

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.

IPR2021-01066
Patent 10,020,711 B2

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

PETRAVICK, *Administrative Patent Judge*.

DECISION
Granting 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. 10,020,711 B2 (Ex. 1001, “the ’711 patent”). Patent Owner U.S. Wells Services, LLC filed a Preliminary Response (Paper 6, “Prelim. Resp.”). With our authorization, Petitioner filed a Reply to Patent Owner’s Preliminary Response (Paper 7, “Reply”) and Patent Owner filed a Sur-Reply (Paper 8, “Sur-reply”).

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.” Having considered the Petition, the Preliminary Response, the Reply, and the Sur-reply, as well as all supporting evidence, we determine that Petitioner shows a reasonable likelihood that at least one of the challenged claims is unpatentable. Accordingly, we institute *inter partes* review.

A. Related Matters

Patent Owner has not asserted the ’711 patent in district court litigation against Petitioner. Pet. 1; Paper 4, 1. Patent Owner, however, has asserted other patents and, in particular, related patents U.S. Patent No. 10,337,308 (“the ’308 patent”) and U.S. Patent No. 9,410,410 (“the ’410 patent”) are asserted in *U.S. Well Services, Inc. v. Halliburton Company*, Case No. 6:21-cv-00367 (W.D. Tex.). Pet. 1–2; Paper 4, 1.

Petitioner has not filed any other petitions challenging the ’711 patent. Petitioner has filed petitions for *inter partes* review challenging Patent Owner’s other patents. Pet. 2; Paper 4, 2. For example, U.S. Patent No. 9,840,901 (“the ’901 patent”) is the subject of IPR2021-01065. The ’410

patent is the subjected of IPR2021-01032 and the '308 patent is the subject of IPR2021-01034. Pet. 2; Paper 4, 2. We instituted *inter partes* review in IPR2021-01032, IPR2021-01034, and IPR2021-01065.

B. The '711 Patent

1. Summary

The '711 patent is titled “System for Fueling Electric Powered Hydraulic Fracturing Equipment with Multiple Fuel Sources” and issued on July 10, 2018. Ex. 1001, codes (45), (54).

The '711 patent explains that fracturing equipment is usually powered by large diesel motors or other internal combustion engines, which have certain disadvantage because diesel is expensive, unfriendly to the environment, and heavier to transport than natural gas. *Id.* at 1:43–48. “It is thus desirable that a natural gas powered fracturing system be used in order to improve safety, save costs, and provide benefits to the environment over diesel powered systems.” *Id.* at 1:62–65. The '711 patent also explains that “[t]urbine use is well known as a power source” and that “[m]ost turbines are configured only to be fueled by natural gas, and the associated gas compression systems are typically only capable of handling natural gas to feed the turbines.” *Id.* at 1:66 –2:6. However “turbine generators come with their own limitations and difficulties as well.” *Id.* 2:2–3.

The '711 patent is

directed to a system and method for fueling one or more turbines using a variety of fuel sources besides natural gas, including liquid fuels and gasified solid fuels. The fueled turbines are then used to power electric hydraulic fracturing equipment.

Id. at 2:12–16.

Figure 1 of the '711 patent is reproduced below.

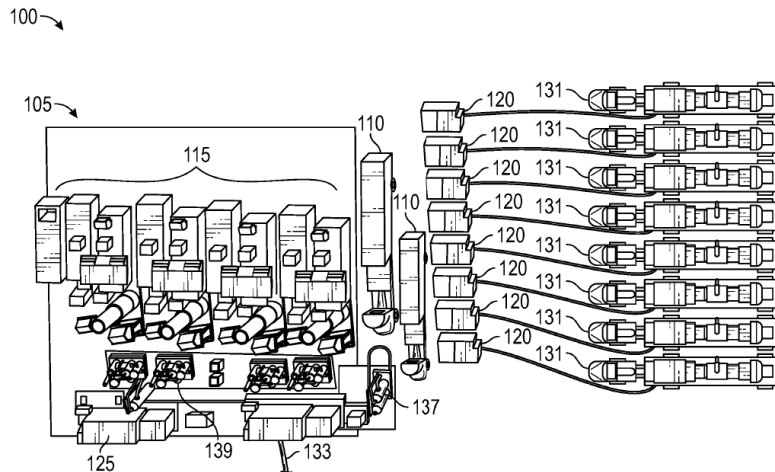


FIG. 1

Figure 1 depicts an example of a power generation system for a hydraulic fracturing system having power generating turbine and gas compression. *Id.* at 3:49–52. Gas enters through main gas line 133 and enters compressors 125. *Id.* at 4:40–42. Compressed gas then enters turbines 115 near switch gear units 110 and transformers 120. *Id.* at 4:45–49. Fracturing pump 120 are electrically couples to transformers 120. *Id.* at 4:49–51. The '711 patent describes that “[a] combustible liquid fuel vaporization system can be used along with an existing gas compression system to allow the turbines to utilize multiple types of combustible liquids.” *Id.* at 4:60–63.

2. *Effective Filing Date of the '711 Patent*

The '711 patent matured from U.S. Patent Application No. 15/487,656, filed on April 14, 2017. Ex. 1001, codes (21) (22). The '711 patent claims priority as a continuation-in-part of U.S. Patent Application No. 15/235,788 (“the '788 application”) (now the '901 patent) which, in turn, is a continuation-in-part of U.S. Patent Application No. 15/202,085 (“the '085 application”) (now the '308 patent), filed on July 5, 2016. *Id.* at code (63). The '085 application is a continuation-in-part of U.S. Patent

Application No. 13/679,689 (now the '410 patent), filed on November 16, 2012. *Id.* Additionally, the '711 patent claims priority to U.S. Provisional Patent Application No. 62/323,303 (“the '303 application”), filed on April 15, 2016. *Id.* at code (60).

Petitioner asserts that the '711 patent is not entitled to priority to the November 16, 2012, filing date of the '085 application because the '788 patent and the '085 application do not share any common inventors. Pet. 9–10. Petitioner also asserts that the '788 applications fails to include sufficient written description for certain limitations of independent claims 1 and 13. Pet. 10. Similarly, Petitioner contends that the '711 patent is not entitled to priority to the filing date of the '303 application because the '303 application fails to include sufficient written description certain limitations. *Id.* Petitioner argues, thus, the effective filing date of the '711 patent is April 14, 2017, the filing date of U.S. Patent Application No. 15/487,656. *Id.* at 8.

As this stage of the proceeding, Patent Owner does not dispute Petitioner’s assertion that the effective filing date is April 14, 2017. Patent Owner responds, “[f]or purposes of this Response, USWS has used Petitioner’s proposed priority date of April 14, 2017. Petition, 8. USWS reserves the right to present evidence of an earlier priority date for claims of the '711 Patent if this IPR is instituted.” Prelim. Resp. 9.

On this record and absent any evidence to the contrary, Petitioner’s arguments are persuasive. First, we are persuaded that the '711 patent is not entitled to priority to the November 16, 2012, filing date of the '085 application because the '788 application and the '085 application do not share any common inventors. See U.S.C. § 120 (“which names an inventor or joint inventor in the previously filed application”); 37 C.F.R. § 1.78(d)(1)

(“Each prior-filed application must name the inventor or a joint inventor named in the later-filed application as the inventor or a joint inventor”). The ’788 application names Jared Oehring and Brandon N. Hinderliter as inventors. Ex. 1012, code (72). The ’085 application names Joel N. Broussard, Jeff McPherson, and Robert Kurtz as inventors. Ex. 1013, code (72).

We have reviewed the ’788 application and determine that the ’788 applications fails to include sufficient written description as required by 35 U.S.C. § 120 for the following limitations of independent claims 1 and 13:

“a gas compression system fluidly coupled to [] at least one generator so as to provide fuel for use by the at least one generator” (Ex. 1001, 13:52–54, 14:52–54, claims 1, 13);

“an inert gas source providing an inert gas to regulate the fuel provided to the at least one generator” (*id.* at 13:55–56, claim 1).

See generally Ex. 1004.

Additionally, we are persuaded that the ’711 patent is not entitled to priority to the filing date of the ’303 application because the ’303 application fails to include sufficient written description, as required under 35 U.S.C. § 119(e). We have reviewed the ’303 application and, on this record and absent any explanation or evidence to the contrary, determine that it does not provide adequate written description support for the following limitations:

a plurality of electric pumps fluidly connected 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
(Ex. 1001, 13:42–48, 14:42–48, claims 1, 13); and
a variable frequency drive connected to the at least one electric motor to control speed of the at least one electric motor, wherein the variable frequency drive frequently performs electric motor diagnostics to prevent damage to the at least one electric motor
(*id.* at 14:59–63, claim 13). *See generally* Ex. 1014.

Accordingly, on this record, we are persuaded that the effective filing date of the '711 patent is April 14, 2017.

C. Challenged Claims

Petitioner challenges claims 1–20. Claims 1 and 13 are independent claims. Claims 2–12 depend from claim 1, and claims 14–20 depend from claim 13.

Claims 1 and 13 are illustrative and are reproduced below, with labeling added.

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

- [1a] a plurality of electric pumps fluidly connected 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;
- [1b] at least one generator electrically coupled to the plurality of electric pumps so as to generate electricity for use by the plurality of electric pumps;
- [1c] a gas compression system fluidly coupled to the at least one generator so as to provide fuel for use by the at least one generator;
- [1d] an inert gas source providing an inert gas to regulate the fuel provided to the at least one generator; and

[1e] a combustible fuel vaporization system gaseously coupled to the gas compression system so as to provide at least one of vaporized fuel or gasified fuel, or a combination thereof, to the gas compression system.

13. A hydraulic fracturing system for fracturing a subterranean formation comprising:

[13a] a plurality of electric pumps fluidly connected 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;

[13b] at least one turbine generator electrically coupled to the plurality of electric pumps so as to generate electricity for use by the plurality of electric pumps;

[1c] a gas compression system fluidly coupled to the at least one turbine generator so as to provide fuel for use by the at least one turbine generator;

[13d] a combustible fuel vaporization system gaseously coupled to the gas compression system so as to provide at least one of vaporized fuel or gasified fuel, or a combination thereof, to the gas compression system; and

[13e] a variable frequency drive connected to the at least one electric motor to control the speed of the at least one electric motor, wherein the variable frequency drive frequently performs electric motor diagnostics to prevent damage to the at least one electric motor.

Ex. 1001, 13:40–60, 14:40–63.

D. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–10, 12	103(a)	Sanborn, ¹ Blutke ²
11, 13–20	103(a)	Sanborn, Blutke, West ³
1–20	103(a)	Broussard, ⁴ Blutke
1–10, 12	103(a)	Sanborn, Blutke, Roby ⁵
11, 13–20	103(a)	Sanborn, Blutke, West, Roby
1–20	103(a)	Broussard, Blutke, Roby

Pet. 20. In addition to the references listed above, Petitioner relies on the Declaration of Dr. Mark Ehsani (Ex. 1003). Patent Owner relies upon the Declaration of Robert Schaaf (Ex. 2008).

II. ANALYSIS

A. Discretionary Denial Under 35 U.S.C. § 314(a)

Patent Owner argues that we should exercise our discretion to deny the Petition under 35 U.S.C. § 314(a) because Petitioner has filed fifteen *inter partes* review petitions challenging fifteen patents in Patent Owner’s portfolio. Prelim. Resp. 13–24; *see also* Sur-reply 1–2. Seven of the patents are asserted in district court litigation *U.S. Well Services, Inc. v. Halliburton Company*, Case No. 6:21-cv-00367-ADA in the Western District of Texas between Patent Owner and Petitioner and eight are not. Prelim. Resp. 5–6.

¹ Sanborn et al., U.S. Patent Application Publication No. 2013/0306322 A1, published Nov. 21, 2013 (Ex. 1004) (“Sanborn”).

² Blutke et al., U.S. Patent No. 7,279,655 B2 (Ex. 1006) (“Blutke”).

³ PCT Int’l Patent App. Publication WO2014/116761 A1 (Ex. 1008) (“West”).

⁴ Broussard et al, U.S. Patent Application Publication No. 2014/0138079 A1 (Ex. 1005) (“Broussard”).

⁵ Roby et al., U.S. Patent No. 7,770,396 B2 (Ex. 1007) (“Roby”).

The '711 patent is not asserted in the district court litigation. Pet. 1, Paper 4, 2.

Patent Owner argues that Petitioner should not be allowed to “attack” Patent Owner’s patent portfolio. Prelim. Resp. 14. According to Patent Owner, Petitioner’s attack harms innovation, the economy, the public at large, and is contrary to the purposes of the AIA⁶. *See generally id.* at 13–24. In particular, Patent Owner alleges that Petitioner is using the *inter partes* review process for improper purposes and, thus, abusing the process. According to Patent Owner,

Petitioner is using the IPR process as a weapon to coordinate an attack against USWS’s patent portfolio to both neutralize its patents and as a likely litigation strategy to drain USWS of resources in the underlying litigation. H.R. Rep. No. 112-98, pt. 1, at 40 (2011); Ex. 2005. Instead of being a shield to egregious patents, the IPR process is being used to affect the economy and undermine the patent system.

Prelim. Resp. 16. Patent Owner alleges that “the barrage of repeated attacks to USWS’s patent portfolio” “raises the possibility . . . , that Petitioner’s heaving and endless utilization of IPR petitions to challenge USWS’s patent portfolio is an attempt to weaponize the IPR process, and impose increased cost and leverage on USWS’s valuable technology in an attempt to overtake this sector of the market.” *Id.* at 17.

Petitioner responds that “[t]his is not the case of multiple attacks on the same patent, and Petitioner’s IPR petitions align with the intent of the AIA.” Reply 1. Petitioner points out that “there has only been a *single* petition against the '711 Patent.” *Id.* at 3. Noting that Patent Owner issued

⁶ Leahy-Smith American Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (2011).

a press release regarding the litigation it filed against Petitioner, Petitioner argues that it “should not need to sit idle against a looming cloud of other patents.” *Id.* at 2 (citing Ex. 1018).

Unlike the covered business method patent review provisions of the AIA, neither the statute nor our rules require that Petitioner have been sued for infringement of the challenged patent in order to be able to file a petition for *inter partes* review. *See* 35 U.S.C. § 311, AIA § 18(a)(1)(B), 37 C.F.R. §§ 42.101, 42.302. However, “[i]n deciding whether to institute the trial, the Board considers at a minimum whether or not a party has satisfied the relevant statutory institution standard.” Consolidated Trial Practice Guide, 55 (citing 35 U.S.C. § 314(a)). “The Board will also take into account whether various considerations . . . warrant the exercise of the Director’s discretion to decline to institute review,” and our exercise of “discretion is informed by 35 U.S.C. §[] 316(b) [], which require[s] the Director to ‘consider the effect of any such regulation [under this section] on the economy, the integrity of the patent system, the efficient administration of the Office, and the ability of the Office to timely complete proceedings instituted under this chapter.’” *Id.* at 55–56.

We are not persuaded by Patent Owner that the circumstances here warrant exercise of discretion to deny the Petition. Patent Owner cites to our precedential case *General Plastic Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 (P.T.A.B. Sept. 6, 2017). Sur-reply 1–2. Patent Owner’s arguments for exercising discretion to deny institution, however, do not correspond to typically considered factors articulated in *General Plastic* because, as both parties indicate, this is not a case of follow-on petitions or multiple petitions challenging the ’711 patent. Reply 3; Sur-reply 1. There has only been a single petition for *inter partes* review filed against the ’711

patent. Patent Owner cites to no other Board decisions with sufficiently similar circumstances where we exercise discretion to deny a Petition under 35 U.S.C. § 314.

Patent Owner contends that we should exercise the Director's discretion to deny institution for a number of reasons, for example, because Petitioner's challenges to Patent Owner's patents are allegedly "an attempt to weaponize the IPR process, and impose increased costs and leverage on USWS's valuable technology in an attempt to overtake this sector of the marketplace." Prelim. Resp. 17. We have considered all of Patent Owner's allegations and are not persuaded that exercising discretion is warranted. Patent Owner's allegations are not supported by sufficient evidence and, to the contrary, it is undisputed that Petitioner has asserted seven of its patents against Petitioner in district court litigation. Petitioner expresses reasonable concern that Patent Owner may initiate additional district court litigation regarding its as yet unasserted patents. *See Reply 2.*

Accordingly, for the foregoing reasons, we decline to exercise discretion under 35 U.S.C. § 314(a) to deny institution.

B. Discretionary Denial Under 35 U.S.C. § 325(d)

Section 325(d) provides that the Director may elect not to institute a proceeding if the challenge to the patent is based on matters previously presented to the Office. 35 U.S.C. § 325(d) states, in pertinent part, that "[i]n determining whether to institute or order a proceeding under this chapter, chapter 30, or chapter 31, the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office." The Board uses a two-part framework for evaluating arguments under § 325(d):

(1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and

(2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”). “[T]he *Becton, Dickinson* factors provide useful insight into how to apply the framework under 35 U.S.C. § 325(d).” *Id.* at 9 (footnote omitted). The non-exclusive *Becton, Dickinson* factors are:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;
- (e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and
- (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph) (“*Becton, Dickinson*”). *Becton, Dickinson* factors (a), (b), and (d) relate to the first part of the *Advanced Bionics* framework (whether the same or substantially the same art or arguments previously were presented to

the Office), and *Becton, Dickinson* factors (c), (e), and (f) relate to the second part of that framework (previous Office error). *Advanced Bionics*, Paper 6 at 9–11. Only if the same or substantially the same art or arguments were previously presented to the Office do we then consider whether the petitioner has demonstrated a material error by the Office. *Id.*

Under § 325(d), the art or arguments must have been previously presented to the Office during proceedings, such as examination of the underlying patent application, pertaining to the challenged patent. *Advanced Bionics*, Paper 6 at 7. Previously presented art includes art made of record by the Examiner, and art provided to the Office by an applicant, such as on an Information Disclosure Statement (“IDS”), in the prosecution history of the challenged patent. *Id.* at 7–8.

Patent Owner contends the same or substantially the same art and arguments cited by Petitioner were already considered by the Office, and Petitioner failed to show or even suggest how the Office may have erred. Prelim. Resp. 24–39. Specifically, Patent Owner contends that 1) Sanborn and Broussard were previously considered by the Office because Sanborn and Broussard were cited on IDSs during prosecution and 2) Blutke, West, and Roby are cumulative or substantially the same as other prior art cited during prosecution. *Id.* at 27–35; Sur-reply 2–5.

Regarding *Becton, Dickinson* factors (a), (b) and (d), we determine that the first part of the *Advanced Bionics* framework is not satisfied with respect to all the grounds. Sanborn and Broussard were previously considered by the Office because Sanborn and Broussard were cited on IDSs during prosecution of the ’711 patent. Ex. 1002, 118, 233. Blutke, West, and Roby, however, were not previously considered by the Office during prosecution. *See generally* Ex. 1002.

Patent Owner argues that Blutke, West, and Roby are cumulative of other prior art cited during prosecution; for example, Patent Owner argues that Blutke is cumulative of Fick⁷ because they both disclose a fuel gasification system and that Roby is cumulative of Collette⁸. Prelim. Resp. 28–31; Sur-reply 4–5. Petitioner disputes that Blutke and Roby are cumulative because, for example, Blutke, unlike Fick, discloses a fuel gasification system that does not require oxygen to generate fuel gas, discloses converting both solid and liquid carbonaceous materials into fuel gas, and discloses a gas compression system or vaporized gas heating system as required by the claims of the '711 patent. Reply 5. Petitioner also argues that Roby, unlike Collette, discloses an inert gas to regulate the fuel provided to the at least one generator as required by the claims of the '711 patent. *Id.*

We are persuaded by Petitioner that Blutke and Roby are not cumulative of the prior art evaluated during prosecution because, as discussed in our analysis below, Petitioner sufficiently shows that Blutke discloses a gas compression system or vaporized gas heating and Roby discloses an inert gas to regulate the fuel provide to the at least one generator as required by the claims of the '711 patent. During prosecution, the Examiner allowed claim 1 after it was amended to include the inert gas source limitation. *See* Ex. 1002, 36–42, 69. All of the grounds asserted in the Petition rely upon a combination of references that includes Blutke, and some grounds additionally include Roby. Pet. 20. Therefore, we determine

⁷ U.S. Patent No. 4,442,665 (Ex. 2001).

⁸ U.S. Patent No. 7,807,048 B2 (Ex. 2010).

that the combinations of reference presented in the Petition were not previously presented to the Office.

We, thus, determine that the first part of the *Advanced Bionics* framework is not satisfied because the Petition includes grounds based on combinations of prior art not previously presented to the Office. We find that § 325(d) is not sufficiently implicated under the circumstances here, and we determine that denying the Petition under § 325(d) is unwarranted.

C. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art at the time of the invention of the '711 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 2 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. 13 (citing Ex. 1003 ¶ 60).

Patent Owner does not dispute this level of skill at this stage of the proceeding. Prelim. Resp. 10.

For purposes of this Decision, we 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).

D. Claim Construction

In an *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b), including construing the claims in

accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b). Thus, we apply the claim construction standard as set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In addition to the specification and prosecution history, we also consider use of the terms in other claims and extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises, although extrinsic evidence is less significant than the intrinsic record. *Id.* at 1312–17. Usually, the specification is dispositive, and it is the single best guide to the meaning of a disputed term. *Id.* at 1315.

Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Neither Petitioner nor Patent Owner provide any explicit construction of any claim terms. See Pet. 13; Prelim. Resp. 10. 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. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs* in the context of an *inter partes* review).

E. Overview of the Asserted Prior Art

1. Sanborn

Sanborn is a U.S. Patent Application Publication titled “System and Process for Extracting Oil and Gas by Hydraulic Fracturing” and published on November 21, 2013. Ex. 1004, codes (43), (54). Sanborn discloses a system for hydraulically fracturing a rock formation to extract hydrocarbons. *Id.* ¶ 2. Sanborn recognizes that traditional hydraulic fracturing systems comprising diesel engines to power fracturing pumps can be inefficient, can require extra safeguards to address potential safety, noise, and environmental issues, and can have an undesirably large footprint. *Id.* ¶¶ 4–7. Sanborn purports to improve upon such known systems by using electric motors to power the pumps. *Id.* ¶¶ 10–11. Figure 1 is a schematic representation of the hydraulic fracturing system and is reproduced below.

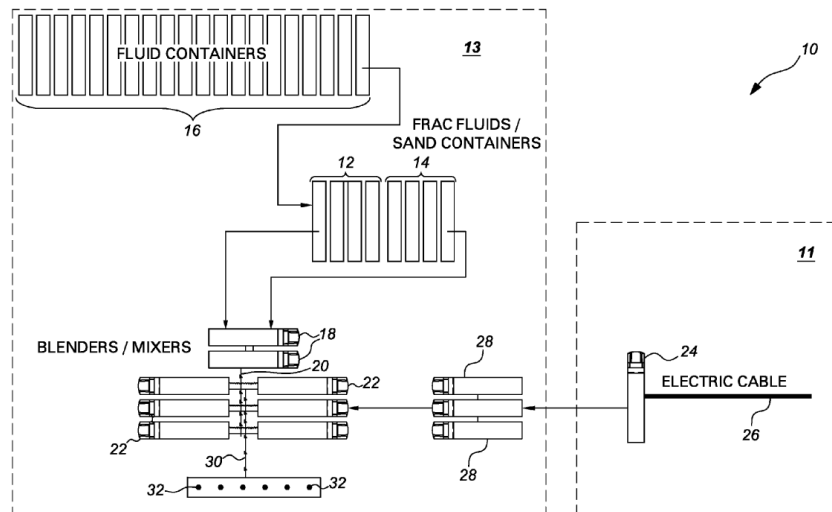


Fig. 1

Figure 1 is a schematic representation of the hydraulic fracturing system, including pumping sub-system 13 and power sub-system 11 that provides energy to the pumping sub-system. *Id.* ¶¶ 17, 33. The power sub-system includes electrical feed source 24, which may

include a natural gas turbine engine and which may “be situated in a location remote from the pumping system.” *Id.* ¶¶ 19, 39. The feed source includes a power distribution unit that may use a transformer to reduce the supplied voltage. *Id.* ¶ 39. Switchgears may be provided to “control multiple lines of power flow, such that faults or failures in individual components or units do not cause secondary damage to other components or units.” *Id.* ¶ 32. The pumping sub-system includes a plurality of pumpers 22, each pumper including at least one pump and one or more electric motors to drive the pump(s). *Id.* ¶¶ 21, 38. The pumping sub-system includes variable frequency drives 28 to control the current supplied to the pumps. *Id.* ¶¶ 40–41.

2. *Blutke*

Blutke is a U.S. Patent titled “Inductively Coupled Plasma/Partial Oxidation Reforming of Carbonaceous Compounds to Produce Fuel For Energy Production” and issued on October 9, 2007. Ex. 1006, codes (45), (54). Blutke’s invention relates to “efficiently reforming carbonaceous compounds into fuel gas” which can be used by gas turbine engines for the production of electricity. Ex. 1006, 1:19–21; Abstract. Blutke discloses that its invention uses “[s]ubstantially any carbonaceous compound that is not fully oxidized,” including “a solid, liquid, or gas,” as feedstock. *Id.* at 4:65–67. Blutke discloses introducing plasma gas (such as steam, carbon dioxide, or argon) into a reaction vessel holding carbonaceous feedstock. *Id.* at 8:59–62, 9:4–8. “[A]t the temperatures within the reaction vessel, thermodynamics generally favor the formation of gaseous compounds, regardless of whether the feedstock is solid, liquid, or gas.” *Id.* at 9:11–14. Blutke discloses various feedstocks, such as “coal, waste oils and emulsions,

chlorinated hydrocarbons, marine diesel, natural gas, heavy refinery bottoms, [and] plastics.” *Id.* at 8:41–44.

Blutke discloses that the fuel gas generated in its reaction vessel may be processed prior to introduction into a gas turbine engine, to increase operating efficiency. *See id.* at 6:24–35. For example, “[c]ompressors, powered using electrical energy produced in the system, can be used to compress the fuel before introduction into [the] turbine,” (*id.*, 6:32–35), a “beneficial” “particulate removal system [is incorporated] to remove particulates,” (*id.*, 15:15–19) and “additional process gases such as carbon dioxide and other hydrocarbon gases” may be introduced to “enhance the quality of the fuel gas produced” (*id.*, 12:55–62).

3. *West*

West is a Patent Cooperation Treaty International Application Publication titled “Variable Frequency Drive Self-Check” and published on July 31, 2014. Ex. 1008, codes (43), (54). West describes diagnostic and control methods for a variable frequency drive. *Id.* at 2. Such methods “include determining whether a switching device in the variable frequency drive is open-circuited, short-circuited, or operating normally.” *Id.*, code (57).

4. *Broussard*

Broussard is a U.S. Patent Application Publication titled “System for Pumping Hydraulic Fracturing Fluid Using Electric Pumps” and published on May 22, 2014. Ex. 1005, codes (45), (54). Broussard describes a system for “pumping fracturing fluid into an oil or gas well using pumps powered by electric motors.” *Id.* ¶ 2. Specifically, Broussard describes a “system [that] includes a plurality of electric pumps fluidly connected to the well, and configured to pump fluid into the wellbore at high pressure so that the

fluid passes from the wellbore into the formation, and fractures the formation.” *Id.* ¶ 7. Broussard indicates that the use of electric motors provides a number of advantages including increased efficiency and lower costs because it allows the equipment to be transferred directly on to a truck body or to a trailer, it reduces the number of trailers needed to carry the equipment, the equipment can be delivered to sites having a restricted amount of space, and the equipment can be carried away with less damage to the surrounding environment. *Id.* ¶ 34. Broussard further indicates that because the electric motors run on natural gas the fuel costs of its system are lower, the components of the system require less maintenance, and emissions are lower.

5. *Roby*

Roby is a U.S. Patent titled “System for Vaporization of Liquid Fuels for Combustion and Method of Use” and issued on August 10, 2010. Ex. 1007, codes (45), (54). Roby discloses that there is “an unmet need for combustion devices such as turbine engines . . . that can be operated with both natural gas and higher hydrocarbon liquid fuels.” *Id.* at 2:43–49. Roby uses “[a] gas stream with a reduced oxygen concentration relative to ambient air” to regulate vaporized liquid fuel, prior to combustion. *Id.* at code (57), Figs. 1(a), 2–5(a). Roby discloses advantages associated with using a non-combustible gas stream, including that: “NO_x reductions can be achieved . . . as a result of the added heat capacity of the reduced oxygen stream/fuel gas mixture” (*id.* at 2:67–3:5); “reaction of the vaporized fuel can be prevented or sufficiently delayed so as to avoid auto-ignition,” (*id.* at 3:10–13) and “the heating value on a mass or volumetric basis of the fuel gas stream may be controlled,” thereby “facilitate[ing] supplying the fuel gas to the combustion device through, for example, an existing natural gas fuel

system” (*id.* at 4:24–29, 9:28–37). Roby discloses that “[a] number of devices or systems known in the art may be used to supply the inert gas stream,” including “exhaust gas . . . from downstream of [a] combustion device,” or a “reduced oxygen gas stream” from an air separator. *Id.*, 3:18–32.

F. Principles of Law

A petition must show how the construed claims are unpatentable under the statutory grounds it identifies. 37 C.F.R. § 42.104(b)(4). Petitioner bears the burden of demonstrating a reasonable likelihood that it would prevail with respect to at least one challenged claim for a petition to be granted. 35 U.S.C. § 314(a).

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective indicia of non-obviousness (i.e., secondary considerations). *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

G. Ground 1: Obviousness of Claims 1–10 and 12 over Sanborn and Blutke

1. Independent Claim 1

a) Preamble, Element 1a, Element 1b, Element 1c

Petitioner contends that the combination of Sanborn and Blutke discloses or renders obvious claim 1’s preamble, element 1a, element 1b, and element 1c. *See* Pet. 24–29. At this stage of the proceeding, Patent Owner does not dispute this. On this record, the evidence and analysis in the Petition is sufficient to show that the preamble, element 1a, element 1b and element 1c are disclosed or would have been obvious over Sanborn and Blutke.

b) Element 1d

Element 1d of claim 1 recites: “an inert gas source providing an inert gas to regulate the fuel provided to the at least one generator.” Ex. 1001, 13:55–56.

Petitioner contends that Blutke discloses element 1d because Blutke “discloses . . . a plasma gas source, and a source of additional process gases, either of which satisfies” this element. Pet. 29 (citing Ex. 1006, 8:49–9:3, 12:55–64). First, Petitioner points to Blutke’s disclosure of plasma gas 16 that may be argon, carbon dioxide, or steam as teaching the claimed inert gas. Pet. 30–31 (citing Ex. 1006, 7:52–58, 8:53–62, Fig. 1). According to Petitioner, “A POSITA would recognize that argon, carbon dioxide, and steam are inert gases.” *Id.* at 31 (citing Ex. 1003 ¶ 102). Patent Owner responds that Blutke discloses that the plasma gas “serves as a catalyst (due to its reactive nature)” as is, thus, not an inert gas source that provides an inert gas to regulated a fuel. Prelim. Resp. 40–41 (citing Ex. 1006, 9:4–22; Ex. 2008 ¶ 26).

Next, Petitioner points to Blutke’s disclosure of providing additional process gases, such as carbon dioxide, a teaching the claimed inert gas. Pet. 32 (citing Ex. 1006, 12:55–64, 17:22–24). Patent Owner responds that “[t]his disclosure in *Blutke* of ‘additional process gases’ is too broad and generic to disclose the ‘inert gas’ feature.” Prelim. Resp. 41 (citing Ex. 2008 ¶ 68).

On this record, we are persuaded by Petitioner that at least Blutke’s disclosure of additional process gases meets the claimed inert gas. See Pet. 32 (citing Ex. 1006 12:55–64). Blutke discloses:

The introduction of additional process gases such as carbon dioxide and other hydrocarbon gases can affect the quality of the fuel gas produced, as a function of the carbonaceous feed that is supplied to the reaction vessel. Those of ordinary skill in the art of chemical processing will easily be able to determine that additional process gases can enhance the quality of the fuel gas being produced, given a specific carbonaceous feed. Such additional gases are directed into reaction vessel 14 via an additional process gas feed 34.

Ex. 1006 12:55–64. Petitioner’s declarant Dr. Mark Ehsani testifies: “a POSITA would recognize that steam and carbon dioxide are both inert gases.” Ex. 1003 ¶ 104. On this record, we are persuaded by Petitioner and Dr. Ehsani’s testimony that Blutke teaches element 1d.

c) Element 1e

Element 1e of claim 1 recites “a combustible fuel vaporization system gaseously coupled to the gas compression system so as to provide at least one of vaporized fuel or gasified fuel, or a combination therefore, to the gas compression system.” Ex. 1001, 13:57–60.

Petitioner contends that Blutke teaches element 1e because Blutke discloses “ICP reaction vessel 14, which is . . . coupled to a gas compression

system (compressor 52), configured to produce gasified fuel from solid and/or liquid fuels, and to provide gasified fuel to compressor 52.” Pet. 33 (citing Ex. 1006, 18:25–40, Fig. 9).

Patent Owner responds by apparently referring to the following passage of Roby:

As used herein, ‘vaporizing’ should be understood to be distinct from ‘gasifying.’ Gasifying is a term of art that refers to a process by which a non-gaseous fuels such as coal is converted into a gaseous fuel by partially reacting (e.g., burning) the non-gaseous fuel with ambient air or an oxygen-enriched gas stream. In contrast, reaction of the liquid fuel is substantially suppressed during the vaporizing process according to the present invention due to the presence of a gas stream with reduced oxygen content relative to ambient air.

Ex. 1007, 5:13–21; Prelim. Resp. 46 (citing to “supra Section VIII(A)(2)”).

Relying the above passage of Roby, Patent Owner asserts that Blutke “is directed to ‘gasifying,’ which requires an endothermic reaction to occur and not ‘vaporizing.’” Prelim. Resp. 46–48; *see also* Ex. 2008 ¶¶ 70, 76–77.

Contrary to Patent Owner’s argument and to the cited passage of Roby, the plain language of element 1e recites that the combustible fuel vaporization system provides “*at least one of* vaporized fuel or *gasified* fuel, or a combination therefore.” Ex. 1001, 13:57–60 (emphasis added). The ’711 patent similarly discloses the combustible fuel vaporization system providing gasified fuel. *Id.* at code (57), 2:33–36. For example, the ’711 patent states “[s]olid fuels can be converted into a gaseous state by gasification, such as through pyrolysis. One example of *pyrolysis* can include converting material containing carbon (such as coal or biomass such as peat, wood, or other human waste products). . . .” *Id.* at 11:51–55 (emphasis added).

On this record, Petitioner persuades us that Blutke teaches element 1e. *See* Pet. 37–38 (citing Ex. 1006 7:65–66, 8:27–48, 9:4–22; Ex. 1003 ¶¶ 107–108). Blutke states, “[w]ithin reaction vessel 14, the carbonaceous feedstock is disassociated by *pyrolysis* into smaller compounds and ions, which then reform into a plurality of different gaseous compounds.” Ex. 1006, 9:8–111 (emphasis added).

d) Secondary Considerations

Notwithstanding, what the teachings of the prior art would have suggested to one skilled in the art, objective evidence of nonobviousness (so called “secondary considerations”) may lead to a conclusion that the challenged claims would not have been obvious. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). Objective evidence of nonobviousness “may often be the most probative and cogent evidence in the record” and “may often establish that an invention appearing to have been obvious in light of the prior art was not.” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (citing *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983)).

“In order to accord substantial weight to secondary considerations in an obviousness analysis, ‘the evidence of secondary considerations must have a “nexus” to the claims, i.e., there must be “a legally and factually sufficient connection” between the evidence and the patented invention.’” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (citing *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019)). “The patentee bears the burden of showing that a nexus exists” *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999). Nexus is a legally and factually sufficient connection between

the objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). A nexus is presumed when “the patentee shows that the asserted objective evidence is tied to a specific product and that product ‘embodies the claimed features, and is coextensive with them.’” *Fox Factory*, 944 F.3d at 1373 (quoting *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed. Cir. 2018)). “A finding that a presumption of nexus is inappropriate does not end the inquiry into secondary considerations,” as “the patent owner is still afforded an opportunity to prove nexus by showing that the evidence of secondary considerations is the ‘direct result of the unique characteristics of the claimed invention.’” *Id.* at 1373–74 (citing *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996)).

Patent Owner argues that Petitioner has failed to rebut the objective evidence of non-obviousness raised during the prosecution of the ’410 patent, an alleged grand-parent of the ’711 patent. Prelim. Resp. 48–50; Sur-Reply 6–10. Patent Owner also argues that there is evidence that Petitioner, in collaboration with others, copied Patent Owner’s claimed invention and evidence of commercial success. Prelim. Resp. 50–55 (citing Ex. 2003).

Petitioner responds that Patent Owner’s secondary considerations arguments advanced during the prosecution of the ’410 patent do not establish non-obviousness of the challenged claims because they lack the requisite nexus. Reply 6–10. First, Petitioner contends Patent Owner is not entitled to a presumption of nexus under step one of *Fox Factory* because Patent Owner has not demonstrated that its Clean Fleet® product, which is discussed in the ’410 patent, is coextensive with the ’711 patent. Reply 6–8.

Petitioner further contends that “the *same* Clean Fleet product discussed in this POPR is relied upon by PO in POPRs for the ’410, ’601,^[9] and ’308 Patents, which name *entirely non-overlapping* inventors with the ’711 Patent.” *Id.* at 7 (citing IPR2021-01032, IPR2021-01033, IPR2021-01034). Petitioner further contends Patent Owner also has not demonstrated an actual nexus exists under step two of *Fox Factory*. *Id.* at 8–10.

Patent Owner bears the burden of showing that a nexus exists. *WMS Gaming*, 184 F.3d, at 1359. On this record, Patent Owner does not sufficiently demonstrate that it is entitled to a presumption of nexus under step one of *Fox Factory*. Patent Owner does not provide any sufficient explanation of how the evidence of object indicia of nonobviousness presented during the prosecution of the ’410 patent or with respect to Petitioner’s copying assertion relates the claims of the ’711 patent. *See generally* Prelim. Resp. 48–50. In particular, Patent owner fails to demonstrate that CleanFleet is coextensive with the claims of the ’711 patent, particularly given that the ’410 patent names entirely non-overlapping inventors.

Patent Owner also does not sufficiently demonstrate a nexus under step two of *Fox Factory*. Patent Owner cites to a Declaration of Jared Oehring as evidence of copying. Prelim. Resp. 50–55 (citing Ex. 2003). However, the Declaration of Jared Oehring is silent as to many of the elements of the claims of the ’711 patent, such as an inert gas source. *See generally* Ex. 2003. Similarly, Patent Owner does not sufficiently establish the required nexus between its commercial success of its CleanFleet product and the claims invention. Prelim. Resp. 56–58 (citing Ex. 2011).

⁹ US Patent No. 8,789,601.

e) Dependent Claims 2–10 and 12

Petitioner argues that dependent claims 2–10 and 12 are obvious over Sanborn and Blutke. Pet. 34–45. Patent Owner does not address the additional elements of claims 2–10 and 12 and relies on its arguments provided for claim 1 for the dependent claims. *See generally*, Prelim. Resp. 39. On this record, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in demonstrating that claims 2–10 and 12 are obvious over Sandborn and Blutke.

f) Conclusion

For the foregoing reasons, and on the record presently before us, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in demonstrating that claims 1–10 and 12 of the '711 patent are obvious over Sandborn and Blutke.

2. Ground 2: Obviousness of claims 11 and 13–20 over Sanborn, Blutke, and West

Petitioner contends that claims 11 and 13–20 are obvious over the combination of Sandborn, Blutke, and West. Pet. 48–51. Pet. 70. Patent Owner relies on its arguments provided for ground 1 with respect to the teachings of Blutke to contest this grounds (*see e.g.*, Prelim. Resp. 39) and additionally asserts the West does not cure the deficiencies of Blutke (*see e.g., id.* at 42). For the reasons explained above and on the record presently before us, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that claims 11 and 13–20 of the '711 patent are obvious over Sanborn, Blutke, and West.

3. *Ground 3: Obviousness of Claims 1–20 over Broussard and Blutke*

Petitioner contends that claims 1–20 are obvious over the combination of Broussard and Blutke. Pet. 52–62. Pet. 70. Patent Owner relies on its arguments provided for ground 1 with respect to the teachings of Blutke to contest this ground. *See e.g.*, Prelim. Resp. 39. For the reasons explained above and on the record presently before us, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that claims 1–20 of the ’711 patent are obvious over Broussard and Blutke.

4. *Ground 4: Obviousness of Claims 1–10 and 12 over Sanborn, Blutke, and Roby*

Referring to its analysis for combining Sanborn and Blutke with respect to ground 1, Petitioner contends that Roby additionally discloses aspects of element 1d. Pet. 63. Petitioner asserts that, in addition to introducing ionized plasma gas and, optionally, oxygen into the reaction vessel, Blutke discloses introducing additional process gases, such as carbon dioxide, to affect the quality of the fuel gas produced. *Id.* (citing Ex. 1006, 10:22–55, 12:55–58, 18:41–47). Petitioner argues

Motivated by *Blutke*’s suggestion that a POSITA “will easily be able to determine that additional process gases can enhance the quality of the fuel gas being produced,” Ex. 1006, 12:59–62, a POSITA would have looked to the teachings of *Roby* for specific examples of such enhancement. *See KSR*, 550 U.S. at 419; Ex. 1003, ¶ 177. In particular, a POSITA would have been motivated to further combine any of the systems taught by Grounds 1-3, with *Roby*’s teachings to provide the enhancement disclosed by *Roby* to the gaseous fuel generated by those systems. [Ex. 1003 ¶ 177].

Pet. 65. According to Petitioner, Roby teaches that the addition of a gas stream with a reduced oxygen concentration relative to ambient air provides the following advantages:

(1) avoiding auto-ignition of the gaseous fuel, [Ex. 1007,] Abstract, 3:6-13, 3:58-64, 6:23-26; (2) reducing the levels of nitrogen oxides (NO_x) produced during combustion of the gaseous fuel, *id.*, 2:64-3:5, 9:44-54; and (3) enabling the use of the fuel gas in an existing turbine engine, without any “modification to the fuel gas distribution system of the engine,” *id.*, 7:47-57. Ex. 1003, ¶ 176.

Pet. 64.

Citing to the passage of Roby reproduced in the discussion of ground 1 above, Patent Owner responds that a person of ordinary skill would not have combined the teachings of Roby and Blutke because Roby is directed to vaporizing and Blutke is directed to gasifying. Prelim. Resp. 43–45. According to Patent Owner, “introducing a reduced oxygen stream, *e.g.*, an inert gas stream, as taught by *Roby* into the inductively coupled plasma reaction vessel of *Blutke* could counteract and suppress the reaction that is required to create the fuel gas in *Blutke*.” *Id.* at 44. Patent Owner argues that Petitioner’s combination of Roby and Blutke is based on hindsight reconstruction of the challenged claims. *Id.*

Impermissible hindsight is inferred when the specific understanding or principle within the knowledge of one of ordinary skill in the art that would motivate one (with no knowledge of the claimed invention) to make the proposed combination has not been explained. *In re Rouffet*, 149 F.3d 1350, 1358 (Fed. Cir. 1998).

On this record and for the purposes of institution, we determine that Petitioner sufficiently explains why it would have been obvious to a POSITA to combine Blutke and Roby, given Blutke’s suggestion of

providing additional process gases and Roby’s teachings of the benefits of providing a gas stream with a reduced oxygen concentration relative to ambient air. *See* Ex. 1003 ¶¶ 177–176. We note that although Blutke disclose an embodiment in which an oxidizer is introduced into the reaction vessel to increase energy production (Ex. 1006, 6:25–28, 6:50–55, 10:22–55, Fig. 2), Blutke also discloses an embodiment without an oxidizer and in which plasma gas 16 may be gases other than oxygen, such as argon (*id.* at 8: 58–62; Fig. 1.). Dr. Ehsani testifies that “a POSITA would recognize that argon, carbon dioxide, and steam are inert gases. Specifically, a POSITA would understand that argon, carbon dioxide, and steam are non-combustible—and therefore inert—gases (in contrast to, for example oxygen).” Ex. 1003 ¶ 102.

On the record presently before us, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that claims 1–10 and 12 of the ’711 patent are obvious over Sandborn, Blutke, and Roby.

5. Ground 5: Obviousness of Claims 11 and 13–20 over Sanborn, Blutke, West, and Roby

Petitioner contends that claims 11 and 13–20 are obvious over the combination of Sandborn, Blutke, West, and Roby. Pet. 70. Patent Owner relies on its arguments provided for ground 1 with respect to the teachings of Blutke and for ground 4 with respect to the combination of Blutke and Roby to contest the ground. *See e.g.*, Prelim. Resp. 39, 42. For the reasons explained above, on the record presently before us, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that claims 11 and 13–20 of the ’711 patent are obvious over Sandborn, Blutke, West, and Roby.

6. *Ground 6: Obviousness of Claims 1–20 over Broussard, Blutke, and Roby*

Petitioner contends that claims 1–20 are obvious over the combination of Broussard, Blutke, and Roby. Pet. 70–71. Patent Owner relies on its arguments provided for ground 1 with respect to the teachings of Blutke and for ground 4 with respect to the combination of Blutke and Roby to contest this ground. *See e.g.*, Prelim. Resp. 39, 42. For the reasons explained above and on the record presently before us, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that claims 1–20 of the ’711 patent are obvious over Broussard, Blutke, and Roby.

III. CONCLUSION

After considering the evidence and arguments presented in the Petition, the Preliminary Response, the Reply, and the Sur-reply, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one of the challenged claims, and thus, we institute an *inter partes* review of all challenged claims on all presented challenges. *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute to require “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

At this stage of the proceeding, the Board has not made a final determination as to the patentability of any challenged claim or any underlying factual and legal issues.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–20 of U.S. Patent No. 10,020,711 B2 is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of U.S. Patent No. 10,020,711 B2 shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

IPR2021-01066
Patent 10,020,711 B2

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