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CANTOR COLBURN LLP-BAKER HUGHES, A GE COMPANY, LLC 20 Church Street 22nd Floor Hartford, CT 06103			BOLOURCHI, NADER	
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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* ADAM WHEELER, STEPHEN COULSTON, and PAUL  
HALSTEAD

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Appeal 2019-000074  
Application 15/158,661  
Technology Center 2600

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Before MAHSHID D. SAADAT, ALLEN R. MacDONALD, and  
NABEEL U. KHAN, *Administrative Patent Judges*.

MacDONALD, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the  
Examiner’s decision to reject claims 1–20. We have jurisdiction under  
35 U.S.C. § 6(b).

We reverse.

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<sup>1</sup> We use the word Appellant to refer to “applicant” as defined in 37 C.F.R.  
§ 1.42(a). Appellant identifies the real party in interest as Baker Hughes,  
Incorporated. Appeal Br. 1.

Claim 1 is illustrative of the claimed subject matter (emphasis, formatting, and bracketed material added):

1. A method of communicating between a surface processing unit and an energy industry tool, comprising:
  - [A.] receiving a power signal from a power source at an integrated interface device of a communication and processing system, the communication and processing system located between the surface processing unit and the energy industry tool, the interface device including a processor and a variable output power supply;
  - [B.] receiving a surface communication at the processor from the surface processing unit;
  - [C.] *transmitting a control signal from the processor to the variable output power supply, the control signal including a series of pulses having a duty cycle that is varied to cause the variable output power supply to generate a modulated direct current (DC) output signal having at least one of a frequency and an amplitude that is modulated according to a communication protocol to represent the surface communication;* and
  - [D.] *transmitting the modulated DC output signal from the variable output power supply to the energy industry tool.*

#### REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Abney	US 5,289,560	Feb. 22, 1994
Hesbol	US 2010/0052940 A1	Mar. 4, 2010

## REJECTION

The Examiner rejects claims 1–20 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Hesbol and Abney. *See* Final Act. 12–26.

Appellant separately argues claim 1. Appellant does not present separate arguments for claims 2–20. Thus, the rejection of these claims turn on our decision as to claim 1. Except for our ultimate decision, we do not discuss the § 103(a) rejection of claims 2–20.

## OPINION

We have reviewed the Examiner’s rejection in light of Appellant’s arguments that the Examiner has erred.

The Examiner finds the combination of Hesbol and Abney teaches or suggests, *inter alia*, “transmitting a control signal from the processor to the variable output power supply, the control signal including a series of pulses having a duty cycle that is varied to cause the variable output power supply to generate a modulated direct current (DC) output signal,” and “transmitting the modulated DC output signal from the variable output power supply to the energy industry tool,” recited in claim 1. *See* Final Act. 12–16 (citing Hesbol ¶¶ 2, 28, 30, 32, Fig. 1; Abney 1:6–12, 3:41–4:19, Figs. 1, 4, 6).

Appellant raises the following argument in contending that the Examiner erred in rejecting claim 1 under 35 U.S.C. § 103(a).<sup>2</sup>

[T]he configuration of Hesbol *precludes the reference from teaching the method recited by Claim 1*. To be clear, Claim 1

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<sup>2</sup> Appellant raises additional arguments in contending the Examiner erred in rejecting claim 1 under 35 U.S.C. § 103(a). *See* Appeal Br. 5–8. We do not reach these additional arguments because the identified issue is dispositive of the appeal.

requires “transmitting a control signal from the processor to the variable output power supply.” This “control signal including a series of pulses having a duty cycle that is varied to cause the variable output power supply to generate a modulated direct current (DC) output signal,” which is what is transmitted “from the variable output power supply to the energy industry tool.” *In summary, the claim requires: processor -control signal → variable output power supply -modulated DC output signal → energy industry tool.*

As FIG. 1 of Hesbol shows and FIG. 2 of Hesbol further details, the alternative current/direct current power supply 33 (referred to, per the Examiner’s assertion, as the asserted claimed variable output power supply) supplies the modem 2 (referred to, per the Examiner’s assertion, as the asserted claimed processor). According to paragraph [0033] of Hesbol, the alternative current/direct current power supply 33 (the asserted claimed variable output power supply) outputs a 24 V/100 W direct current output. As FIG. 1 of Hesbol also shows, the external electronic units 26 (referred to, per the Examiner’s assertion, as the asserted claimed energy industry tool) are within the modem 2 (asserted claimed processor) and supplied by the FPGA 4 of the modem 2 (asserted claimed processor). The external electronic units 26 (asserted claimed energy industry tool) are regarded as being outside the modem 2 (asserted claimed processor) for purposes of comparison with the summary of Claim 1 above. *Thus, when summarized, Hesbol describes: asserted claimed variable output power supply -direct current output → asserted claimed processor -binary signal → asserted claimed energy industry tool.*

Thus, even ignoring what is transmitted, the very configuration in Hesbol *precludes the reference from teaching* the claimed “transmitting a control signal from the processor to the variable output power supply,” where the control signal is defined as “including a series of pulses having a duty cycle that is varied to cause the variable output power supply to generate a modulated direct current (DC) output signal,” which is what is transmitted to the energy industry tool. That is, *instead of processor → variable output power supply → energy industry tool, as required by Claim 1, Hesbol describes asserted claimed*

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*variable output power supply* → *asserted claimed processor* →  
*asserted claimed energy industry tool*.

Appeal Br. 8–9 (Appellant’s emphasis omitted; panel’s emphasis added).

In response to Appellant’s arguments, the Examiner further finds:

Therefore, main point of contention is that the Applicant still suggests that the energy industry tool is connected directly and without any intervening device to the variable output power supply and argues that in Hesbol, the energy industry tool is connected to the variable output power supply through the processor.

However, Claim 1 solely recites: “transmitting the modulated DC output signal **from the variable output power supply to the energy industry tool**” (lines 13 and 14 of claim 1, emphasis added), i.e., *the Applicant does not exclusively claim*: “transmitting the modulated DC output signal from the variable output power supply *without any intervening step, function or device, and directly to the energy industry tool*”.

Furthermore, the specification, as originally [filed], explicitly recites (see [para. 52]) and the drawing clearly shows (see Fig. 6) that *the modulated power output signal is transmitted from the interface assembly to the tool over a power line*.

Ans. 19–20 (emphasis added).

In response, Appellant further argues:

The error in the Examiner’s rejection does not stem from an allegation by Appellants that there cannot be any intervening devices between the variable output power supply and the energy industry tool. Instead, Appellants’ arguments were that the specific arrangement and teachings of Hesbol *preclude the reference from teaching the claimed invention*. Specifically, the arrangement of Hesbol precludes the reference from teaching a “control signal from the processor to the variable output power supply . . . to cause the variable output power supply to generate a modulated direct current (DC) output signal . . . and transmitting the modulated DC output signal from the variable output power supply to the energy industry tool,” as required by Claim 1.

Appellants summarized the argument as follows: *instead of processor → variable output power supply → energy industry tool, as required by Claim 1, Hesbol describes asserted claimed variable output power supply → asserted claimed processor → asserted claimed energy industry tool.* However, the discussion preceding this summary makes clear why the alternative current/direct current power supply 33 of Hesbol, which is alleged to teach the claimed variable output power supply, *cannot generate and transmit - directly or indirectly - a modulated DC output signal to the external electronic units 26*, which are asserted to teach the claimed energy industry tool (see e.g., page 6 of the Appeal Brief). The alternating current/direct current power supply 33, which is asserted to teach the claimed variable output power supply, *does not generate any communication at all for transmission - directly or indirectly - to the external electronic units 26*, which are asserted to teach the claimed energy industry tool. Instead, as noted in paragraph [0034] of Hesbol, the alternating current/direct current power supply 33, which is asserted to teach the claimed variable output power supply, *is designed to limit frequencies in a certain range from being fed back into the power line 3 to minimize electronic interference and noise on the power line 3.*

As also stated in the Appeal Brief, the alternative current/direct current power supply 33 of Hesbol, along with the power line 3, is connected to the diplexer 9 of the modem 2, which is asserted to teach the claimed processor. This modem 2, which is asserted to teach the claimed processor, is what communicates with the external electronic units 26, which are asserted to teach the claimed energy industry tool. This gives rise to the summary asserting that *Hesbol describes asserted claimed variable output power supply → asserted claimed processor → asserted claimed energy industry tool.* This indicates that the arrangement of Hesbol *precludes* “control signal from the processor to the variable output power supply” and “transmitting the modulated DC output signal from the variable output power supply to the energy industry tool,” as required by Claim 1, *which is summarized as processor → variable output power supply → energy industry tool.* Thus, with regard to this

argument, *the communication sequence, rather than any intervening devices, is the issue.*

Reply Br. 2–3 (Appellant’s emphasis omitted; panel’s emphasis added).

We are persuaded that, on this record, the Examiner has not shown that the combination of Hesbol and Abney teaches or suggests the aforementioned limitations of claim 1. More specifically, we agree with Appellant that claim 1 recites a sequence of: (a) transmitting a control signal from a processor to a variable output power supply; (b) the control signal causing the variable output power supply to generate a modulated direct current (DC) output signal; and (c) transmitting the modulated DC output signal from the variable output power supply to the energy industry tool. *See* Appeal Br. 9; *see also* Reply Br. 4. However, Hesbol discloses that an alternating current/direct current power supply (identified by the Examiner as the claimed “variable output power supply”) provides energy to a modem (identified as the claimed “processor”) configured to modulate and demodulate binary payload data to and from an electrical signal of a power line in order to limit a range of frequencies from being fed back into the power line. *See* Hesbol ¶¶ 30, 32, 34, Fig. 1. The Examiner has not identified which portion of Hesbol teaches or suggests the modem transmitting a control signal to the alternating current/direct current power supply, where the control signal causes the alternating current/direct current power supply to generate an electrical output signal. The Examiner has also not addressed this discrepancy between the claim and the cited references in its obviousness analysis. Thus, on this record, we do not sustain the rejection.



CONCLUSION

Appellant has established that the Examiner erred in rejecting claims 1–20 under 35 U.S.C. § 103(a).

On this record, claims 1–20 have not been shown to be unpatentable.

DECISION SUMMARY

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1–20	103(a)	Hesbol, Abney		1–20

REVERSED