevant data—and portends a POSITA would add Barone’s filter to Armitage because both systems are designed to predict anomalous conditions and avoid false or inaccurate data processing. (*See* Pet., at 21 (citing EX1003, ¶67 (stating same)), 29 (citing EX1003, ¶ 82 (stating same)); *see also* Reply at 10 (citing EX1025, ¶ 13 (stating same)).) Petitioner’s statements, echoed without further analysis by its expert, fail to ***precisely*** explain ***why and how*** a POSITA would have combined the filter of Barone with Armitage’s system. Would a POSITA use one or more filters of Barone? Which ones? Why those? Would any modifications be necessary or desirable? None of these questions have been answered by Petitioner’s conclusory arguments.

In contrast, removing data may frustrate an intended purpose of Armitage. For example, it may remove the very signals Armitage is looking for and/or prevent Armitage from quantifying the severity of outlier sensor data, which may be indicated by the “degree to which any specific sensor deviates.” (*See* POR, at 11-12 (citing EX2003, ¶ 53; EX1003, ¶¶40, 43-44).) That is, filtering in Armitage may remove one or more data points that indicate the degree of severity. (*See also* POR at 12-13 (explaining advantages of having more data, not less, in Armitage).)

Petitioner does not dispute that combining Armitage and Barone would so impact Armitage but speculates that the ‘915 Patent may filter out outlier data. (*See* Reply, at 11-12.) This confuses the question at hand and introduces improper hindsight. Instead, a motivation to combine must be viewed through the lens of the prior art disclosures and the knowledge of a POSITA at the time of the invention and not through the solution envisioned or disclosed by the ‘915 Patent. *See KSR*, 550 U.S. at 418; *Interconnect Plan. Corp. v. Feil*, 774 F.2d 1132, 1143 (Fed. Cir. 1985). Petitioner also claims it doesn’t matter if one or more data points are filtered out as they are immaterial to indicating a failure and keeping such data would result in false failures. (POR, 12-13.) There is no evidence or support that not filtering in Armitage would result in false failures. (*See generally* EX1006.) In addition, and as explained *supra*, not filtering one or more data points may still provide useful. (*See* EX1007, ¶43 (allowing for detection of severity of issue).) Regardless, even if the deviations

in Armitage referenced by Petitioner are based on multiple data readings, Petitioner has not explained how adding a filter will ensure enough of these data readings are preserved.

Because Petitioner has failed to show a motivation to combine Armitage and Barone, Grounds 1-3 should be rejected.

D. Dependent Claims 25 (Software Filter) and 28 (Digital Filter) Are Not Obvious.

Petitioner misconstrues the teachings of Barone and incorrectly argues that Barone incorporates by reference datasheets for microcontrollers to argue that Barone teaches digital and software filters. (Reply, 14-20.)

Initially, Petitioner’s arguments that Barone discloses outputting digital signals to the micro-controller 177/CPU, which essentially adds new prior art—specific microcontroller data sheets—to the combination, is raised for the first time in its Reply and therefore should be disregarded. *See, e.g., Samsung Elecs. Co., Ltd. v. Power2b Inc.*, IPR2022-00325, Paper 36 at 24 (PTAB June 26, 2023) (finding petitioner improperly raised new arguments and evidence in reply). In fact, the Petition states that Barone “explicitly teaches output of an ‘accelerometer 171’ being transmitted to ‘signal conditioning 178,’ where the *analog* signals are amplified and/or filtered.” (Pet. at 12, 27.) There is no discussion of Barone outputting or using

digital signals prior to being routed to an analog to digital converter. (See generally *Pet.*)

i. Barone Does Not Discloses a Digital or Software Filter.

Contrary to Petitioner's claims, Barone does not disclose a digital or software filter. As seen in FIG. 7 of Barone below, the accelerometer sensor interfaces with a TI quad op-amp package while the microphone and temperature sensors interface with a TI dual op-amp package.

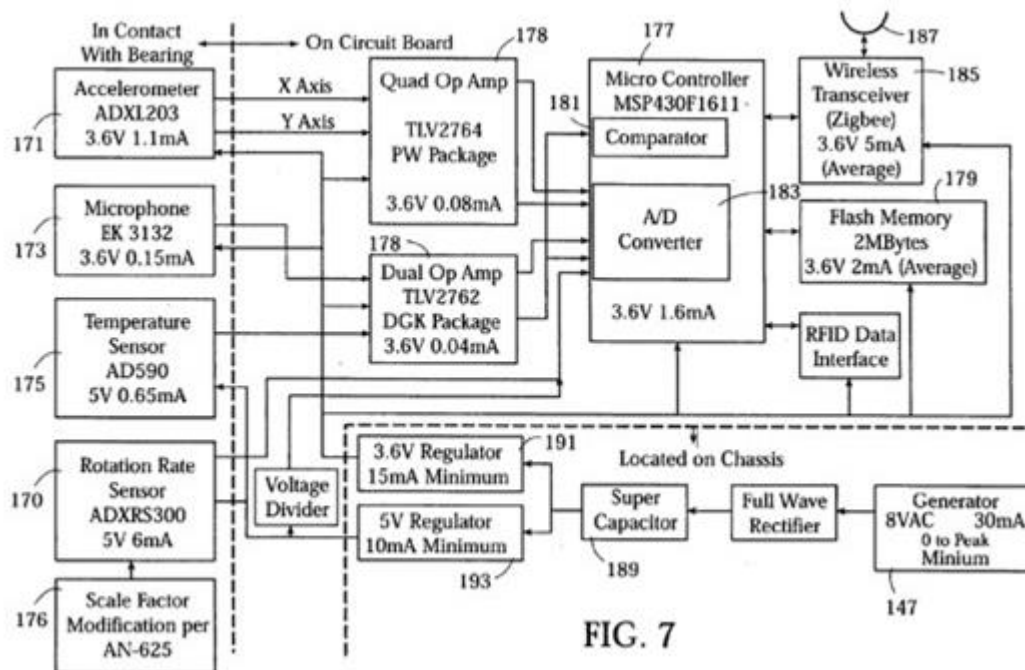


FIG. 7

(EX1007, FIG. 7, ¶¶114-116.) Both the op-amp packages perform *analog filtering*.

(EX1007, ¶¶175-78 (Quad Op-Amp performing analog filtering); ¶¶167-68 (Dual Op Amp performing analog filtering).) As further shown, the signals from both the dual and quad op-amp outputs are converted to digital form by the Analog-to-Digital

Converter (“ADC”) 183 of micro controller 177, identified as MSP430F1611. (See EX1007, Fig. 7.) While the microphone or temperature sensor signals 173, 175 can be passed from the Dual op amp package to either the ADC 183 or the comparator 181, the accelerometer signal 171 is only passed from the Quad op amp package to the ADC 183. Once the signal reaches the microcontroller 177, no further filtering is performed as the signal is interpreted and transmitted. (See EX1007, FIG. 8.) Thus, the sensor signals are clearly analog, and the output of the op-amp packages are *filtered analog signals*. Contrary to Petitioner’s argument, there is no teaching or suggestion in Barone to use a digital accelerometer signal, much less a digital or software filter thereon.

ii. The Data Sheets (EX1026-1027) are Not Incorporated by Reference Into Barone.

Recognizing that Barone does not disclose a digital or software filter, Petitioner attempts to incorrectly argue—for the first time in Reply—that the microcontrollers and datasheets therefore are “incorporated by reference in Barone.” (Reply, 16-17.) Not only is there no incorporation by reference but the datasheets that Petitioner now relies on do not disclose what Petitioner claims. Importantly, none of these arguments were made in the Petition. Therefore, these arguments should be disregarded. See *Samsung Elecs*, IPR2022-00325, Paper 36 at 24.

a. No Incorporation by Reference.

The mere mention of a product or other reference is not sufficient to incorporate them by reference. *See Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1346 (Fed. Cir. 2009) (emphasis added) (“*mere reference to another application*, or patent, or publication *is not an incorporation of anything* therein”); *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000) (emphasis added) (“To incorporate material by reference, the host document must identify *with detailed particularity* what *specific material it incorporates* and *clearly indicate where that material is found in the various documents.*”).

Here, other than in the figure shown above, Barone mentions the MSP430F1611 or MSP430FG4618 microcontrollers only twice. Barone states:

The circuit of the node 125 also includes a low-power micro-controller 177 *such as the MSP430F1611 or MSP430FG4618 sold by Texas Instruments*, programmed with algorithms to determine the health of bearings through vibration and acoustic trending and temperature monitoring received from the sensor array via operational amplifiers and/or signal conditioners 178, and comparator 181 and/or analog/digital converter 183.

(EX1007, ¶116 (emphasis added).) Barone makes one other passing reference to each micro-controller. (*See id.*, ¶118 (stating, “The analog signal conditioning circuits (Op Amps and required passive devices), flash memory, voltage regulators,

super capacitor, MSP430F1611 microcontroller and Zigbee transceiver are preferably packaged on a single circuit board.”), ¶221 (stating, “the microprocessor of the preferred embodiment, the Texas Instruments MSP430FG4618 has 8 kilobytes of RAM and 116 K of flash memory, which can accommodate more frequencies around the calculated defect frequencies screened for, to allow for any slight variation in the accuracy of the detection of the rate of rotation of the wheel.”)

As shown, there is no stated intention to incorporate any material by reference in these passages nor is there any statement identifying the material that would be incorporated. Indeed, not only is there only a passing mention of these products there is no mention of the corresponding *data sheets* at all. This is insufficient to incorporate by reference. *Callaway Golf*, 576 F.3d at 1346. Moreover, Barone is explicit about what material is incorporated by reference, even including a bibliography of specific references that *are* incorporated by reference and which do not include the TI data sheets or any other documentation related to the recited microcontrollers. (See EX1007, ¶¶15-20; ¶¶161-163, 165, 188 (specifically incorporating other material by reference).)

b. Data Sheets Do Not Change Barone’s Disclosure.

Second, even if the data sheets were incorporated by reference—which they are not—and considered by the Board—which they should not—the data sheets do not disclose what Petitioner asserts. Petitioner claims that high, low, and band pass

filters can filter electronic/analog signals but could also filter digital signals. (Reply at 15-16 (citing Ex. 1025, ¶ 20 (Petitioner’s expert making the verbatim assertion without citing any support therefore).) Relying on this unsupported statement, Petitioner makes multiple erroneous claims.

Petitioner claims Barone passes a digital signal through a low pass filter. (Reply, 16-20.) To make this claim, Petitioner points to FIG. 8 and paragraph 116 of Barone to argue that Barone discloses that accelerometer signals, which are conditioned in signal conditioner 178, can then be converted to a digital signal with ADC 183 before being received by the micro-controller 177. (*Id.*) Next, however, Petitioner pivots to disclosure not included in or referenced by Barone to claim the output of the microcontroller in Barone is a filtered digital data stream. (*Id.*) Specifically, Petitioner claims that the micro-controller 177 is either MSP430F1611 or MSP430FG4618. (*Id.*) Petitioner relies on the “Block Diagram of Comparator_A Module” from the data sheets for those controllers, (*see* Reply, 17 (FIGS. 1-2); EX1026 and 1027, FIG. 8 (reproduced below)¹), to claim that the comparator of

¹ This block diagram discloses an analog circuit with passive components (capacitor, resistor), logic gates, and S/W-controlled switches. While the sensor signals interface with the comparator on the left, the output of which represents a logic state, these are all analog signals and nothing in this circuit is related in any way to data stored in computer memory or registers. That is, this circuit does not operate in any

these controllers include a low-pass filter. (Reply, 17-19 (acknowledging that depending on certain conditions—including the path the stream takes and the software used—the data stream passed through the comparator may or may not be filtered).)

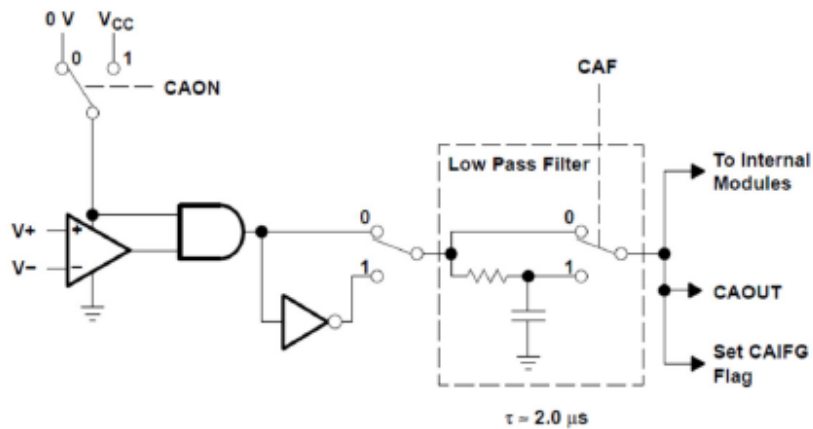


Figure 8. Block Diagram of Comparator_A Module

Assuming arguendo that the Board is inclined to consider this untimely argument and evidence, Petitioner fails to appreciate that Barone teaches that only the data streams from the microphone and temperature sensors pass through the comparator and the data stream from the accelerometer goes straight to the ADC. Therefore, even if the comparator includes a digital filter controlled by software, Barone teaches the acceleration data would not be filtered by the low-pass filter of the comparator and the specification is silent on accelerometer sensors passing way on digital data. Thus, even if considered, this evidence fails to support Petitioner's arguments.

through comparator 181. (EX1007, ¶¶240-54 (describing microphone and temp sensors can be used to trigger an interrupt under certain conditions by comparator 181).

Second, Petitioner relies on Barone's teachings related to the use of a discrete Fourier transform to claim the use of a digital filter executed by software/a software filter. (Reply at 19-20.) However, as previously explained, a POSITA would understand this to be a data *analysis* that involves translation of a signal into a time-based domain (i.e., a Fourier transformation) for identification of peaks indicative of bearing degradation and *not a filtering* of data. (See POR, 22-23 (citing EX1007, ¶¶202-22, 231, 236; EX2006, ¶70 (further explaining that this mathematical analysis is invertible, a fact that could not be true if the data was filtered out in the process).)

E. Patent Owner Does Not Mischaracterize Barone's Disclosure.

Petitioner argues that Patent Owner's claim that in Barone "there is no need to filter the digitized signal and Barone explicitly acknowledges the same" is a mischaracterization. (Reply at 20.) Not true.

Petitioner relies on the filtering disclosed in paragraph 234 of Barone, which mentions a specific type of signal conditioning that filters frequencies below 290 or 300 Hz, to claim "[t]his is a digital filter." (*Id.*) However, the very next paragraph makes clear that "[i]n such an embodiment, the anti-aliasing filter circuitry is part of the signal conditioning 178 shown in in FIG. 8 and is applied to the *analog signal*

before conversion to digital. (EX1007, ¶235.) Therefore, it is actually Petitioner who mischaracterizes Barone.

Accordingly, the Board should not find any of the claims challenged in Grounds 1-3 unpatentable.

III. PETITIONER’S GROUND 4 FAILS TO RENDER ANY CLAIM OBVIOUS.

A. LeFebvre Does Not Disclose the Claimed Filter.

Initially, Petitioner does not dispute (nor contend in its Reply) that LeFebvre’s disclosures related to “sampling” do not constitute the claimed sampling. (*Compare* POR, 31-32 *with* Reply, 21-23.) Instead, Petitioner relies entirely on LeFebvre’s disclosure that the system is designed to first “process the raw sensor data” and thereafter “send only essential indicative information” gleaned from the processing of the data. (*See* Reply, 21-23.) However, and contrary to Petitioner’s claims, the ‘915 Patent does not disclose filtering post-processed data nor that selective transmission of such data is “filtering.” Indeed, the passages cited by Petitioner make clear that LeFebvre is using filters to streamline information that is thereafter “sent to the CMU” for processing. (*See* Reply, 22.)

Not only does LeFebvre not disclose a filter that filters acceleration data, neither LeFebvre nor Barone disclose such a filter that is a digital or software filter. (*See* §II(D), *supra* (incorporated here).)

B. There is No Motivation to Combine LeFebvre with Barone.

Petitioner fails to address the merit of any of Patent Owner's arguments regarding the lack of a motivation to combine LeFebvre with Barone. (Reply, 23.) Petitioner again points to a purported flaw in the '915 Patent's teachings to deflect from the need to precisely explain the why and how a POSITA would combine the specific teachings of LeFebvre and Barone. (*Id.*) This is improper hindsight. *See KSR*, 550 U.S. at 418; *Interconnect Plan.*, 774 F.2d at 1143.

Regardless, and as further described in its Response, Patent Owner has explained that—unlike the claimed invention—LeFebvre does not use acceleration data to make independent decisions regarding a defect or failure of a sensor but rather uses the data to validate the identification of defects. (See POR, 33.) Petitioner has not explained how or why filtering data used for a distinctly different purpose would be beneficial, much less how or why Barone's filter would create such a benefit. This failure warrants rejection of Ground 4.

V. CONCLUSION.

For the foregoing reasons and those articulated in its Patent Owner Response, and not acquiescing to any argument made by Petitioner in its Petition or Reply, the Board should not find any challenged claim of the '915 Patent unpatentable.

Dated: March 8, 2024

By: / Ryan N. Miller /

Ryan N. Miller

Reg. No. 68,262

Counsel for Patent Owner

Amsted Rail Company, Inc.

CERTIFICATE OF WORD COUNT

Pursuant to 37 CFR § 42.24(d), the undersigned hereby certifies that the foregoing Patent Owner's Sur-Reply contains 4,556 words using the word count feature of Microsoft Word.

Dated: March 8, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e), the undersigned hereby certifies that on the 8th day of March, 2024, the foregoing Patent Owner's Sur-Reply was served via e-mail, as authorized by the Petitioner, at the following email correspondence address of record:

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