

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HOPKINS MANUFACTURING CORPORATION
and THE COAST DISTRIBUTION SYSTEM, INC.,
Petitioner,

v.

CEQUENT PERFORMANCE PRODUCTS, INC.,
Patent Owner.

Case IPR2015-00609
Patent 6,445,993 B1

Before KEN B. BARRETT, WILLIAM V. SAINDON, and
BARRY L. GROSSMAN, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Hopkins Manufacturing Corporation and The Coast Distribution System, Inc. (collectively, “Petitioner”) filed a request for an *inter partes* review of claims 1, 2, 4, 5, 7, 9, 11, 14, 15, 17, 18, 20, 22, 24, 27, 28, 30, 31, 33, 35, and 37 of U.S. Patent No. 6,445,993 B1 (“the ’993 patent,” Ex. 1001). Paper 1 (“Pet.”). Cequent Performance Products, Inc. (“Patent Owner”) filed a Patent Owner Preliminary Response. Paper 8 (“Prelim. Resp.”). The Board instituted a trial for claims 1, 2, 4, 5, 14, 15, 17, 18, 27, 28, 30, and 31. Paper 9 (“Dec. on Inst.”) Although Petitioner proposed five grounds of unpatentability, we instituted trial on only one asserted ground of unpatentability for anticipation and one asserted ground of unpatentability for obviousness. Dec. on Inst. 13–14.

After institution of trial, Patent Owner filed a Patent Owner Response (“PO Resp.”) to the Petition. Paper 17. Petitioner filed a Reply (“Reply”) to Patent Owner’s Response. Paper 21. Petitioner relies on the Declaration testimony of Dr. Mark Horenstein (Ex. 1008) in support of its Petition and a second Declaration of Dr. Horenstein (Ex. 1011) in support of its Reply. Patent Owner relies on the Declaration testimony of Dr. John Martens (Ex. 2009) in support of its Response.

Patent Owner also filed a Motion to Exclude. Paper 26 (“PO Mot. Exclude”). Petitioner filed an Opposition to that Motion (Paper 28, “Pet. Opp. Mot. Exclude”), and Patent Owner filed a Reply (Paper 30, “PO Reply Mot. Exclude”).

Oral hearing was conducted on May 9, 2016. The record contains a transcript of the hearing. Paper 31 (“Tr.”).

The Board has jurisdiction under 35 U.S.C. § 6(c). This final written decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

Petitioner has shown by a preponderance of the evidence that claims 1, 2, 5, 14, 15, 18, 27, 28, and 31 are unpatentable as anticipated by Robinson, and that claims 4, 17, and 30 are unpatentable as being obvious over Robinson and Guzorek. We dismiss-in-part and deny-in-part Patent Owner's Motion to Exclude.

A. Related Proceedings

The parties identify as a related proceeding regarding the '993 Patent *Cequent Performance Products, Inc. v. Hopkins Manufacturing Corporation et al.*, No. 2:13-cv-15293 (E.D. Mich.). Pet. 1; Paper 5 (Patent Owner's mandatory notices). Patent Owner additionally identifies as related matters IPR2015-00613 and IPR2015-00616.¹

B. The '993 Patent

The '993 patent, titled "Brake Control Unit," pertains to a brake control unit for providing a brake output signal to the brake load of a towed vehicle, e.g., a trailer. Ex. 1001, col. 1, ll. 4–6. The brake control unit utilizes an accelerometer coupled to a processor having in memory executable code "which causes the processor to automatically acquire an operating point of the brake control signal when the brake control unit is mounted within a range of operating positions." *Id.* at col. 2, ll. 7–10.

According to the specification, it was known in the art to use a brake control signal from an accelerometer to determine when a towing vehicle

¹ The Board denied institution in IPR2015-00613 and in IPR2015-00616.

was braking so that a brake output signal could be sent to the brakes of the towed vehicle. *Id.* at col. 1, ll. 25–31. The accelerometer output reflects not only deceleration due to braking, but also includes the acceleration due to gravity when the accelerometer is not level, for example when the trailer is being towed on an incline. *See id.* at col. 5, l. 63–col. 6, l. 21; Ex. 1008 ¶¶ 11–12 (Dr. Horenstein Decl.); Ex. 2009 ¶¶ 23–24 (Dr. Martens Decl.). The specification describes an embodiment where: 1) a “reference level (i.e., operating point)” is set prior to braking, 2) the reference level is compared to the level of the brake control signal after braking, and 3) a correction factor is calculated to determine the true deceleration due to braking. *See* Ex. 1001, col. 6, ll. 49–64. This process allows the microprocessor to determine the appropriate duty cycle of the brake output signal to apply to the trailer brakes. *See id.* at col. 6, ll. 64–65.

The specification explains that “prior art brake control units have typically required an operator of the towing vehicle to set or adjust, by mechanical means, a reference level of the accelerometer[] when the brake control unit was initially mounted or changed to a different mounting orientation.” *Id.* at col. 1, ll. 33–37. Thus, according to the specification, there was a need in the art to have a brake control unit that eliminated the need to manually level the accelerometer when the unit is initially mounted or the orientation is changed. *Id.* at col. 1, ll. 50–53.

Additionally, “[v]arious prior art brake control units have included a display to provide an operator of a towing vehicle with various information. These displays have included a plurality of light emitting diodes (LEDs) and/or one or more seven-segment displays.” *Id.* at col. 1, ll. 8–12. According to the specification, it would be desirable for the brake control

unit to display a wide range of status and diagnostic information. *Id.* at col. 1, ll. 56–58. Figure 4A of the '993 is reproduced below:

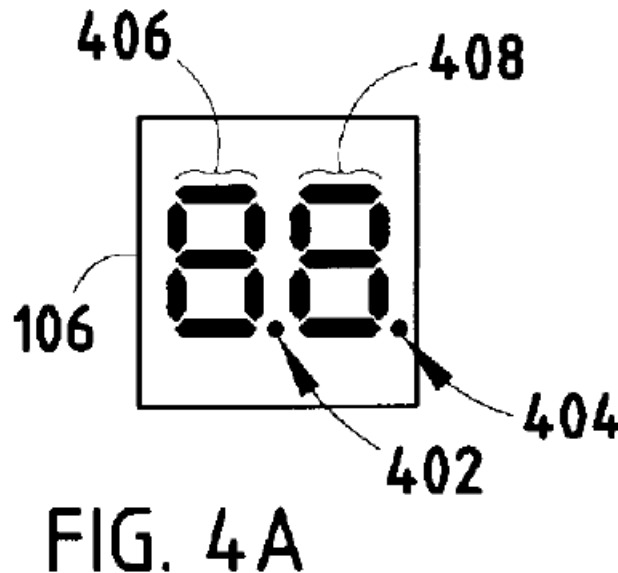


Figure 4A depicts an exemplary seven-segment display for providing status and diagnostic information. *Id.* at col. 2, ll. 50–52, col. 4, ll. 28–38.

C. Illustrative Claim

Of the challenged claims, claims 1, 14, and 27 are independent.

Illustrative claim 1 is reproduced below.

1. A brake control unit for providing a brake output signal to a brake load of a towed vehicle, comprising:
 - a processor;
 - an accelerometer coupled to the processor, the accelerometer providing a brake control signal to the processor, wherein the processor is programmed to cause an appropriate brake output signal to be provided to the brake load responsive to the brake control signal; and
 - a memory subsystem coupled to the processor, the memory subsystem storing processor executable code which causes the processor to automatically acquire an operating point of the brake control signal when the brake control unit is mounted within a range of operating positions.

Ex. 1001, col. 10, ll. 5–22.

D. Asserted Grounds of Unpatentability

We instituted *inter partes* review of claims 1, 2, 5, 14, 15, 18, 27, 28, and 31 on the ground of anticipation by Robinson² under 35 U.S.C. § 102(e) and of claims 4, 17, and 30 on the ground of obviousness over Robinson and Guzorek³ under 35 U.S.C. § 103(a).⁴ Dec. on Inst. 13–14.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also* *Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

*Automatically Acquire an
Operating Point of the Brake Control Signal*

Independent apparatus claim 1 recites a memory subsystem storing code “which causes the processor to automatically acquire an operating

² U.S. Patent No. 6,837,551 B2, iss. Jan. 4, 2005, filed Apr. 7, 2003 (Ex. 1004).

³ U.S. Patent No. 6,179,390 B1, iss. Jan. 30, 2001, filed Apr. 24, 1998 (Ex. 1005).

⁴ Patent Owner does not contest Petitioner’s assertion (Pet. 11, 12) that the references are prior art under 35 U.S.C. § 102(e).

point of the brake control signal.” Independent claim 27 recites an apparatus having the same memory subsystem of claim 1, and independent method claim 14 recites the step of providing the same memory subsystem. The dispositive issue, as framed by Patent Owner’s arguments, involves the meaning of “automatically acquire an operating point.” See PO Resp. 2.

Patent Owner argues that “‘operating point’ refers to ‘a value representing accelerometer output *over a length of time* other than during a braking event’” (PO Resp. 12) and “not accelerometer output at one particular instant in time” (*id.* at 10). In its Response, Patent Owner impliedly argues that the claims require that “a processor determines the ‘operating point’ by taking multiple accelerometer readings over a period of time and computing them into a single operating point” (*id.* at 2) and that there must be some “conversion” of the brake control signal into an operating point (*id.* at 3) and some calculation (*e.g., id.*). At oral argument, Patent Owner expressed reluctance to proffer with any specificity the scope of the proposed “calculation” because of copending litigation. Tr. 58:4–7 (“You have to do something with that brake control signal to create an operating point. As you can tell, I’m avoiding, because we’re in the middle of an infringement here, saying what that means”). In its Response, Patent Owner attempts to raise additional claim construction arguments by citing, without adequate explanation, to several paragraphs in Dr. Martens’s Declaration. PO Resp. 11, 12; *see, e.g., id.* at 11 (“Dr. Martens explains how the ‘automatically acquire’ phrase that precedes the ‘operating point’ term buttresses its correct meaning.”). This is an improper incorporation by reference of arguments from the declaration into the Response. See

37 C.F.R. § 42.6(a)(3). We decline to consider any additional arguments not set forth in Patent Owner’s briefs.

Petitioner argues that “operating point” is a reference level—a value representing accelerometer output prior to braking⁵—and may encompass a single accelerometer reading or multiple readings. *See* Pet. 8; Reply 3. Petitioner maintains that “automatically acquir[ing] an operating point” means obtaining an operating point by microprocessor operation as opposed to manual action by the user. Reply 7. Petitioner further argues that the claims are not limited to any particular method of developing an operating point, and argues that Patent Owner has not pointed to any evidence to demonstrate a clear intent to limit or define an operating point as such. *Id.* at 5. Petitioner argues that Patent Owner is attempting to import some limitations from the specification into the claims. *Id.* at 1. Specifically, Petitioner contends that Patent Owner attempts to incorporate portions of the preferred embodiment, but not all the requirements of that embodiment. *Id.* at 9.

We start our analysis with the language of the claims. Claim 1, for example, recites “the accelerometer providing a brake control signal to the processor [and] executable code which causes the processor to automatically acquire an operating point of the brake control signal.” Thus, the “brake control signal” is a signal provided by the accelerometer, and the “operating point” is a “point” of that signal.

⁵ Petitioner initially argued that the “operating point” was the accelerometer output *just prior to braking*. Pet. 8. In our Decision on Institution, we declined to limit the scope to the point in time immediately prior to braking. Dec. on Inst. 6.

In arguing that the claims call for conversion of a signal to an operating point, Patent Owner characterizes the claims as reciting “both a ‘brake control signal’ and an ‘operating point’ based on the brake control signal.” PO Resp. 3. The claims, however, do not indicate that the operating point is *based on* the brake control signal, as Patent Owner suggests, but rather recite “an operating point *of* the brake control signal.” *E.g.*, Ex. 1001, col. 10, l. 20 (emphasis added). Thus, the claim language merely implies that a brake control signal has an operating point, and calls for such a point to be acquired.

As Petitioner notes, “absent from claim 1 or Cequent’s emphasized claim limitations is any recitation of a ‘rolling average,’ of calculations deriving an operating point, or of any conversion of data into an operating point.” Reply 4. We note that the drafter of the claims chose to use the term “acquire,” which is different from “calculate,” “compute,” or “convert.” At oral argument, Patent Owner argued that the “operating point” is something created by the processor; in other words, an output of the processor. Tr. 30. However, a more natural reading of the claim, which uses the term “acquire,” is that the operating point is an input to the processor, not necessarily an output.

We next turn to the specification and, as an initial matter, address an embodiment discussed at length by the parties. The specification describes an embodiment using a rolling average of ten readings to determine the “reference level (i.e., operating point).” Ex. 1001, col. 6, ll. 49–65. The parties appear to agree that a reference level is an operating point. See PO Resp. 5; Reply 3, 5. The parties also appear to agree that the rolling average algorithm merely is a preferred embodiment, and that the claims should not

be limited to that algorithm. See, e.g., PO Resp. 5 (“The processor calculates a ‘rolling average’ based on, for example *in a preferred and non-limiting embodiment*, the ten most recent readings of the accelerometer output and uses that average as a ‘reference level.’” (emphasis added)); Tr. 40 (Patent Owner referring to the rolling average as “the exemplary embodiment”); *id.* at 54–55 (Patent Owner arguing that the proposed calculation is not limited to the rolling average of the preferred embodiment); *id.* at 54, 59 (Patent Owner’s contention that the utilization of only two readings would satisfy the claim); Reply 5.

To the extent, however, that Patent Owner contends that the claims should be limited by all or any portion of the algorithm embodiment, we decline to construe the claims as so limited. The specification makes clear that the disclosed embodiments are not limiting, stating:

The above description is considered that of the preferred embodiments only. Modification of the invention will occur to those skilled in the art and to those who make or use the invention. Therefore, it is understood that *the embodiments shown in the drawings and described above are merely for illustrative purposes and not intended to limit the scope of the invention*, which is defined by the following claims as interpreted according to the principles of patent law, including the Doctrine of Equivalents.

Ex. 1001, col. 9, l. 63–col. 10, l. 4 (emphasis added). Even if we were to find that there is only one embodiment disclosed, that alone would not justify limiting the claims. See *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (expressly rejecting the contention that “if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment”); *id.* (“Even when the specification describes only a single embodiment, the claims of the patent

will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using ‘words or expressions of manifest exclusion or restriction.’”).

The specification does not expressly define the term “acquire,” and the term only appears in recitations of language the same as or substantially similar to that of the claim. *See* Ex. 1001, Abstract, col. 2, ll. 6–10.

The specification, consistent with the claim language, explains that the “brake control signal” is the signal provided from the accelerometer to the processor. *See, e.g.*, Ex. 1001, col. 5, ll. 36–38 (“An accelerometer . . . provides a brake control signal to the microcontroller U5.”); col. 6, ll. 52–53 (“the accelerometer output (i.e., the brake control signal)”); col. 10, ll. 10–12 (claim 1). The specification further explains that a signal has a magnitude or level. *See id.* at col. 3, ll. 35–40 (“magnitude . . . of the brake output signal”); col. 6, ll. 10–13 (microcontroller reads “the level of a signal”); col. 6, ll. 18–19 (“the accelerometer . . . provides a brake control signal level”).

The specification—other than in the claims themselves and in repeating the claim language (*id.* at Abstr., col. 2, ll. 8–10)—uses the term “operating point” only twice. *See id.* at col. 6, ll. 4, 57. The specification indicates that the “operating point” is the magnitude or level of the output of the accelerometer, e.g., a voltage value. *Id.* at col. 6, ll. 3–5 (“When the offset is compensated in this position the output (i.e., the operating point) of the [accelerometer’s operational] amplifier is 2.5 volts.”⁶); *id.* at col. 6,

⁶ The specification of the ’993 patent uses the term “accelerometer” to refer to both the accelerometer itself and to an acceleration measurement system

ll. 57–59 (“This reference level (i.e., operating point) may be at 1.8 volts, 3.0 volts, or other voltage within the acceptable range set by the mounting constraints.”). The parties agree that the “operating point” is acquired prior to braking, or during non-braking conditions. See Pet. 8; PO Resp. 2, 12, 18; Reply 3, 4. This is consistent with the specification’s description of embodiments where a reference level is compared against the deceleration during braking. See Ex. 1001, col. 6, ll. 49–63, col. 7, ll. 4–11.

As mentioned, the pertinent claim language is executable code causing “the processor to automatically acquire an operating point of the brake control signal.” The interrelationship between the brake control signal and the operating point is described, in language that closely parallels that pertinent claim language, as follows: “The microcontroller U5 is programmed to periodically determine the output of the accelerometer U101, by reading the level of a signal at pin 7.” *Id.* at col. 6, ll. 10–13. In other words, the processor (microcontroller) is caused, via executable code, (programmed) to automatically acquire (periodically determine by reading) the operating point (the level of the signal) of a brake control signal (the signal that is the output of the accelerometer).

including, *inter alia*, an accelerometer and operational amplifier incorporated on a monolithic integrated circuit. Ex. 1001, col. 5, ll. 38–44. In an embodiment, the output of a single-axis accelerometer is coupled to an operational amplifier, the output of which, in turn, is coupled to a microcontroller (i.e., a processor). See *id.* at col. 5, ll. 44–51. The amplifier gain is set such that the accelerometer provides a brake control signal of 2.5 volts when the accelerometer is level. *Id.* at col. 6, ll. 13–17.

The claim term “automatically” is directed to one of the stated problems in the prior art—the need for manual adjustment when the orientation of the accelerometer is changed. The specification explains:

Some prior art brake control units have also included a processor for receiving a brake control signal from an accelerometer. The brake control signal provided by the accelerometer has been utilized to determine when the towing vehicle was decelerating so that a brake output signal (e.g., an energizing current) could be applied to a brake load (i.e., brake electromagnets) of a towed vehicle (e.g., a trailer), in response to the deceleration of the towing vehicle. These prior art brake control units have typically required an operator of the towing vehicle to set or adjust, by mechanical means, a reference level of the accelerometer; when the brake control unit was initially mounted or changed to a different mounting orientation. . . .

What is needed is a brake control unit that eliminates the need to manually adjust the level of the accelerometer when the brake control unit is initially mounted or changed to a different mounting orientation.

Ex. 1001, col. 1, ll. 24–53. The specification, in summarizing how the invention addresses this need, indicates that the brake control unit has a memory with executable code “which causes the processor to automatically acquire an operating point of the brake control signal when the brake control unit is mounted within a range of operating positions.” *Id.* at col. 2, ll. 6–10; *see also* PO Resp. 4–5 (Patent Owner arguing that the claimed invention, by automatically acquiring an operating point, does not require any manual intervention, thereby solving a problem in the prior art).

The prosecution history further indicates that the asserted distinguishing feature was the use of a processor to automatically acquire an operating point rather than through the use of manual intervention. During prosecution, the applicant asserted that the Robertson reference lacked the

“automatically acquire an operating point” feature, arguing that Robertson required action by a human. Ex. 1002, 138–39. Specifically, the applicant argued that “Robertson teaches away from Applicants claimed subject matter in that it requires technician or operator leveling of the brake control unit when the brake control unit is installed in the vehicle and when the orientation of the brake control unit is changed[.]” *Id.* at 139. The applicant argued that Robertson’s operator or technician intervention “does not teach or suggest a processor that is programmed to perform the task of automatically acquiring an operating point.” *Id.* at 138; *see also id.* at 125 (arguing Robertson “does not teach or suggest a processor performing the task of automatically acquiring an operating point”). Also, the applicant distinguished three cited prior art references, arguing:

prior art brake control units that have included an accelerometer have required an operator of a towing vehicle to set or adjust by mechanical means a reference level of the accelerometer, when the brake control unit is installed in the vehicle or when the position of the brake control unit in the vehicle is altered.

Id. at 139–40. Thus, the applicant distinguished *automatically acquiring an operating point via a processor* from *manually setting a reference level*.

In our Decision on Institution, we preliminarily construed “operating point” as “a value representing accelerometer output during a period other than during a braking event.” Dec. on Inst. 6. Patent Owner argues that the term “period” in our preliminary construction should be construed “as referring to a *length of time*, and not to one particular instance in time.” PO Resp. 11. However, as Petitioner notes (Reply 10–11), we used that term merely to indicate that the claim was broader than Petitioner’s proposed narrow construction which would limit the operating point to the output at

the time *just prior* to the braking event. Dec. on Inst. 6. Notably, the term “period” is not found in the claims and therefore is not in need of construction. Patent Owner recognized that our preliminary construction was just that—preliminary—and also that Patent Owner’s strained interpretation of that preliminary construction might be incorrect and, accordingly, argued that its position set forth in the Patent Owner Response should be adopted. See PO Resp. 12 (“If, however, the Board interprets its preliminary construction of ‘operating point’ to include accelerometer output at a single instant in time, then the Board should revise its construction based on the analysis above, the intrinsic evidence in the specification and claims, and the expert opinion of Dr. Martens.”).

Patent Owner, citing paragraph 32 of the Martens Declaration as support, argues that “[t]he specification identifies that the ‘operating point’ is based on accelerometer output *over a period of time*, and not accelerometer output at one particular instant in time.” PO Resp. 9–10. The cited paragraph of the Martens Declaration does not support Patent Owner’s proposition regarding the specification, but rather is an opinion as to how our preliminary construction should be construed. Ex. 2009 ¶ 32. We do not find this testimony helpful.

Patent Owner argues that the value representing accelerometer output—each of the individual accelerometer readings—is the claimed “brake control signal,” not the claimed “operating point.” PO Resp. 5, 12–13. For the reasons set forth above, this argument is not persuasive as the “brake control signal” is the signal from the accelerometer and the “operating point” is the value (i.e., a level expressed as a voltage) of that signal during non-braking situations.

Patent Owner argues that the operating point must be calculated over a length of time “so that the claimed device more accurately models the real world environment, more accurately estimates the true deceleration of the towing vehicle, and provides for a more efficient and smooth braking experience.” PO Resp. 8 (citing Ex. 2009 ¶ 29). Patent Owner offers an illustrative example where “aberrational force caused by a knee-hit or pothole” would be averaged out. *Id.*; *see also* Tr. 40–41 (providing a “bumpy road” and pothole example). However, Patent Owner fails to point to any intrinsic evidence discussing this pothole theory. *See* PO Resp. at 8–9; Tr. 41–43. Even if the specification discussed the theory, the cited portion of Dr. Martens’s declaration does not support the full extent of Patent Owner’s proposition but, at most, indicates that time variations of accelerometer output due to bumps in the road are filtered out by the ten-reading, two-second rolling average period of the preferred embodiment. Ex. 2009 ¶ 29. Patent Owner, however, takes the position that the claimed invention is not limited to that preferred rolling-average embodiment discussed by Dr. Martens and argues that the claim broadly covers two readings. *See* Tr. 54, 59. Patent Owner does not explain adequately how only two readings, particularly if taken at the preferred embodiment’s interval of 200 milliseconds, yield the purported bump-filtering benefits Patent Owner now attributes to the claimed invention. For the above reasons, Patent Owner’s pothole theory and “real world environment” arguments are not persuasive.

Patent Owner argues “the specification *always* describes the operating point as derived from accelerometer output over a length of time, and not a single instant in time.” PO Resp. 10. As mentioned above, the specification

discusses substantively “operating point” twice. Patent Owner’s Response, however, focuses only on the preferred embodiment and fails to discuss or even acknowledge the specification’s other discussion of this important term. In addition to referencing “operating point” in the context of the preferred embodiment, the specification describes the factory calibration of the accelerometer and describes the output of the accelerometer as the “operating point.” Ex. 1001, col. 5, l. 63–col. 6, l. 5. The specification indicates that the “operating point” merely is the value of the signal (in this case, 2.5 volts representing the output level when the accelerometer is perfectly horizontal). *Id.* Notably, there is no indication in that portion of the specification that the accelerometer is even connected to a processor during this calibration activity and there is no suggestion that this “operating point” requires calculation—by a processor or otherwise—or is anything other than merely the reading of the instantaneous value of the accelerometer output signal. At oral argument, Patent Owner made the conclusory argument that this reference at the top of column 6 of the ’933 specification to the “operating point” is not the “real-world condition operating point” of the claims. Tr. 31–32. Patent Owner offers no persuasive argument as to why we should disregard that portion of the specification or why the claims should be limited to only particular conditions.

For the reasons discussed above, we construe “automatically acquire an operating point of the brake control signal” to mean *obtain by processor operation an operating point of the signal provided by the accelerometer*, where “operating point” is a value representing the level or magnitude of the accelerometer output at a time other than during a braking event.

“Acquir[ing] an operating point” encompasses reading a single value of the

accelerometer output as well as calculating or otherwise determining a value based on multiple readings of the accelerometer output.

B. Anticipation by Robinson

Petitioner argues that claims 1, 2, 5, 14, 15, 18, 27, 28, and 31 are anticipated by Robinson. In support of this assertion, Petitioner provides an analysis of Robinson's disclosure (Pet. 11–12, 15–18) and includes claim charts (*id.* at 40–50) explaining how each limitation of the challenged claims is disclosed in Robinson.

Robinson teaches a system and method for controlling the brakes of a towed vehicle. Ex. 1004, Abstr. Robinson utilizes an accelerometer that reads acceleration in at least two axes. *Id.* A microprocessor continually polls the accelerometer while there is no braking event, to determine the “base line” acceleration and gravitational forces. *Id.* at col. 15, ll. 9–20; *see id.* at col 16, ll. 55–57. The polling of the accelerometer gives the microprocessor a basis for determining the effects due to traveling on an incline, and results in a more accurate application of the brakes by the brake controller. *Id.* at col. 15, ll. 20–30. Upon braking, the microprocessor again polls the accelerometer to determine the actual amount of braking occurring, and an appropriate signal is sent to the brake actuator. *Id.* at col. 15, ll. 23–53.

The control module during operation is mounted in a convenient location such as on the gear shift lever or on the dashboard of the towing vehicle. *See id.* at col. 6, ll. 25–33. Robinson also discloses the use of an LED display on the control module that indicates brake force and system status. *Id.* at col. 7, ll. 57–61. Robinson monitors the brake magnets' integrity and, if brake magnets are not connected, then there will be no status

signal sent to a status LED and the status LED will go out. *Id.* at col. 16, ll. 58–63. Robinson also discloses a power module that receives power input from the trailer battery. *Id.* at col. 9, ll. 51–54. The power module, upon receipt of a signal from the microprocessor, sends power to the brake magnets. *See id.* at col. 9, ll. 55–65.

According to Petitioner, relying on the testimony of Dr. Horenstein, Robinson’s processor inherently has associated with it a memory, reasoning that a processor, in order to function, requires a memory to store executable code. Pet. 16 (citing Ex. 1008 ¶¶ 25, 115, 118, 126, 134). We find this argument and evidence persuasive.

Petitioner maintains that Robinson’s baseline is an “operating” point within the meaning of the challenged claims and that that operating point is automatically acquired by way of the microprocessor’s continuous polling while the vehicle is not braking. Pet. 16, 41–42, 44–45, 48–49.

Patent Owner, in its Response to the Petition, does not dispute that Robinson describes most elements of the claims before us. *See* PO Resp. 14–20. We find Petitioner’s evidence regarding the non-disputed limitations persuasive and adopt Petitioner’s reasoning. *See* Pet. 11–12, 15–18, 40–50. Patent Owner contends, however, that Robinson does not anticipate because it fails to disclose the “automatically acquire an operating point of the brake control signal” feature of the claims. *Id.* at 14. Specifically, Patent Owner argues that Robinson’s base line reading represents accelerometer output at a single instant in time⁷ (*id.* at 15, 18) and

⁷ *But see* Prelim. Resp. 17 (Patent Owner initially arguing that “[t]he base line acceleration [in Robinson], however, is based on several ‘polled’

reiterates its position “that multiple measurements are needed to obtain the ‘operating point’” (*id.* at 16). According to Patent Owner, Robinson’s base line merely is the claimed “brake control signal.” *Id.* at 15, 18. Patent Owner’s argument is not persuasive because, for the reasons set forth above, the properly construed claims are not as narrow as Patent Owner proposes. *See* Section II.A.

There is no dispute that Robinson’s microprocessor obtains, without operator intervention, at least one reading from the accelerometer prior to a braking event and utilizes that reading in determining the appropriate brake control signal. Accordingly, we agree with Petitioner that Robinson discloses the disputed limitation “automatically acquire an operating point of the brake control signal.” As such, we need not reach Petitioner’s alternative argument that Robinson discloses the limitation under Patent Owner’s position that multiple readings are required. *See* Reply 15–22 (regarding summing of the x-axis and y-axis readings and averaging).

Based on the argument and evidence presented in the Petition and having considered the argument and evidence presented by both parties during the trial, we are persuaded that Petitioner has established, by a preponderance of the evidence, that claims 1, 2, 5, 14, 15, 18, 27, 28, and 31 are anticipated by Robinson.

outputs taken over time and does not represent output just prior to braking. Ex. 1004 at 15:8-30.” (emphasis omitted)).

C. Obviousness over Robinson and Guzorek

Petitioner asserts that claims 4, 17, and 30 would have been obvious to a person of ordinary skill in the art over Robinson and Guzorek. Pet. 17–18, 50–56.

Claim 4 depends from claim 2. Claim 2, in turn, depends from independent claim 1 and adds the limitation of a display for providing status and diagnostic information. Claim 4 further limits the display of claim 2 to a dual seven-segment display. Claims 17 and 30 similarly require a dual seven-segment display, and each depends from a claim similar to claim 2.

Robinson does not disclose a seven-segment display but rather discloses a display of LEDs including a set of LEDs where “the number of braking level indicators that are lighted is an indication of braking force.” Ex. 1004, col. 11, ll. 39–44. Petitioner turns to Guzorek for the teaching of the use of a dual seven-segment display in a braking controller context. Pet. 18 (citing Ex. 1005, Fig. 1, 3A (element 76)); *id.* at 50–56 (claim charts); *see also id.* at 12–13 (describing generally Guzorek). A portion of Guzorek’s Figure 1 is shown below.

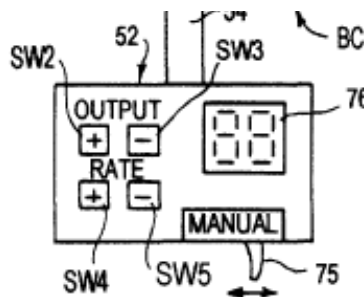


Figure 1 is a schematic diagram illustrating a towed vehicle electric brake control system, with the portion shown above depicting, *inter alia*, two-digit LED display 76 on remote control unit 52. Ex. 1005, col. 3, ll. 55–56, col. 9, ll. 43–46. “[T]he LED display 76 can display the output setting, rate setting,

trailer connect indication, and ‘non-sensor’ mode indication of the microprocessor 51 in the event the force sensor 60 becomes disconnected or is not installed.” *Id.* at col. 9, ll. 47–51.

Petitioner reasons that it would have been obvious to substitute Robinson’s known display with another known display such as Guzorek’s dual seven-segment display as a matter of design choice. Pet. 18 (citing Ex. 1008 ¶¶ 138–142). Patent Owner does not contest that assertion. Patent Owner’s only argument against Petitioner’s obviousness challenge is the assertion that Petitioner has failed to prove that Robinson discloses the “automatically acquire an operating point.” PO Resp. 3–4, 20–21. We found this argument, made in the context of the anticipation ground, unpersuasive for the reasons set forth above.

We are persuaded by Petitioner’s uncontested assertion, and adopt as our own, that the utilization of a dual seven-segment display rather than Robinson’s LED display would have involved merely a simple substitution of one known element for another. We conclude Petitioner has demonstrated by a preponderance of the evidence that claims 4, 17, and 30 would have been obvious in view of the combination of Robinson and Guzorek.

D. Patent Owner’s Motion to Exclude Evidence

Patent Owner moves to exclude certain evidence and certain portions of Petitioner’s Reply. PO Mot. To Exclude (Paper 26). Petitioner opposes the motion to exclude. Pet. Exclude Opp. (Paper 28).

Patent Owner seeks to exclude Exhibit 1012 (Wiley dictionary excerpt), certain portions of Exhibit 1011 (Dr. Horenstein’s reply declaration), and certain portions of Exhibit 1013 (Dr. Marten’s

cross-examination). PO Mot. To Exclude 1, 11. Exhibit 1012 is an excerpt from Wiley Electrical and Electronics Engineering Dictionary. Petitioner relies, in its Reply, on this exhibit for the definition of “baseline.” Reply 20. Patent Owner asserts that most of the other documents sought to be excluded pertain to this dictionary definition. PO Mot. To Exclude 1. We do not rely on or address Petitioner’s reliance on the dictionary definition in our Decision. Therefore, Patent Owner’s motion to the extent it requests to exclude Exhibit 1012 and the related portions of Exhibits 1011 and 1013 is *dismissed as moot*.⁸

Patent Owner seeks to exclude certain statements on pages 6, 20, and 22 of Petitioner’s Reply. PO Mot. To Exclude 1, 14. Patent Owner argues that the statements mischaracterize or misstate Dr. Martens’s testimony and are not probative. *Id.* at 12–14. The Reply brief is not itself evidence, and a motion to exclude is not a proper vehicle for a party to argue that the other party’s arguments are incorrect. In effect, Patent Owner’s motion to exclude is an unauthorized sur-reply. Patent Owner’s request to exclude portions of the Reply is *denied*.

Additionally, Patent Owner seeks to exclude paragraphs 5, 6, and 8 of Exhibit 1011 because the testimony of Dr. Horenstein “reach[es] legal conclusions and do[es] not include technical analysis or techniques that

⁸ For similar reasons, we overrule Patent Owner’s objection, made at the close of the hearing, that the “baseline is an average” argument was raised for the first time in the Reply. Tr. 64. Further, we note that Patent Owner addressed this matter in its Response, prominently pointing to its cross-examination of Petitioner’s expert concerning the same. See PO Resp. 16–20.

would help a trier of fact understand the evidence or to determine the fact in issue in violation of [*Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993)].” PO Mot. To Exclude 11–12. The cited testimony pertains to Dr. Horenstein’s opinions concerning claim construction, and Patent Owner does not indicate clearly the additional facts or technical analysis or techniques Patent Owner contends would be needed to support the opinions. Patent Owner’s arguments go to weight, not admissibility, of the testimony, and the Board is capable of assessing the weight to be given the testimony without excluding it. Patent Owner’s request to exclude the testimony of Dr. Horenstein is *denied*.

III. CONCLUSION

For the reasons given above, Petitioner has shown by a preponderance of the evidence that claims 1, 2, 5, 14, 15, 18, 27, 28, and 31 are unpatentable as anticipated by Robinson, and that claims 4, 17, and 30 are unpatentable as being obvious over Robinson and Guzorek.

IV. ORDER

Accordingly, it is

ORDERED that claims 1, 2, 4, 5, 14, 15, 17, 18, 27, 28, 30, and 31 of the ’993 patent are held *unpatentable*;

FURTHER ORDERED that Patent Owner’s Motion to Exclude is *dismissed-in-part* and *denied-in-part*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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FOR PETITIONER:

Scott R. Brown
Matthew B. Walters
HOVEY WILLIAMS LLP
jcrawford@hoveywilliams.com
mwalters@hoveywilliams.com

FOR PATENT OWNER:

David B. Cupar
Matthew J. Cavanagh
McDONALD HOPKINS LLC
dcupar@mcdonaldhopkins.com
mcavanagh@mcdonaldhopkins.com