

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HALLIBURTON ENERGY SERVICES, INC.,
Petitioner,

v.

U.S. WELL SERVICES, LLC,
Patent Owner.

IPR2021-01539
Patent 10,648,311 B2

Before MEREDITH C. PETRAVICK, LYNNE H. BROWNE, and
SEAN P. O'HANLON, *Administrative Patent Judges*.

BROWNE, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Petitioner, Halliburton Energy Services, filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–20 of U.S. Patent No. 10,648,311 B2 (Ex. 1001, “the ’311 patent”). Patent Owner, U.S. Well Services, LLC (“USWS”), filed a Preliminary Response (Paper 6, “Prelim. Resp.”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition and any response thereto shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Considering the Petition, the arguments presented in the Preliminary Response, as well as all supporting evidence, we determine that Petitioner does not show a reasonable likelihood that at least one of the challenged claims is unpatentable. Accordingly, we do not institute *inter partes* review.

A. Real Parties in Interest

Petitioner states that it, “Halliburton Company, and Halliburton Holdings LLC are the real parties in interest.” Pet. 1. Patent Owner states that it, USWS Holdings, LLC, and U.S. Well Services, Inc. are the real parties in interest. Paper 4, 1.

B. Related Matters

The parties state that the ’311 patent has not been asserted in litigation. Pet. 1; Paper 4, 1. The parties state that Petitioner filed petitions for *inter partes* review against other patents held by Patent Owner, including: IPR2021-01032 against U.S. Pat. No. 9,410,410; IPR2021-01033 against U.S. Pat. No. 8,789,601; IPR2021-01034 against U.S. Pat. No. 10,337,308; IPR2021-01035 against U.S. Pat. No. 9,970,278; IPR2021-01036 against U.S. Pat. No. 9,611,728; IPR2021-01037 against U.S. Pat.

No. 9,745,840; IPR2021-01038 against U.S. Pat. No. 10,408,030; IPR2021-01065 against U.S. Pat. No. 9,840,901; IPR2021-01066 against U.S. Pat. No. 10,020,711; IPR2021-01238 against U.S. Pat. No. 10,526,882; IPR2021-01315 against U.S. Pat. No. 9,893,500; IPR2021-01316 against U.S. Pat. No. 10,280,724; and IPR2021-01538 against U.S. Pat. No. 10,408,031. Pet. 1–2; Paper 4, 1.

C. The '311 Patent

1. Specification

The '311 patent, titled “High Horsepower Pumping Configuration for an Electric Hydraulic Fracturing System,” issued May 12, 2020. Ex. 1001, codes (45), (54). It relates to a hydraulic fracturing system for fracturing a subterranean formation including various pump configurations for producing greater horsepower (HP) output with a smaller footprint at a well site. *Id.* at 4:30–33. Figure 3A of the '311 patent is reproduced below.

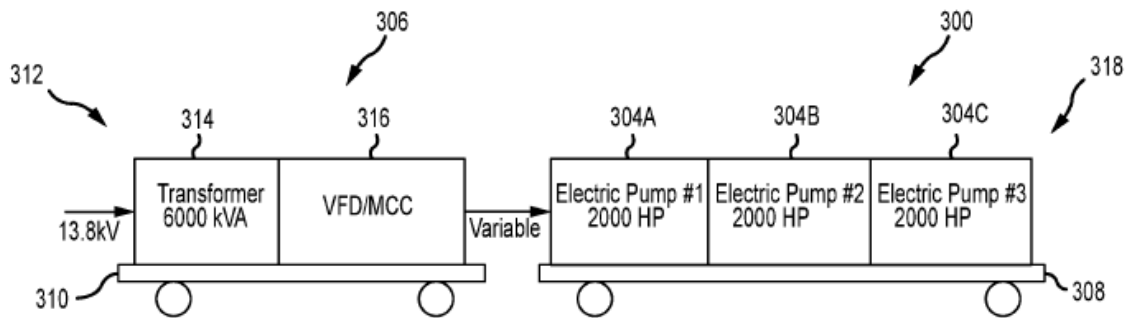


Figure 3A shows a schematic block diagram of pumping configuration 300. *Id.* at 3:17–19. As shown in Figure 3A, pump configuration 300 includes, on the left side of the diagram, first trailer 312. *Id.* at Fig. 3A, 7:21–23. First trailer 312 includes support structure 310 (represented as a wheeled platform). *Id.* at Fig. 3A, 7:19–21. Transformer 314 (represented by a rectangle) is located on top of the left side of support structure 310. *Id.* Variable frequency drive/motor control center (“VFD/MCC”) 316

(represented by a rectangle) is located to the right of transformer 314 on top of support structure 310. *Id.* at Fig. 3A, 7:26–28. An arrow labeled 13.8 kV points to the left side of transformer 314, which is also labeled with 6000 kVA. *Id.* at Fig. 3A. As shown in Figure 3A, pump configuration 300 includes, on the right side of the diagram, second trailer 318. *Id.* at Fig. 3A, 7:30–31. Second trailer 318 includes support structure 308 (represented as a wheeled platform). *Id.* at Fig. 3A, 7:16–21. Electric pumps 304A, 304B, and 304C (each represented as a rectangle) are adjacently located in sequential order from left to right on support structure 308. *Id.* Each electric pump is rated for approximately 2,000 HP (as labeled), “thereby providing a configuration to produce approximately 6,000 HP.” *Id.* at Fig. 3A, 7:31–33.

In operation, transformer 314 steps down the 13.8 kV voltage. Ex. 1001, Fig. 3A, 7:21–23. VFD/MCC 316 controls operation of the electric motor powering the electric pumps (represented by a solid arrow extending from the right side of VFD/MCC 316 to the left side of electric pump 304A). *Id.* at Fig. 3A, 7:26–28. “VFD/MCC 316 may be integrated into a singular unit or may be separate and distinct units.” *Id.* at 7:28–30. The Specification discloses that Figure 3A illustrates “various cabling and instrumentation permanently mounted to the first trailer 312 for supporting the transformer 314 and VFD/MCC 316. As a result, connections may be simplified at the site because separate cabling and the like will not be run between the transformer 314 and the VFD/MCC 316.” *Id.* at 7:33–39.

D. Challenged Claims

Petitioner challenges claims 1–20. Pet. 10–11. Claims 1, 8, and 17 are independent. Ex. 1001, 13:46–67, 14:21–49, 15:13–16:13. Claims 2–7

depend from claim 1. *Id.* at 14:1–20. Claims 9–16 depend from claim 8. *Id.* at 14:50–15:12. Claims 18–20 depend from claim 17. *Id.* at 16:13–23.

Representative claim 1 is reproduced below:

1. A hydraulic fracturing system for fracturing a subterranean formation, comprising:

three electric pumps, arranged on a first support structure, the three electric pumps coupled to a well associated with the subterranean formation and powered by at least one electric motor, and configured to pump fluid into a wellbore associated with the well at a high pressure so that the fluid passes from the wellbore into the subterranean formation and fractures the subterranean formation; and

support equipment, arranged on a second support structure, electrically coupled to the three electric pumps, wherein the support equipment includes at least a transformer for distributing power to at least one of the three electric pumps and a control system for monitoring or controlling one or more operational parameters of the three electric pumps, the power being received from at least one generator at a voltage higher than a respective operating voltage of the three electric pumps, the second support structure having integrated instrumentation and cabling for coupling the transformer and the control system.

Id. at 13:46–67.

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Claims Challenged	32 U.S.C. §	Reference(s)
1–4, 6–20	103	Morris, ¹ Glass ²

¹ Morris et al., U.S. Patent No. 9,534,473 B2, issued Jan. 3, 2017 (Ex. 1004) (“Morris”).

² Glass, U.S. Patent Application Publication No. 2015/0252661 A1, published Sept. 10, 2015 (Ex. 1006) (“Glass”).

Claims Challenged	32 U.S.C. §	Reference(s)
1–4, 6–20	103	Morris, SAE-J1292 ³
1–4, 6–20	103	Morris, Glass, Coli ⁴
1–4, 6–20	103	Morris, SAE-J1292, Coli
1–6	103	Coli, Glass
1–6	103	Coli, SAE-J1292
7, 17–20	103	Coli, Glass, Oehring-114 ⁵
7, 17–20	103	Coli, SAE-J1292, Oehring-114
1–4, 6–20	103	Morris, Glass, De Buda ⁶
1–4, 6–20	103	Morris, SAE-J1292, De Buda
1–4, 6–20	103	Morris, Glass, Coli, De Buda
1–4, 6–20	103	Morris, SAE-J1292, Coli, De Buda
1–6	103	Coli, Glass, De Buda
1–6	103	Coli, SAE-J1292, De Buda
7, 17–20	103	Coli, Glass, Oehring-114, De Buda
7, 17–20	103	Coli, SAE-J1292, Oehring-114, De Buda

Pet. 10–11. In addition to the references listed above, Petitioner relies on the Declaration of Robert Durham, Ph.D. (Ex. 1002). Patent Owner submits a Declaration of Mr. Robert Schaaf (Ex. 2008).

II. ANALYSIS

A. *Level of Ordinary Skill in the Art*

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the

³ SAE Recommended Practice J1292, “Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring” (Oct. 1981) (Ex. 1007) (“SAE-J1292”).

⁴ Coli et al., U.S. Patent Application Publication No. 2012/0255734 A1, published Oct. 11, 2012 (Ex. 1005) (“Coli”).

⁵ Oehring et al., U.S. Patent Application Publication No. 2016/0290114 A1, published Oct. 6, 2016 (Ex. 1008) (“Oehring-114”).

⁶ Eric de Buda, U.S. Patent No. 7,940,039 B2, issued May 10, 2011 (Ex. 1011 (“De Buda”).

technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner contends that a person of ordinary skill in the art at the time of the invention of the '311 patent would have had the following education and experience:

either (1) a Bachelor of Science in Mechanical Engineering, Electrical Engineering, Petroleum Engineering or an equivalent field as well as at least [two] years of academic or industry experience in the oil and gas industry, including well drilling, completion, or production; or (2) at least four years of industry experience in the oil and gas industry[,] including well drilling, completion, or production.

Pet. 4 (citing Ex. 1002 ¶ 55). Patent Owner adopts this definition of the level of skill. Prelim. Resp. 7.

For purposes of this Decision, we also adopt Petitioner's proposal as reasonable and consistent with the prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art may reflect an appropriate level of skill in the art).

B. Claim Construction

For petitions filed on or after November 13, 2018, the "broadest reasonable interpretation" standard has been replaced with the federal court claim construction standard that is used to construe a claim in a civil action under 35 U.S.C. § 282(b). This is the same claim construction standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny.

Neither Petitioner nor Patent Owner provide any explicit construction of any claim terms. Pet. 4; Prelim. Resp. 8. Except to the extent we explain

how we interpret the claims in the analysis below, we decline to otherwise expressly construe any claim terms at this time. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs* in the context of an *inter partes* review).

C. Overview of the Asserted Prior Art

1. Morris

Morris is a U.S. Patent titled, “Mobile Electric Power Generation for Hydraulic Fracturing of Subsurface Geological Formations,” issued January 3, 2017. Ex. 1004, codes (10), (45), (54).

Morris discloses equipment for mobile electric hydraulic fracturing operations located at well sites. Ex. 1004, 1:16–24, 4:41–43. The equipment may include “a fracturing pump transport that comprises a dual shaft electric motor configured to drive at least two pumps.” *Id.* at 5:1–4. Figure 7B is reproduced below.

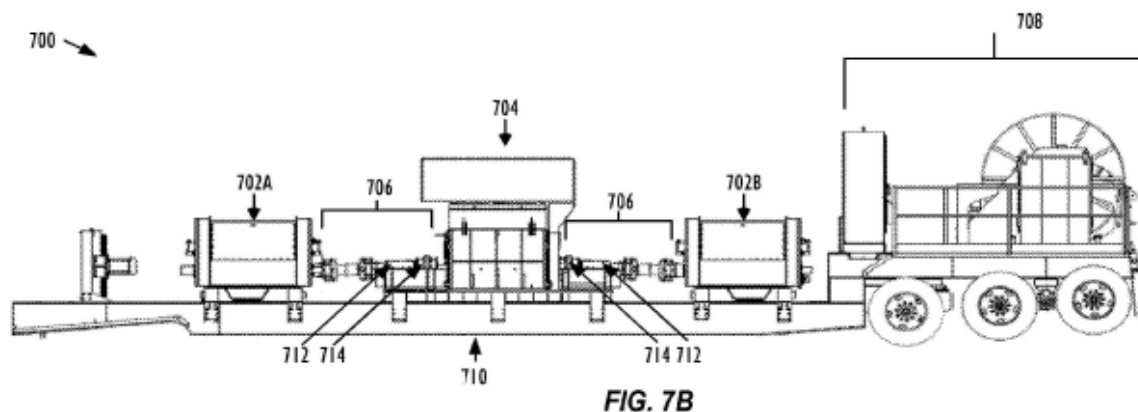


Figure 7B is a schematic diagram of a fracturing pump transport powered by a mobile source of electricity. *Id.* at 3:28–30. Figure 7B

illustrates fracturing pump transport 700 including various equipment located on lay-down trailer 710. *Id.* at Fig. 7B, 15:10–15. Figure 7B illustrates, from left to right, pump 702A connected by drive line assembly 706 to the left side of prime mover 704. *See id.* at Fig. 7B, 16:61–17:2. The right side of prime mover 704 is connected by drive line assembly 706 to pump 702B. *See id.* The Specification refers to this part as the trailer’s lower section, positioned lower than the trailer axles, that may hold or have mounted prime mover 704 and pumps 702A and 702B. *Id.* at 15:28–31. “[P]rime mover 704 may be a dual shaft electric motor that has a shaft that protrudes on opposite sides of the electric motor” so that one side of prime mover 704 drives one pump 702A and the opposite side drives second pump 702B. *Id.* at 15:32–34, 50–52. “[P]umps 702A and 702B are not configured in a series configuration in relation to the prime mover 704. In other words, the prime mover 704 independently drives each pump 702A and 702B such that if one pump fails, it can be disconnected and the other pump can continue to operate.” *Id.* at 15:52–57.

The Specification further describes trailer 710 as having “an upper section above the trailer axles that could hold or have mounted the fracturing pump trailer power and control systems.” Ex. 1004, 15:15–18. Fracturing pump trailer power and control system 708 (represented as a wheeled platform) is located to the right of trailer 710. *See id.* at Fig. 7B.

“[F]racturing pump trailer power and control system 708 may comprise one or more electric drives, transformers, controls 20 (e.g., a programmable logic controller (PLC) located on the fracturing pump transport 700), and cables for connection to the drive power trailers and/or a separate electric pumper system.” *Id.* at 15:18–24.

Morris further describes “auxiliary power transport 106 [that] may comprise a transformer and a control system to control, monitor, and provide power to the electrically connected fracturing equipment.” Ex. 1004, Fig. 1, 6:39–41. “[A]uxiliary power transport 106 may receive the 13.8 KV electrical connection and step down the voltage to 4.8 KV, which is provided to other fracturing equipment.” *Id.* at 6:42–45. “The control system may be configured to connect to a control network system such that the auxiliary power transport 106 may be monitored and/or controlled from a distant location, such as the data van 114 or some other type of control center.” *Id.* at Fig. 1, 6:53–57.

2. *Coli*

Coli is a U.S. Patent Application Publication titled, “Mobile, Modular, Electrically Powered System for use in Fracturing Underground Formations,” that published on October 11, 2012. Ex. 1005 codes (10), (43), (54).

Coli discloses a scalable, electrically powered fracturing fleet for delivering pressurized treatment fluid to a wellbore in a fracturing operation. Ex. 1005 ¶ 36. The fracturing fleet includes one or more trailers, each housing one or more fracturing modules. *Id.* ¶ 38. Figure 3 is reproduced below.

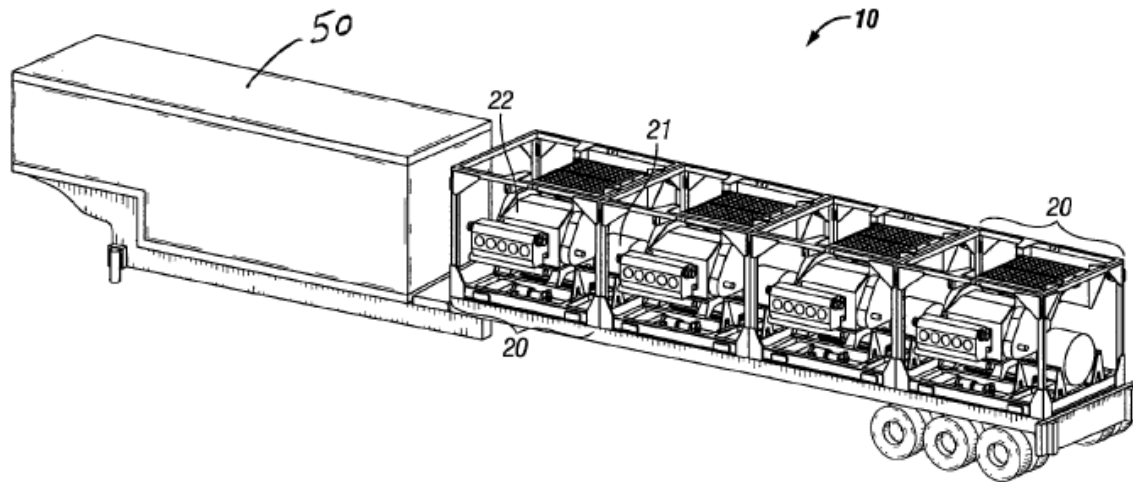


FIG. 3

Figure 3 is a schematic perspective view of a fracturing trailer. *See id.* at Fig. 3, ¶ 40. Fracturing trailer 10 is illustrated as a rectangular platform with various elements mounted thereon. *See id.* The left side of the platform includes electrical transformer and drive unit 50 (represented as a solid box) that can be an independent unit for association with a fracturing module or can be permanently fixed to trailer 10. *Id.* at Fig. 3, ¶ 47. The right side of the platform includes four fracturing modules 20 mounted thereon, and three pairs wheels located below the right end of the platform. *Id.* at Fig. 3, ¶ 40. Each fracturing module includes electric motor 21 paired to pump 22 as illustrated. *Id.*

In use, electrical transformer and drive unit 50 “step down the voltage of the power from turbine generator 30 to a voltage appropriate for electric motor 21.” Ex. 1005 ¶ 47. The system “can deliver a true 2500 hp directly to each pump 22 because pump 22 is directly coupled to electric motor 21,” “allowing for up to 10,000 hp total to the pumps” (for four pumps). *Id.* ¶ 49. A “control system can regulate fracturing module 20 in delivery of treatment fluid from blender module 30 to pumps 22 for delivery to the wellbore.” *Id.* ¶ 65. “When the system operator sets a maximum pressure for the

treatment, the control software and variable frequency drives calculate a maximum current available to the motors. Variable frequency drives essentially ‘tell’ the motors what they are allowed to do.” *Id.*

3. *Glass*

Glass is a U.S. Patent Application Publication titled, “Hydraulic Fracturing System,” published on September 10, 2015. Ex. 1006, codes (10), (43), (54).

Glass discloses a fracturing system including a trailer unit with one or more well service pumps, electrical induction motors being coupled to the pumps, variable frequency drives (“VFD”) coupled to the motors, and a diesel generator coupled to the motors and VFD. Ex. 1006 ¶ 10. The VFD “is mounted on each trailer (including a motor control center or MCC).” *Id.* ¶ 81. “There are also various cables 318 connecting the equipment (e.g., cable from the drive to the motor will run through the trailer frame).” *Id.* ¶ 105, Fig. 1.

4. *SAE-J1292*

SAE-J1292 is a Recommend Practice from the Society of Automotive Engineers titled, “Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring,” published October 1981. Ex. 1007, 1–3. Petitioner contends that “SAE-J1292 was publicly accessible at least by 2005, when it was incorporated by reference into 49 CFR §393.7(b)(14) and §393.28.” Pet. 8 (citing Ex. 1019; Ex. 1020).

SAE-J1292 “covers the application of primary wiring distribution system harnesses to automotive, truck, and similar type vehicles.” Ex. 1007 § 1. SAE-J1292 discloses that for trailer sections, “[a]ll wiring shall be installed in: a. Suitable conduit and boxes, b. Structure of the trailer, and c. Housings and/or raceways which provide equal protection.” *Id.* § 5.1.1.

5. *Oehring-114*

Oehring-114 is a U.S. Patent Application Publication titled, “Modular Remote Power Generation and Transmission for Hydraulic Fracturing System,” published on October 6, 2016. Ex. 1008, codes (10), (43), (54).

Oehring-114 discloses a system for implementing a power generation section for a fracturing system including multiple turbine generators and multiple electrical equipment rooms. Ex. 1008 ¶ 26, Fig. 4. Electricity generated by turbine generators is transmitted to multiple switch gears. *Id.* The output of the switch gears is connected to a step up transformer that increases voltage of the electricity being supplied by the power generation section. *Id.* A step down transformer reduces the voltage of the electricity before flowing through multiple switch gears to equipment loads. *Id.* ¶¶ 26–27, Fig. 4.

6. *De Buda*

De Buda is a U.S. Patent titled, “Transformer Meter and System for Using Same,” that issued on May 10, 2011. Ex. 1011, codes (10), (45), (54).

De Buda discloses a transformer meter configured to record voltage, current, temperature, and energy measurements from the transformer and to communicate those measurements to a remote user. Ex. 1011, 4:47–54. The transformer meter may include current sensors that are clamped onto the terminals of the transformer without dismantling cables connected to the terminals. *Id.* at 4:64–65, 5:12–16. The transformer meter also includes an instrumentation module coupled to the sensors and a communication module coupled to the instrumentation module. *Id.* at 4:65–5:1. “The instrumentation module is programmed to measure and record both the voltage across and the current passing through the transformer over a given

time interval.” *Id.* at 6:10–12. The communication module transmits the data to a remote data collector. *Id.* at 5:66–6:2.

D. Obviousness of claims 1–4 and 6–20 based on Morris

Grounds 1A–2B and 5A–5D all rely on *Morris* as the base reference in challenging claims 1–4 and 6–20. Pet. 13–54, 80–82. For each of these challenges, Petitioner asserts that *Morris* discloses three electric pumps. *See id.* For example, for independent claim 1, which requires three electric pumps, Petitioner asserts that *Morris*’s “disclosure is not limited to only two pumps, because *Morris* states the fracturing transport includes ‘at least two pumps.’” Pet. 16. For independent claims 8 and 17, which similarly require three electric pumps, Petitioner makes the same assertion. *Id.* at 37, 46. Based on their dependence from claims 1, 8, or 17, Petitioner makes the same assertion for dependent claims 2–4, 6, 7, 9–17, and 18–20. Alternatively, Petitioner asserts that “[t]o the extent ‘three’ electric pumps is not expressly disclosed, it would have been obvious to use ‘three’ pumps.” *Id.* at 16 (citing Ex. 1001, 13:48–49; Ex. 1002 ¶¶ 143–144).

Patent Owner argues that “Petitioner’s obviousness analysis is deficient because Petitioner has failed to show that *Morris* teaches ‘three electric pumps,’ as recited in the independent claims.” Prelim. Resp. 35. Specifically, Patent Owner argues that “*Morris* only teaches two electric pumps and teaches away from adding additional pumps” and notes that “during prosecution even the Examiner stated that *Morris* discloses ‘two electric pumps’ and relied on a separate reference *Brunette* to teach ‘three electric pumps.’” *Id.* (citing Ex. 1004; Ex. 1003, 1085).

In support of its argument that *Morris* teaches away from adding additional pumps, Patent Owner asserts that “*Morris* teaches using a dual shaft electric motor as the prime mover 704 to drive two pumps 702A, 702B

not in a series.” Prelim. Resp. 35 (citing Ex. 1004, 7:20–24, 15:50–54; Ex. 2008, 61). Patent Owner asserts further that “*Morris* teaches the ‘pumps 702A and 702B may not be configured in a series configuration where the prime mover 704 drives a first pump 702A and the first pump 702B [*sic*] subsequently drives a second pump 702B.’” *Id.* at 35–36 (citing Ex. 1004, 16:28–31; Ex. 2008, 61). Patent Owner argues that because in *Morris* “a pump is already connected to each shaft at opposite ends of the prime mover, a third pump can only be added in series with one of the pumps already attached to the prime mover,” which goes against *Morris*’s teaching that the pumps may not be configured in series. *Id.* at 36 (citing Ex. 2008, 61).

On the record before us, we agree with Patent Owner that *Morris* does not disclose three pumps. Although *Morris* refers to “at least two” pumps in column 5 at lines 1–4, *Morris* makes no other reference to more than two pumps. Rather, throughout its disclosure *Morris* refers generally to “at least one pump” or specifically to first 702A and second 702B pumps. *See, e.g.*, Ex. 1004, 7:18–28, 15:50–57. Further, we agree with Patent Owner that *Morris*’s teaching of two pumps connected in parallel to opposite sides of a prime mover to allow one of the pumps to be “disconnected [while the] other pump continues to operate” would discourage pursuit of a configuration including a third pump which would necessarily have to be connected in series with either the first or second pump, such that *Morris* teaches away from the proposed modification. Ex. 1004, 15:54–57; *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

Moreover, even if *Morris* does not teach away from the proposed combination, Petitioner fails to adequately explain why one of ordinary skill in the art would modify *Morris* to use three pumps. *Morris* already provides

for redundancy in that it provides two pumps. *See, e.g.*, Ex. 1005, 7:24–28, 15:50–57. Further, we do not agree with Petitioner that Morris teaches using “an increased quantity of relatively small . . . pumps.” Pet. 19 (citing Ex. 1004, 16:24–28). Although Morris describes “pumps 702A and 702B [that] may each operate from a range of about 1,500 HP to about 5,000 HP,” Morris does not disclose more than two pumps in this part of its disclosure, and Morris reiterates that the pumps may not be connected in a series configuration. *Id.* at 16:23–24; *see also id.* at 16:25–29. Further, Petitioner does not adequately explain how additional pumps would be added to Morris’s prime mover without connecting those pumps in series.

We also disagree with Petitioner’s assertion that “[u]sing three instead of two pumps presents nothing more than ‘result-effective variables’ (e.g., tradeoffs between footprint, horsepower, and expense).” Pet. 20 (citing *In re Applied Materials, Inc.*, 692 F.3d 1289, 1297-98 (Fed. Cir. 2012)). Rather, we agree with Patent Owner that “Petitioner has failed to show that the ratio of pumps was result-effective.” Prelim. Resp. 36. *See In re Antonie*, 559 F.2d 618, 620 (CCPA 1977) (explaining that, in order to rely on routine optimization to render the value of a claimed variable obvious, the variable must first be recognized in the art as one affecting the result).

For these reasons, we determine that on the record before us, Petitioner fails to demonstrate a reasonable likelihood of prevailing in showing that independent claims 1, 8, or 17 or their dependent claims 2–4, 6, 7, 9–16, and 18–20 are unpatentable based on the challenges set forth in Grounds 1A–2B and 5A–5D.

E. Obviousness of claims 1–7 and 17–20 based on Coli

Grounds 3A–4B and 5E–5H all rely on Coli as the base reference in challenging claims 1–7 and 17–20. Pet. 55–82. For each of these

challenges, Petitioner asserts that Coli suggests integrated instrumentation and cabling for coupling the transformer and control system. For example, for claim 1, which requires a “second support structure having integrated instrumentation and cabling for coupling the transformer and the control system,” Petitioner asserts that “[i]t would have been obvious over Coli to have integrated instrumentation and cabling for coupling the transformer and control system.” *Id.* at 59. For claim 17, Petitioner makes the same assertion. *Id.* at 78. Based on their dependence from claims 1 or 17, Petitioner makes the same assertion for claims 2–7 and 18–20. Pet. 59, 78. Alternatively, Petitioner asserts that integrated instrumentation and cabling for coupling the transformer and control system “would also have been obvious over Coli in view of Glass [or] SAE-J1292.” *Id.* at 60, 78.

Patent Owner argues that “Petitioner fails to show that the references teach ‘the second support structure having integrated instrumentation and cabling for coupling the transformer and the control system.’” Prelim. Resp. 41–42. Noting that “Petitioner argues ‘it was general engineering knowledge for transformers to have integrated sensors to measure temperature,’” Patent Owner asserts that the claims, however, “recite ‘the second support structure having integrated instrumentation and cabling,’ not the transformer.” *Id.* at 42 (citing Pet. 60; Ex. 1001, claims).

Turning to Glass and SAE-J1292, Patent Owner argues that “neither reference teaches ‘integrated instrumentation’” and that “neither *Glass* nor *SAE-J1292* teach integrating the cable with the second support structure.” Prelim. Resp. 42 (citing Ex. 2008. 66, 67). Specifically, Patent Owner contends that “*Glass* merely suggests passing the cable through the trailer frame and does not teach integrating the cable with the trailer frame” and that “*SAEJ1292* generally teaches the vehicle body structure having channels

for wiring, but does not teach integrating the cable with the vehicle body structure.” *Id.* (citing Ex. 2008, 66–67).

On the record before us we agree with Patent Owner that none of Coli, Glass, or SAE-J1292 discloses or suggests a “second support structure having integrated instrumentation and cabling for coupling the transformer and the control system” as required by independent claims 1 and 17. Ex. 1001, 13:65–67, 16:9–12. As described in the ’311 patent, a support structure having integrated instrumentation and cabling as claimed provides simplified connections that “reduce the likelihood of misconnections at the well site.” *Id.* at 7:42–43; *see also id.* at 7:28–42. Petitioner does not identify where Coli discloses such a structure. Further, we agree with Patent Owner that neither Glass nor SAEJ1292 cure this deficiency in Coli as their teachings are limited to cabling and do not address integrated instrumentation.

For these reasons, we determine that on the record before us, Petitioner fails to demonstrate a reasonable likelihood of prevailing in showing that independent claims 1 or 17 or their dependent claims 2–7 and 18–20 are unpatentable based on the challenges set forth in Grounds 3A–4B and 5E–5H.

F. Discretionary Denial Under 35 U.S.C. § 314(a) and 325(d)

As we have determined that Petitioner does not demonstrate a reasonable likelihood of prevailing for any claim on any ground, we need not consider whether application of the Director’s discretionary authority to deny institution in accordance with 35 U.S.C. §§ 314(a) or 325(d) is appropriate in this proceeding.

III. CONCLUSION

For the reasons discussed above, Petitioner has not demonstrated a reasonable likelihood of prevailing for any challenged claim.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *denied* as to all challenged claims, and no trial is instituted.

IPR2021-01539
Patent 10,648,311 B2

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