

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GRIDCO, INC.,
Petitioner,

v.

VARENTEC, INC.,
Patent Owner.

Case IPR2017-01135
Patent 9,014,867 B2

Before WILLIAM V. SAINDON, JUSTIN T. ARBES, and
FREDERICK C. LANEY, *Administrative Patent Judges*.

LANEY, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

Petitioner Gridco, Inc. filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–3, 8–10, 15–18, and 22 of U.S. Patent No. 9,014,867 B2 (Ex. 1001, “the ’867 patent”) pursuant to 35 U.S.C. § 311(a). Patent Owner Varentec, Inc. filed a Preliminary Response (Paper 6, “Prelim. Resp.”) pursuant to 35 U.S.C. § 313. Pursuant to 35 U.S.C. § 314(a), the Director may not authorize an *inter partes* review unless the information in the petition and preliminary response “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” For the reasons that follow, we have decided not to institute an *inter partes* review.

I. BACKGROUND

A. The ’867 Patent¹

The ’867 patent relates to the optimization of a power distribution grid network. Ex. 1001, 1:28–29. The ’867 patent addresses new requirements for regulating (i.e., controlling) line voltage that were being “driven by distribution renewable energy penetration and the need to increase grid capacity without building new lines or infrastructure.” *Id.* at 5:27–30. Generally, to address these regulation concerns, the Specification describes “[s]ystems and methods for an edge of network voltage control of a power grid.” *Id.* at 2:24–25.

A volt-ampere reactive (“VAR”) device is placed near loads that receive power on the grid to individually regulate the line voltage to quickly

¹ Case IPR2017-01134 involves the same parties and another patent, U.S. Patent No. 9,293,922 B2, in the same family as the ’867 patent. See Pet. 1.

and independently react to events or changes along the power grid and avoid centralized control, wherein centralized control requires knowledge of a complete state of the grid, including all variables that affect load and input. *Id.* at 7:35–46. Multiple VAR devices are “deployed along the length of a typical distribution feeder to flatten the required voltage and respond to network conditions.” *Id.* at 9:15–19.

The Specification describes the VAR device as including a processor configured to control a relay and semiconductor switch that enables or disables a capacitor based on the line voltage. *Id.* at 9:40–54. The VAR processor provides the additional ability to control the switching of the VAR device in a manner that prevents “fighting” between multiple VAR devices. *Id.* at 5:58–61. Infighting results from the VAR devices constantly correcting and re-correcting the line voltage. *Id.* at 19:40–42. To avoid this infighting, the VAR processor is configured to control the timing of the switching (or the point at which VAR compensation is engaged/disengaged) to ensure it is different between the various VAR devices. *Id.* at 6:43–47. The Specification states that the disclosed regulation scheme results in flattening the overall voltage range along the distance from the substation, “thereby saving energy, increasing responsiveness, and improving overall control along longer distribution feeders[, as well as avoiding infighting].” *Id.* at 6:39–47.

B. Illustrative Claim

Claim 1 of the '867 patent recites:

1. A system comprising:
a distribution power network;

a plurality of loads at an edge of the distribution power network, each of the plurality of loads configured to receive power from the distribution power network; and

a plurality of shunt-connected, switch-controlled Volt-Ampere Reactive (“VAR”) sources at the edge of the distribution power network, each of the plurality of shunt-connected, switch-controlled VAR sources configured to detect a proximate voltage at the edge of the distribution power network, each of the plurality of shunt-connected, switch-controlled VAR sources comprising a processor and a VAR compensation component, the processor configured to:

enable the corresponding shunt-connected, switch-controlled VAR source to non-continuously monitor the proximate voltage by waiting for a delay and then evaluating the proximate voltage to determine, after the delay, whether to enable the corresponding VAR compensation component based on the proximate voltage; and

adjust network VAR by controlling a switch to enable the corresponding VAR compensation component based on the determination;

wherein the delay extends for a predetermined length of time;

wherein the delay of each of the plurality of shunt-connected, switch-controlled VAR sources is not equal.

C. The Prior Art

Petitioner relies on the following prior art:

U.S. Patent No. 5,402,057, issued Mar. 28, 1995 (Ex. 1003, “D’Aquila”);

ELECTRIC UTILITY ENGINEERING REFERENCE BOOK, VOLUME 3: DISTRIBUTION SYSTEMS, Westinghouse Electric Corporation (1965) (Ex. 1004, “Green Book”);

Static Var Compensator Models for Power Flow and Dynamic Performance Simulation, 9 IEEE Transactions on

Power Systems 229–240 (Feb. 1994) (Ex. 1005, “IEEE SVC”);
and

NOMAX INSTRUCTION MANUAL 900 SERIES SWITCHED
CAPACITOR CONTROLS, HD Electric Company (2007) (Ex.
1006, “NoMAX”).

D. The Asserted Ground

Petitioner challenges claims 1–3, 8–10, 15–18, and 22 of the ’867
patent on the following grounds:

References	Basis	Claim(s) Challenged
D’Aquila and the Green Book	35 U.S.C. § 103(a) ²	1, 2, 8–10, 15– 18, and 22
D’Aquila, the Green Book, and IEEE SVC	35 U.S.C. § 103(a)	3
The Green Book and NoMAX	35 U.S.C. § 103(a)	1, 2, 8–10, 15– 18, and 22
The Green Book, NoMAX, and IEEE SVC	35 U.S.C. § 103(a)	3
D’Aquila and NoMAX	35 U.S.C. § 103(a)	1, 2, 8–10, 15– 18, and 22
D’Aquila, NoMAX, and IEEE SVC	35 U.S.C. § 103(a)	3

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Because the challenged claims of the ’867 patent are presumptively entitled to at least the filing date of the ’867 patent, which is before the effective date of the applicable AIA amendment, we refer to the pre-AIA version of 35 U.S.C. § 103.

E. Claim Interpretation

The Board interprets claims in an unexpired patent using the “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) (upholding the use of the broadest reasonable interpretation standard).

Independent claims 1 and 3 recite a plurality of shunt-connected, switch-controlled VAR sources, each comprising a processor configured to enable the corresponding VAR source to “*non-continuously monitor the proximate voltage* by waiting for a delay and then evaluating the proximate voltage to determine, after the delay, whether to enable the corresponding VAR compensation component based on the proximate voltage” (emphasis added). Independent claim 17 similarly recites (emphasis added):

non-continuously monitoring the first proximate voltage by waiting for a first delay and then evaluating the first proximate voltage to determine, after the first delay, by the first processor of the first shunt-connected, switch-controlled VAR source, whether to enable the first VAR compensation component based on the first proximate voltage, wherein the first delay extends for a first predetermined length of time.

“Petitioner proposes . . . that ‘non-continuously monitor the proximate voltage,’ be construed as proposed by Patent Owner” in the related litigation. Pet. 11 (citing Ex. 1011, 8); *see also* Ex. 1012, 10–11 (Patent Owner’s claim construction brief). Patent Owner does not address the construction of the phrase in its Preliminary Response. In the related litigation, “[t]he parties agreed” to the district court’s construction of “non-continuously monitor the proximate voltage”: “[w]aiting for a delay and then evaluating the proximate voltage to determine, after the delay, whether to enable a VAR

compensation component based on the proximate voltage but not evaluating the proximate voltage during the delay to determine whether to enable a VAR compensation component.” *Varentec, Inc. v. Gridco, Inc.*, No. 16-217-RGA, 2017 WL 3731243, at *7 (D. Del. Aug. 30, 2017). Considering the claims, Specification, and prosecution history, we are persuaded that this construction is the broadest reasonable interpretation in light of the Specification, and adopt it for purposes of this Decision. We further conclude that only “non-continuously monitor the proximate voltage” requires interpretation for purposes of this Decision.

II. DISCUSSION

Patent Owner challenges the sufficiency of Petitioner’s showing as to how the asserted prior art teaches a shunt-connected, switch-controlled VAR source with a processor configured to enable the VAR source to “non-continuously monitor the proximate voltage,” as recited in independent claims 1 and 3, and similarly recited in claim 17. In particular, Patent Owner contends “[t]he ‘867 Patent claims *non-continuous monitoring* of proximate voltage prior to enabling a VAR source whereas the Cited References teach *continuous monitoring* of voltage.” Prelim. Resp. 24 (emphasis omitted). Because we find this issue dispositive, we need not reach Patent Owner’s other arguments. For the following reasons, we find Petitioner’s proof deficient in demonstrating the prior art discloses a switch-controlled VAR source having a processor configured to enable the VAR source to “non-continuously monitor the proximate voltage” when determining whether to enable the corresponding VAR component.

A. Obviousness Grounds Based on D'Aquila and the Green Book (Claims 1–3, 8–10, 15–18, and 22) and D'Aquila, the Green Book, and IEEE SVC (Claim 3)

Petitioner asserts that claims 1–3, 8–10, 15–18, and 22 are unpatentable over D'Aquila and the Green Book, and claim 3 is unpatentable over D'Aquila, the Green Book, and IEEE SVC, under 35 U.S.C. § 103(a), citing the testimony of Richard Brown, Ph.D., P.E., as support. Pet. 16–35 (citing Ex. 1002). With respect to these grounds, Petitioner argues that D'Aquila “teaches the use of time delays to avoid hunting . . . but does not detail the particular mechanism of the delay to be associated with each capacitor.” *Id.* at 22 (citation omitted). Petitioner, therefore, relies on the Green Book, arguing that “[t]he Green Book . . . details the mechanism for delays that avoid hunting including waiting for a delay and determining, after the delay, whether to enable a VAR compensation component. . . . Hence the Green Book satisfies the non-continuously monitoring portion [of the claims].” *Id.* at 22–23, 32 (citing Ex. 1002 ¶ 76). As support, Petitioner refers to a teaching about “Switched Capacitor Controls” in the Green Book that explains with “Voltage Control[,] a time delay is also required between the time when an operation is called for and when the switching operation actually takes place, to prevent unnecessary switching due to momentary disturbances.” *Id.* at 24 (quoting Ex. 1004, 294). To illustrate this point, Petitioner directs us to Figure 55 (chapter 7) in the Green Book, reproduced below. *Id.* at 24–25.

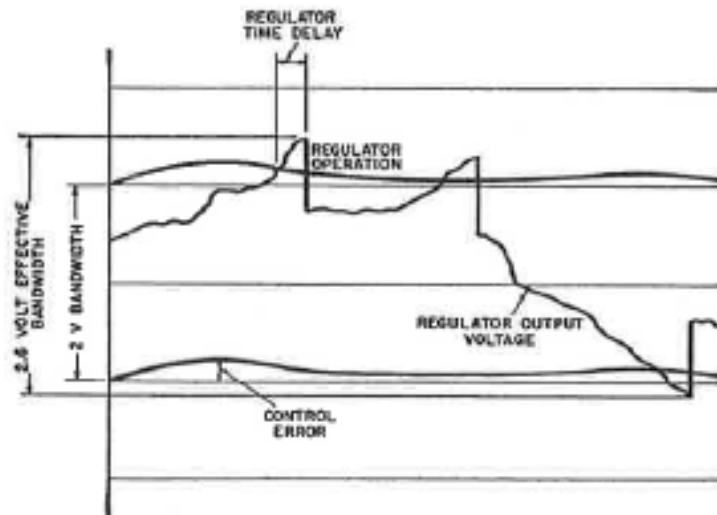


Fig. 55—Voltage-time profile of voltage regulator output voltage illustrating effective bandwidth.

Figure 55 above shows a voltage-time profile of a voltage regulator, including the effect of a regulator time delay. Ex. 1004, 294. Petitioner asserts this figure shows when the voltage either exceeds the upper threshold or falls below the lower threshold, the voltage regulator operation does not immediately begin, but instead delays operation for a period of time before it takes corrective action after determining the voltage remains outside the respective threshold. Pet. 25 (citing Ex. 1002 ¶¶ 81–83).

Petitioner’s evidence supports a finding that the Green Book discloses configuring a voltage regulator to have a time delay between an initial determination of an out-of-threshold-voltage condition and a subsequent out-of-threshold-voltage condition before taking corrective action. This fact, however, begs the question at hand: namely, whether it was known to configure a voltage regulator to not evaluate the proximate voltage *during the time delay*.

As explained above regarding the interpretation of the non-continuous monitoring limitation, the parties agree that during the period of delay, the

claimed VAR processor must “wait[]”—i.e., there is no processing of the proximate voltage for the purpose of determining whether to enable the compensation component. *See supra* Section I.E. Only after “waiting” during the delay period does the claimed processor return to evaluating the proximate voltage to determine whether to enable a VAR compensation component. Although the Green Book clearly shows a regulator delaying corrective action after the initial out-of-threshold-voltage condition occurs, Petitioner fails to identify any evidence that suggests the voltage regulator, during the delay, also stops monitoring the proximate voltage to determine whether to enable the voltage regulator. As a result, we find Petitioner has not carried its burden of showing that the Green Book, alone or in combination with D’Aquila, discloses a switch-controlled VAR source comprising a processor configured to enable the VAR source to “non-continuously monitor the proximate voltage,” as recited in independent claims 1 and 3, and similarly recited in independent claim 17.

B. Obviousness Grounds Based on the Green Book and NoMAX (Claims 1–3, 8–10, 15–18, and 22) and the Green Book, NOMAX, and IEEE SVC (Claim 3)

Petitioner asserts that claims 1–3, 8–10, 15–18, and 22 are unpatentable over the Green Book and NOMAX, and claim 3 is unpatentable over the Green Book, NOMAX, and IEEE SVC, under 35 U.S.C. § 103(a), again citing the testimony of Dr. Brown. Pet. 35–61 (citing Ex. 1002). With respect to these grounds, Petitioner repeats its argument that the Green Book discloses a processor configured to enable a VAR source to “non-continuously monitor the proximate voltage.” Pet. 44–45, 58 (citing Ex. 1002 ¶¶ 146–149). For the reasons discussed above, we are unpersuaded Petitioner has carried its burden of showing that the Green

Book discloses a switch-controlled VAR source comprising a processor configured to enable the VAR source to “non-continuously monitor the proximate voltage,” as recited in independent claims 1 and 3, and similarly recited in independent claim 17.

Petitioner also contends NoMAX teaches the non-continuous monitoring limitation. *Id.* at 45–46. To support this conclusion, Petitioner describes the operation of the NoMAX processor as follows:

The NoMAX processor further provides a time delay between first sensing a voltage condition and evaluating and determining, after the delay, whether to enable or disable the capacitor bank that it controls. In voltage operation, NoMAX has two set points, open volts and close volts, for disengaging and engaging the capacitor bank, respectively. Each set point activates/deactivates the capacitor bank after a time delay.

Id. at 46 (citing Ex. 1006, 4). Here again, however, Petitioner fails to identify any evidence indicating the NoMAX processor, during the delay, stops monitoring the proximate voltage to determine whether to enable the voltage regulator. To the contrary, Patent Owner identifies persuasive evidence suggesting the NoMAX processor *continuously* monitors the proximate voltage during the time delay. Prelim. Resp. 44–45 (citing Ex. 1006, 15). In particular, NoMAX teaches the processor will “automatically abort” switching on a capacitor bank if the voltage returns within the threshold limits for a predetermined amount of time and before the set time delay. Ex. 1006, 15. As a result, we find Petitioner also has not carried its burden of showing that NoMAX, alone or in combination with the Green Book, discloses a switch-controlled VAR source comprising a processor configured to enable the VAR source to “non-continuously monitor the

proximate voltage,” as recited in independent claims 1 and 3, and similarly recited in independent claim 17.

*C. Obviousness Grounds Based on D’Aquila and NOMAX
(Claims 1–3, 8–10, 15–18, and 22) and D’Aquila, NOMAX, and IEEE SVC
(Claim 3)*

Petitioner asserts that claims 1–3, 8–10, 15–18, and 22 are unpatentable over D’Aquila and NOMAX, and claim 3 is unpatentable over D’Aquila, NOMAX, and IEEE SVC, under 35 U.S.C. § 103(a), again citing the testimony of Dr. Brown. Pet. 61–72 (citing Ex. 1002). With respect to these grounds, Petitioner repeats its argument that NoMAX discloses a processor configured to enable a VAR source to “non-continuously monitor the proximate voltage.” *Id.* at 62–63 (citing Ex. 1002 ¶¶ 214–215; Ex. 1006, 4, 14, 15). For the reasons discussed above, we are unpersuaded Petitioner has carried its burden of showing that NOMAX, alone or in combination with D’Aquila, discloses a switch-controlled VAR source with a processor that is configured to enable the VAR source to “non-continuously monitor the proximate voltage,” as recited in independent claims 1 and 3, and similarly recited in independent claim 17.

III. CONCLUSION

In view of the foregoing and because Petitioner has not shown sufficiently that the asserted prior art teaches a shunt-connected, switch-controlled VAR source with a processor configured to enable the VAR source to “non-continuously monitor the proximate voltage,” as recited in independent claims 1 and 3, and similarly recited in independent claim 17, we conclude that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the ’867 patent challenged in

the Petition. Therefore, we do not institute an *inter partes* review on any of the asserted grounds as to any of the challenged claims.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied as to all challenged claims of the '867 patent.

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