

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CRUSOE ENERGY SYSTEMS, LLC,
Petitioner,

v.

UPSTREAM DATA INC.,
Patent Owner.

PGR2023-00039
Patent 11,574,372 B2

Before HYUN J. JUNG, JAMES J. MAYBERRY, and
MATTHEW S. MEYERS, *Administrative Patent Judges*.

MEYERS, *Administrative Patent Judge*.

DECISION
Granting Institution of Post-Grant Review
35 U.S.C. § 324

Crusoe Energy Systems, LLC (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting post-grant review of claims 1–4, 7–12, 15–30, 34–37, and 40 (“the challenged claims”) of U.S. Patent No. 11,574,372 B2 (Ex. 1001, “the ’372 patent”). Upstream Data Inc. (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”). With our authorization (Ex. 1101), Petitioner filed a Preliminary Reply to Patent Owner’s Preliminary Response (Paper 12, “Prelim. Reply”) to address § 325(d) issues raised in the Preliminary Response. Patent Owner filed a Preliminary Sur-reply thereto (Paper 13, “Prelim. Sur-reply”).

We have authority to determine whether to institute a post-grant review. 35 U.S.C. § 324 (2018); 37 C.F.R. § 42.4(a) (“The Board institutes the trial on behalf of the Director.”). Section 324(a) provides that a post-grant review may not be instituted “unless . . . the information presented in the petition . . . , if such information is not rebutted, would demonstrate that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable.” Upon consideration of the evidence and arguments in the Petition (including its supporting testimonial evidence), the evidence and arguments in the Preliminary Response (including its supporting testimonial evidence), the Preliminary Reply, and the Preliminary Sur-reply, we determine that the information presented shows that it is more likely than not that Petitioner would prevail with respect to at least one of the challenged claims. Accordingly, we institute post-grant review on all challenged claims on all asserted grounds. *See* 37 C.F.R. § 42.208(a) (“When instituting post-grant review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability

asserted for each claim.”); *see also SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

I. BACKGROUND

A. Real Parties-in-Interest

Petitioner identifies that Crusoe Energy Systems, LLC is the real party-in-interest. Pet. 124. Patent Owner indicates Upstream Data Inc. is the patent owner and real party-in-interest in this proceeding. Paper 4, 2.

B. Related Proceedings

The parties state that the ’372 patent is at issue in *Upstream Data Inc. v. Crusoe Energy Systems LLC*, Case No. 1:23-cv-01252 (D. Colo.) (filed May 18, 2023). Pet. 123; Paper 4, 2.

C. The ’372 Patent

The ’372 patent is titled “Blockchain Mine at Oil or Gas Facility.” Ex. 1001, code (54). Figure 1, reproduced below, is a schematic of a system for power a blockchain mine at a remote oil well, using a generator.

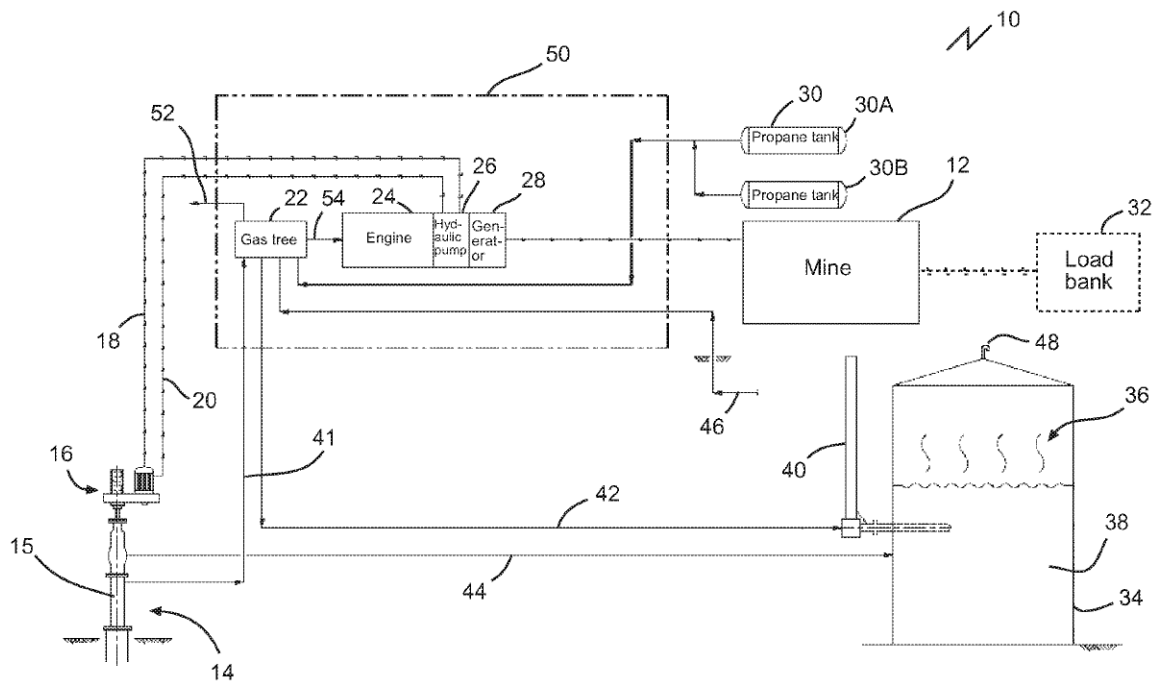


Figure 1 illustrates blockchain mining device 12, oil well 14, and generator 28. *Id.* at 8:35–40.

According to the '372 patent, “[a]t remote oil and gas facilities, excess natural gas is often wasted, for example vented to atmosphere or burned via flaring.” Ex. 1001 at 1:11–13. The '372 patent identifies that this is because “[i]n many locations it may not be economically feasible to build the infrastructure required to take the produced gas, or resultant electricity generated by combustion of the gas, to market.” *Id.* at 7:49–52. The '372 patent discloses that the “cheaper the electricity the more reward the miner will receive relative to competition.” *Id.* at 13:20–21. The '372 patent further discloses that reliance on “low-cost hydroelectric power” has led to a “centralization of blockchain miners in specific countries with abundant hydroelectric power.” *Id.* at 14:4–11. This, according to the '372 patent, is counter to the idea of decentralization and distribution inherent in the

blockchain model, so the '372 patent identifies a “need to further decentralize BITCOIN and other blockchain mining through a more decentralized source of low-cost power.” *Id.* at 14:13–20. To this end, the '372 patent describes positioning a generator and blockchain mining device “at a suitable location relative to the hydrocarbon well, storage site, or processing facility,” such as located adjacent to a remote oil well. *Id.* at 9:14–19.

D. Illustrated Claims

The '372 patent includes 41 claims, and Petitioner challenges claims 1–4, 7–12, 15–30, 34–37, and 40. Of the challenged claims, claims 1 and 24 are independent. Claim 1 is illustrative and reads as follows¹:

[1pre] A system comprising:

[1a] a source of combustible gas produced from a facility selected from a group consisting of a hydrocarbon production, storage, or processing facility;

[1b] a generator connected to the source of combustible gas to receive a continuous flow of combustible gas to power the generator; and

[1c] blockchain mining devices connected to the generator; in which:

[1c_i] the blockchain mining devices each have a mining processor and are connected to a network interface;

[1c_ii] the network interface is connected to receive and transmit data through the internet to a network that stores or has access to a blockchain database;

[1c_iii] the mining processors are connected to the network interface and adapted to mine transactions associated with the blockchain database and to communicate with the blockchain database;

¹ We utilize Petitioner's annotations. Pet. i.

[1c_iv] the network is a peer-to-peer network;
[1c_v] the blockchain database is a distributed database
stored on plural nodes in the peer-to-peer network;
and
[1c_vi] the blockchain database stores transactional
information for a digital currency.

Ex. 1001, 19:52–20:7.

E. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–4, 7–12, 15–30, 34–37, and 40 of the ’372 patent are unpatentable on the following grounds (Pet. 3², 12–119):

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1–4, 8, 16–30, 34	103 ³	Dickerson, ⁴ CryptoKube, ⁵ Szmigielski, ⁶ and Kheterpal ⁷
1–4, 8, 10–12, 15–30, 34–37, 40	103	Dickerson, CryptoKube, Belady-989, ⁸ Szmigielski, and Kheterpal
1–4, 7–12, 15–30, 34–37, 40	103	Dickerson, CryptoKube, Belady-989, Boot, ⁹ Szmigielski, and Kheterpal

² Petitioner omits listing its patent-eligibility challenge to claims 1–4, 7–12, 15–30, 34–37, and 40 in its summary of grounds presented. *See* Pet. 3. However, Petitioner provides a detailed analysis of this challenge in the Petition. *See* Pet. 112–119. We understand this to be typographical error.

³ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Because the challenged claims of the ’372 patent have an effective filing date (Feb. 8, 2017) after the effective date of the applicable AIA amendments, we refer to the AIA version of 35 U.S.C. § 103 in this Decision.

⁴ Dickerson, WO 2015/123257 A1, pub. Aug. 20, 2015 (Ex. 1005).

⁵ “Launch your own Bitcoin Data Center,” (last retrieved July 17, 2023 at <https://web.archive.org/web/20160305044934/http://www.cryptokube.com:80/home/4586398583>) (Ex. 1006, “CryptoKube”). Petitioner also references “CryptoKube Bitcoin Mining Data Center Tour” video, (last retrieved November 28, 2023 at <https://web.archive.org/web/20150511223850/https://www.youtube.com/watch?v=5bDtgIcVb3s>) (Ex. 1007, “CryptoKube video”; transcription in Ex. 1008).

⁶ Szmigielski, Albert, “Bitcoin Essentials,” Packt Publishing Ltd., Birmingham, UK, ISBN 978-1-78528-197-6, February 2016 (Ex. 1009).

⁷ Kheterpal et al., US 2016/0125040 A1, pub. May 5, 2016 (Ex. 1010).

⁸ Belady, et al., WO 2015/072989 A1, pub. May 21, 2015 (Ex. 1011).

⁹ Boot, et al., US 9,394,770 B2, iss. July 19, 2016 (Ex. 1012).

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1–4, 8, 16–22, 24–30, 34	103	MAGS, ¹⁰ Polivka, ^{11, 12} Szmigielski, and Kheterpal
1–4, 8, 10–12, 15–30, 34–37, 40	103	MAGS, Polivka, Belady-989, Szmigielski, and Kheterpal
1–4, 7–12, 15–30, 34–37, 40	101	Eligibility

Petitioner also relies on the declarations of Michael Nikolaou, Ph.D. (Ex. 1003) and Vernon Kasdorf (Ex. 1004) to support its arguments.

II. ELIGIBILITY FOR POST-GRANT REVIEW

As a threshold matter, we must determine whether the ’372 patent is eligible for post-grant review. The post-grant review provisions in section 6(d) of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (September 16, 2011) (“AIA”) apply only to patents that “contain[] or contained at any time . . . a claim to a claimed invention that has an effective filing date . . . that is on or after [March 16, 2013].” AIA §§ 3(n)(1), 6(d), 6(f)(2)(A), 125 Stat. 284, 293, 305–312 (2011).

¹⁰ “Gas Conversion Systems Reclaim Fuel for Industry,” Spinoff 2015, National Aeronautics and Space Administration, Technology Transfer Program, pp. 104–107 (last retrieved Nov. 28, 2023 at https://spinoff.nasa.gov/Spinoff2015/ee_3.html) (Ex. 1013).

¹¹ “Mining Container ~ 100kW by Polivka GmbH,” Bitcoin Forum, (last retrieved June 29, 2023 at <https://web.archive.org/web/20150520015416/https://bitcointalk.org/index.php?topic=948523.0;all>) (Ex. 1015).

¹² Petitioner also cites to a video, “Polivka Mining Container Setup on Vimeo,” in Ex. 1019 (last retrieved in July 2023 at <https://vimeo.com/119105477>). Pet. iv, 79; Ex. 1020, 11 (refers to video as Exhibit 1017).

Each petitioner for post-grant review must certify that the challenged patent is available for post-grant review. 37 C.F.R. § 42.204(a). In addition, “[a] petition for a post-grant review may only be filed not later than the date that is 9 months after the date of the grant of the patent or of the issuance of a reissue patent (as the case may be).” 35 U.S.C. § 321(c). Petitioner has the burden to demonstrate eligibility for post-grant review. *See Mylan Pharms. Inc. v. Yeda Res. & Dev. Co.*, PGR2016-00010, Paper 9 at 10 (PTAB Aug. 15, 2016).

Petitioner certifies under 37 C.F.R. § 42.204(a) that the ’372 patent is available for post-grant review. Pet. 2. Petitioner also contends that it “is not barred or estopped from requesting review, has not filed a civil action regarding the ’372 patent, and this Petition is being filed within nine months of the ’372 patent’s issuance.” *Id.* (citing 37 C.F.R. §§ 42.201–202). Patent Owner does not address post-grant-review eligibility of the ’372 patent in its Preliminary Response.

On this record, we determine that the ’372 patent is eligible for post-grant review. The ’372 patent’s earliest effective filing date is February 8, 2017 (the filing date of a provisional application to which the ’372 patent claims priority), which is after March 16, 2013. Ex. 1001, code (60). In addition, the Petition’s filing date, July 20, 2023 (Paper 3, 1), is not later than the date that is nine months after the ’372 patent’s grant date of February 7, 2023. Ex. 1001, code (45). Finally, we accept Petitioner’s certification that it had not filed a civil action challenging the validity of a claim of the ’372 patent before the Petition was filed.

III. DISCRETIONARY DENIAL - § 325(D)

1. *Principles of Law*

Under § 325(d), in determining whether to institute an *inter partes* review, “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.” In evaluating whether the same or substantially the same prior art or arguments were previously presented to the Office, the Board has identified several non-exclusive factors for consideration. *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) (“the *Becton, Dickinson* factors”). Those factors are as follows:

- (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.

Id. (footnote omitted); *see also* Patent Trial and Appeal Board Consolidated Trial Practice Guide 62–63 (Nov. 2019).¹³

We further apply the following two-part framework in determining whether to exercise its discretion under § 325(d), specifically:

- (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 [the] 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*”). *Becton, Dickinson* factors (a), (b), and (d) relate to the first step, and *Becton, Dickinson* factors (c), (e), and (f) relate to the second step. *Id.* at 10.

We turn to the parties’ contentions regarding § 325(d). For the reasons given below, we are not persuaded to discretionarily deny the Petition based on § 325(d).

2. *Advanced Bionics Part One: Whether the Prior Art and Arguments are the Same or Substantially the Same*

Beginning with the first part of the *Advanced Bionics* framework, we consider whether *Becton, Dickinson* factors (a), (b), and (d) indicate that “the same or substantially the same art previously was presented to the Office” or that “the same or substantially the same arguments previously

¹³ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

were presented to the Office.” 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. *Becton, Dickinson*, Paper 8 at 7–8.

Petitioner acknowledges that Kheterpal and Belady-989 were, in some manner, previously presented to the Office. *See, e.g.*, Prelim. Reply 1 (arguing that “none of the foregoing references (Dickerson, CryptoKube, MAGS, Polivka) were made of record”). We need not determine whether the first part of the *Advanced Bionics* framework is satisfied based on these disclosures, however, as the second part of the analysis, which we address below, is dispositive.

3. *Advanced Bionics Part Two: Whether Petitioner has Demonstrated Material Error*

Under the second part of the *Advanced Bionics* framework, we consider “whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.” *Advanced Bionics*, Paper 6 at 8. “An example of a material error may include misapprehending or overlooking specific teachings of the relevant prior art where those teachings impact patentability of the challenged claims.” *Id.* at 8 n.9.

Petitioner argues that the Office erred in manner material to the patentability of the challenged claims because the “the ’372 patent should not have been issued in the first place.” Pet. 123; *see also* Prelim. Reply 5 (“[T]he examiner mistakenly relied on PO’s erroneous argument that

blockchain mining ‘cannot be compared’ with regular data center processing.”). According to Petitioner,

[d]uring prosecution, the Office allowed the amended claims because (1) Applicant argued that blockchain mining is meaningfully different from traditional data-processing because it requires more energy; [EX1002, 222–223] and (2) Applicant argued that its “discovery amounts to a new use for previously known individual components (a common precursor for patentability), and may provide numerous benefits including the reduction of greenhouse gas emissions and capture of revenue where gas disposal is otherwise a capital loss (for example paragraphs 33, 34, 48, and 73).

Pet. 123 (citing Ex. 1002, 223). On the current record, Petitioner contends Szmigielski establishes that “there is no fundamental difference between a traditional data center and a digital currency miner” and “using flare gas to generate power to reduce greenhouse gas emission was known to the public well before the priority date of the ’372 patent.” *Id.*

Patent Owner disagrees and argues that “Petitioner has not adequately identified any error by the Examiner.” Prelim. Resp. 36. Patent Owner argues that Petitioner’s contention that “there is no fundamental difference between a traditional data center and a digital currency miner” is incorrect because it ignores Szmigielski’s disclosure that the power to run a crypto mine operation must be both “inexpensive and reliable.” *Id.* (citing Ex. 1009, 90). Consequently, Patent Owner argues that Petitioner has not shown “error in Examiner’s reliance on the argument that blockchain mining cannot be compared with regular data centers.” Prelim. Sur-reply 5 (citing Prelim. Reply 5). Rather, “Petitioner at best has alleged that *it* disagrees with that evaluation,” which is not enough to establish that the Office erred in a

manner material to patentability. *Id.* (citing *Advanced Bionics*, Paper 6 at 9). We disagree.

Instead, we agree with Petitioner that the Office erred in a manner material to the patentability of challenged claims. Pet. 123; Prelim. Reply 5. Petitioner argues that the Petition’s explanation for why a person having ordinary skill in the art would have been motivated to combine the references is more detailed than the motivation provided by the Examiner with reference to Szmigielski. Pet. 123. More particularly, Petitioner asserts that Szmigielski teaches that “there is no fundamental difference between a traditional data center and a digital currency miner.” *Id.* (citing Ex. 1009, 88).

Patent Owner responds that Szmigielski actually discloses that “[i]ndustrial miners face *almost* the same issues as data centers: access to relatively cheap power, good network access, access to latest hardware, and stable political climate.” Prelim. Resp. 36 (citing Ex. 1009, 88). Patent Owner asserts Szmigielski’s disclosure regarding the similarities between miners and datacenters is adequate to motivate one of ordinary skill in the art to combine the references because crypto miners being “almost the same” as datacenters is not the same as having “no fundamental differences.” Prelim. Resp. 36. According to Patent Owner, the Szmigielski reference “emphasizes that power must be both ‘inexpensive and reliable’ to run the mining ‘hardware and the associated cooling systems.’” *Id.* (citing Ex. 1009, 90). Patent Owner adds that crypto mining operations are “highly energy-intensive,” and argues that this is “the very difference cited by Applicant and presumably accepted by examiner.” *Id.* (citing Ex. 1002,

222).

However, for the reasons given below (see §§ IV.C–F), we preliminarily find that Petitioner has articulated sufficiently persuasive reasoning, based on the evidence of record, as to why one of ordinary skill in the art would have made Petitioner’s proposed combinations. *See, e.g.*, Pet. 19–20, 50–51. We discuss this reasoning in greater detail below, but in one example Dr. Nikolaou explains that one of ordinary skill in the art would have been motivated to combine Petitioner’s proposed combinations based on Szmigielski’s disclosure “that ‘[i]ndustrial miners face *almost* the same issues as data centers: access to relatively cheap power, good network access.’” Ex. 1003 193–195 (citing Ex. 1009, 88).

We also consider the teachings of Belady-989 in conjunction with Szmigielski’s disclosure. Belady-989 is directed to a datacenter that also generates power using energy generated by natural gas as a byproduct of oil drilling operations. Ex. 1011, Abstract. Belady-989 discloses that remote “data centers often consume large quantities of electrical power” and “the cost of obtaining such electrical power is becoming a primary determinant in the economic success of a data center.” *Id.* ¶4. Belady-989 further discloses that “data centers are being located in areas where the data centers can obtain electrical power in a cost-effective manner” because the need for advanced computing services requires “massive amounts of computing processing capability.” *Id.* 3–4.

Based on the record before us at this early stage, we find that Petitioner has shown that the Examiner erred in failing to appreciate that a person having ordinary skill in the art would have combined the teachings in

the manner recited in the claims. *See, e.g.*, Pet. 19–20 (citing Ex. 1003 ¶¶ 91–99; Ex. 1004 ¶¶ 89–97), 50–51 (citing Ex. 1003 ¶¶ 187–195; Ex. 1004 ¶¶ 166–174). As a result, on this record, Petitioner demonstrates that the Office erred in a manner material to the patentability of challenged claims.

IV. ANALYSIS

A. Level of Ordinary Skill in the Art

The level of ordinary skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including: “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Best Med. Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1353 (Fed. Cir. 2022) (citations omitted). “The patent’s purpose can also be informative.” *Id.* (citation omitted).

Petitioner asserts that one of ordinary skill in the art (“POSITA”) would have had “a degree in chemical engineering, petroleum engineering, process engineering, mechanical engineering, or a similar field with 1–2 years of experience in designing power generation systems, Blockchain mining systems, or other comparable hands-on experience.” Pet. 7 (citing

Ex. 1003 ¶ 19). Petitioner adds that “[a]lternatively, a person having 3–5 years of experience in the Blockchain mining industry would also qualify as a POSITA” and “[a]dditional education could substitute for professional experience, or vice versa.” *Id.* at 7–8 (citing Ex. 1003 ¶ 19).

Patent Owner disagrees with Petitioner’s articulation of the level of ordinary skill in the art, but does not offer a definition of its own. Prelim. Resp. 9–10. According to Patent Owner, “[t]he Petition and related declarations propose two alternative levels of ordinary skill in the art, where the second alternative does not require any formal education or any experience in the field of oil or gas production.” *Id.* at 9. While Patent Owner disagrees with Petitioner’s characterization of the level of ordinary skill in the art, Patent Owner does not explain how a different level of skill is likely to alter Petitioner’s analysis. Instead, Patent Owner contends that it “applied Petitioner’s articulation and confirmed the prior art analysis detailed below would not change based on disagreements over the level of ordinary skill in the art.” *Id.* at 9–10 (citing Ex. 2001 ¶¶ 15–16).

To the extent necessary, and for purposes of this Decision, we accept Petitioner’s statement on the level of skill in the art. *See Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007) (listing the type of problems encountered in the art, prior art solutions to those problems, and the sophistication of the technology as factors that may be considered in determining the level of ordinary skill in the art). The prior art itself may be sufficient to demonstrate the level of skill in the art at the time of the invention. *See Okajima*, 261 F.3d at 1355 (explaining that specific findings regarding ordinary skill level are not required “where the prior art itself

reflects an appropriate level and a need for testimony is not shown”) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985)).

B. Claim Construction

In a post-grant 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. § 42.200(b). “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention” and “after reading the entire patent.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 1321 (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.

Petitioner proposes express constructions for four claim terms, “blockchain mining device,” “mining processor,” “a continuous flow of combustible gas,” and “sales gas line.” Pet. 4–7. Patent Owner disputes Petitioner’s proposed constructions for the terms “blockchain mining device,” “mining processor,” and “a continuous flow of combustible gas.”

Prelim. Resp. 4–9. Patent Owner notes that no construction is necessary for the term “blockchain mining devices” “[b]ecause the claim language itself informs a person of ordinary skill as to [its] meaning.” *Id.* at 6.

For purposes of this Decision, and based on the record before us, we do not discern any claim-construction issue affecting Petitioner’s demonstration that it is more likely than not to prevail. Thus, at this stage, we do not find it necessary to construe expressly any language of the challenged claims. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). We note that this determination does not preclude the parties from arguing their proposed constructions of the claims during trial. Indeed, the parties are hereby given notice that claim construction, in general, is an issue to be addressed at trial. A final determination as to claim construction will be made at the close of the proceeding, after any hearing, based on all the evidence of record.

C. Alleged Obviousness over Dickerson and CryptoKube, Szmigielski, and Kheterpal (Ground 1: Claims 1–4, 8, 16–30, and 34)

Petitioner asserts that claims 1–4, 8, 16–30, and 34 are unpatentable as obvious over Dickerson, CryptoKube, Szmigielski, and Kheterpal.

Pet. 12–48. Petitioner also relies on the declaration testimony of Dr. Nickolaou and Mr. Kasdorf to support its arguments. *Id.* (citing Exs. 1003, 1004). Patent Owner’s arguments on the merits are limited to disputing Petitioner’s contentions regarding the proposed the proposed motivation to

combine the asserted references. Prelim. Resp. 10–24. We address Petitioner’s contentions and Patent Owner’s arguments below, beginning with the motivation to combine Dickerson CryptoKube, Szmigielski, and Kheterpal. We first provide a brief overview of the asserted references.

1. Overview of Dickerson (Ex. 1005)

Dickerson is directed to “processing and using raw natural gas that is normally flared at the site of oil and gas field operation facilities.” Ex. 1005 ¶ 2. Dickerson’s Figure 1, which is reproduced below, illustrates “a schematic view of a combined gas conditioning and power generation system.” *Id.* ¶ 8.

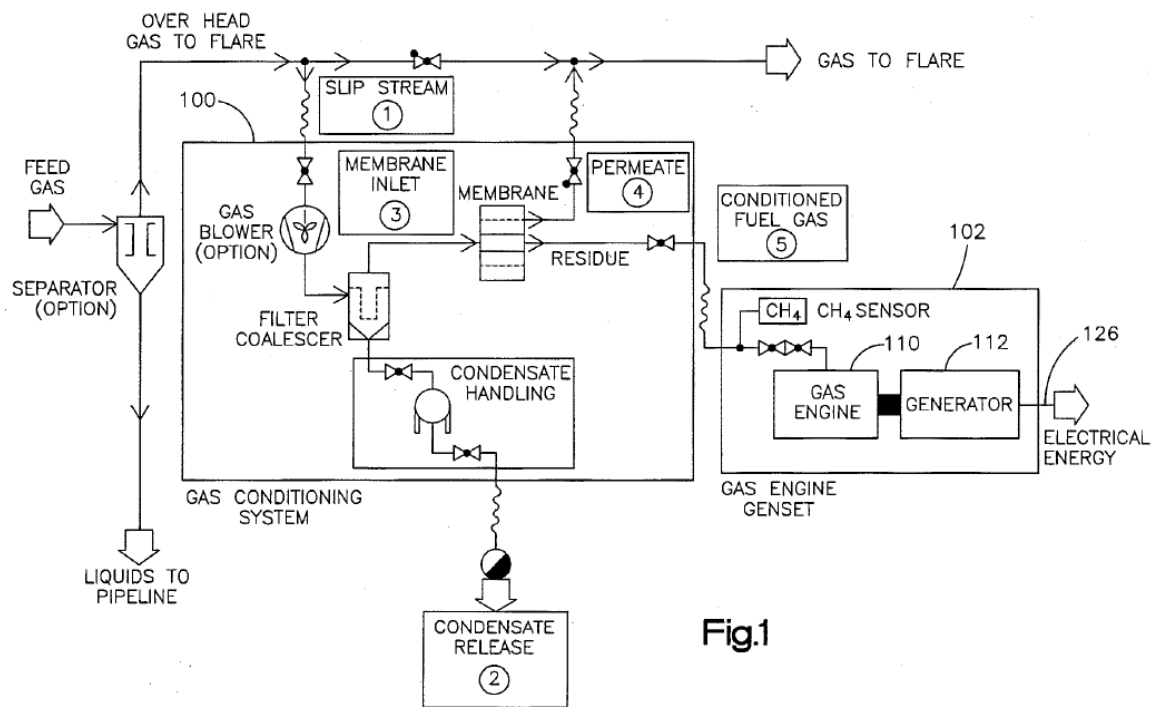


Fig.1

Figure 1 depicts a feed gas feeding into gas conditioning unit 100, which supplies gas to gas engine genset 102, which includes gas engine 110 and generator 112 to provide electrical energy via cable 126. Ex. 1005 ¶ 26.

Dickerson discloses that “large amounts of raw natural gas are flared

because of the lack of gas pipeline takeaway capacity.” Ex. 1005 ¶ 3. Dickerson also discloses that “a number of oil and gas field facilities where gas is being flared rely on diesel-powered electrical generating units for electricity needed to run the facilities.” *Id.* ¶ 4. As an alternative, Dickerson discloses that its apparatus may be delivered “to an oil or gas production facility, connecting and operating the apparatus while the facility is generating raw natural gas.” *Id.* ¶ 7. Dickerson’s apparatus includes a “membrane separation unit for separating useful fuel gas from raw natural gas produced at an oil or gas production facility,” because of the presence “of contaminants and uneven qualities, the raw natural gas is often unsuitable for use in electric power generators.” *Id.* ¶¶ 4, 6. The apparatus also includes “a gas engine that uses the fuel gas to generate electricity that is returned to the facility.” *Id.* ¶ 6.

2. *Overview of CryptoKube (Ex. 1006–1008)*

CryptoKube¹⁴ products include a variety of “entry level data center” models for the small or medium-sized industrial bitcoin miner or investor. Ex. 1006, 1–2.¹⁵ The data-centers include an enclosure, cooling, internal power distribution, and are ready for the introduction of computers for use in bitcoin mining or investing. *Id.* The models are designed to be built and delivered so that the buyer need only hook up electrical service to the unit, because “[e]verything you need is already inside and ready to go.” *Id.*

¹⁴ Petitioner references all of Exhibits 1006–1008 collectively as “CryptoKube,” in that each Exhibit documents various aspect of the CryptoKube product.

¹⁵ We reference Petitioner’s pagination in this reproduction of a web page.

(“JUST ADD POWER!”).

3. *Overview of Szmigielski (Ex. 1009)*

Szmigielski is a book titled “Bitcoin Essentials.” Ex. 1009, Title Page.¹⁶ Szmigielski describes various aspects related to the mining of Bitcoin, including instructions on how to mine bitcoin, how transactions are recorded on the blockchain, and also discusses the pros and cons of mining using CPUs, GPUs, FPGAs, and ASICs. *Id.* at v. Szmigielski explains bitcoin wallets (pages 1–14), mining software (pages 14–24), and other aspects of mining (pages 25–107). *Id.* at i–iv.

Szmigielski describes compute power and resources needed to accomplish mining outcomes, and notes that “costs can add up quickly and electricity is a big part of it. It is very important to set up your mining operation where electricity is cheap or perhaps even free.” Ex. 1009, 71. Szmigielski describes that it is a benefit to mine bitcoin at a location with with low electricity rates and a cooler climate. *Id.* at 72. This is because “[o]ne of the biggest costs for Bitcoin miners is the cost of electricity.” *Id.* at 90.

4. *Overview of Kheterpal (Ex. 1010)*

Kheterpal is a patent application publication titled “Digital Currency Mining Circuitry Having Shared Processing Logic,” which relates to mining digital currencies. Ex. 1010, code (54), ¶2. Kheterpal describes an exemplary digital currency, Bitcoin, which is governed by the Bitcoin

¹⁶ We refer to the original pagination, rather than Petitioner’s.

protocol, in which a “network maintains a public ledger in which new transactions are verified and recorded by members of the network via cryptography.” *Id.* ¶ 4. Kheterpal discloses that “[t]he Bitcoin protocol defines a system in which the creation and distribution of the bitcoin cryptocurrency is governed by consensus among a peer-to-peer network.” *Id.*

Kheterpal discloses that “Bitcoin mining operations involve identifying a solution to a cryptographic puzzle in which transactions that are to be verified form part of the puzzle parameters.” Ex. 1010 ¶ 5. Kheterpal further discloses that “Bitcoin mining operations are typically performed via brute-force techniques,” where the “difficulty of the cryptographic puzzle has led to the use of dedicated circuitry designed specifically for Bitcoin mining.” *Id.*

Figure 2, reproduced below, illustrates a schematic of Kheterpal’s device.

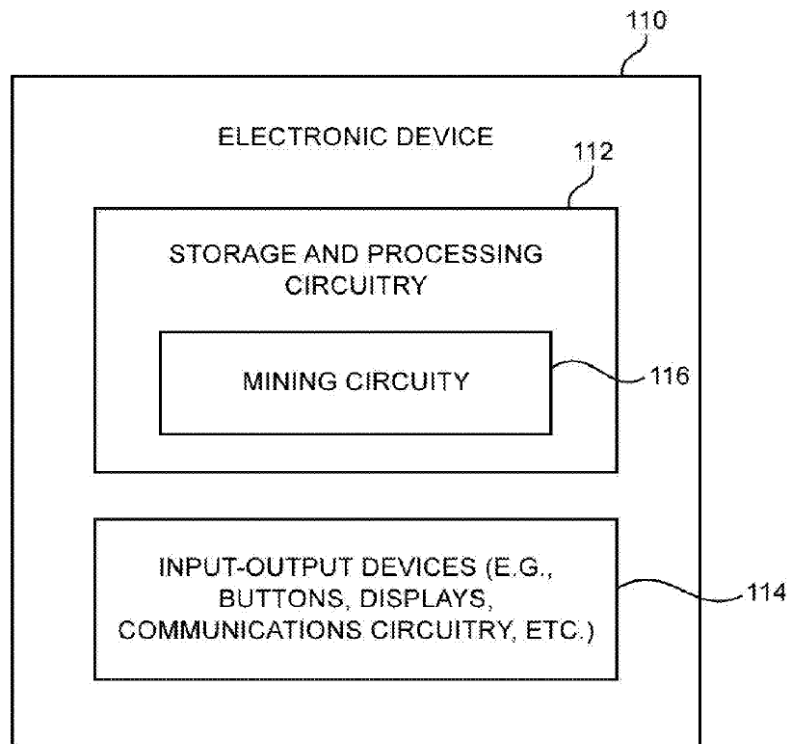


Figure 2 depicts Kheterpal’s electronic device 110, which includes storage and processing circuitry 112, which itself includes mining circuitry 116.

Ex. 1010 ¶ 32.

5. *Motivation to Combine Dickerson and CryptoKube, Szmigielski and Kheterpal*

According to Petitioner, one of ordinary skill in the art “would have been motivated to combine Dickerson with CryptoKube, among other reasons, because Dickerson discloses a mobile power generation system that can generate electricity using flare gas (raw natural gas that is to be flared) at an oil and gas production facility.” Pet. 19 (citing Ex. 1003 ¶¶ 91–99; Ex. 1004 ¶¶ 89–97; Ex. 1005 ¶ 2, Abstract). Petitioner points out that “Dickerson discloses that the power generated may be more than the power required on an oil field pumping site, and that its system can provide power

not only for local consumption but also for export to the grid at the same time if utility power lines are accessible.” *Id.* (citing Ex. 1005 ¶ 39).

Petitioner also points out that these sites “are typically located in remote areas where no utility power is available.” *Id.* (citing Ex. 1005 ¶ 24). Based on these teachings, Petitioner concludes that one of ordinary skill in the art “would have understood that Dickerson’s system can generate free or cheap excess electricity while being isolated from the grid (e.g., because no utility power lines are accessible).” *Id.* at 19–20 (citing Ex. 1003 ¶¶ 91–93; Ex. 1004 ¶¶ 89–91).

In the asserted combination, Petitioner proposes combining “Dickerson’s mobile power generation system” with “CryptoKube’s mobile Bitcoin miner, wherein the Bitcoin mining devices (spondooliestech SP35 servers) are connected to and powered by Dickerson’s generator.” Pet. 20 (citing Ex. 1003 ¶ 99; Ex. 1004 ¶ 97). Relying on Szmigielski, Petitioner asserts that it was known in the art that “access to cheap power is desired because one of the biggest costs for digital currency miners is the cost of electricity.” *Id.* (citing Ex. 1009 ¶ 90). As such, Petitioner contends that one of ordinary skill in the art “would have been motivated to couple a device capable of digital currency mining to Dickerson’s system to utilize the free excess electricity.” *Id.* (citing Ex. 1003 ¶¶ 94–95; Ex. 1004 ¶¶ 92–93).

Petitioner also asserts that “CryptoKube discloses a mobile Bitcoin miner that can be easily transported to a remote oil and gas production facility” (Pet. 20 (citing Ex. 1006, 1–4)), and as such, concludes that one of ordinary skill in the art “would have found it obvious to couple CryptoKube

with Dickerson’s system to utilize the free excess electricity.” *Id.* (citing Ex. 1003 ¶¶ 96–97; Ex. 1004 ¶¶ 94–95). Petitioner argues such a combination would have been obvious because “[b]oth the Dickerson system and CryptoKube are containerized and built inside an ISO shipping container to confer better mobility.” *Id.* (citing Ex. 1005 ¶ 14; Ex. 1006, 1–4); *see also id.* (citing Ex. 1003 ¶ 98; Ex. 1004 ¶ 96) (“[I]t is easy to combine the two by (1) connecting the two systems or (2) placing the respective equipment of the two containers into a single container.”).

In response, Patent Owner argues that Petitioner fails to establish that one of ordinary skill in the art would have been motivated to combine Dickerson, CryptoKube, Szmigielski, and Kheterpal. Prelim. Resp. 10–24.¹⁷ Patent Owner contends that Dickerson and CryptoKube are from “disparate and unrelated fields of art before the invention of the ’372 patent,” and as such, one of ordinary skill in the art would not have combined the references absent hindsight bias. *Id.* at 10–17. Patent Owner argues further that Szmigielski actually “*teaches away* from any attempt to combine Dickerson and CryptoKube” because “Szmigielski sets forth the requirement that electrical power for crypto mining must be *reliable*, unlike Dickerson’s variable and even occasional output.” *Id.* at 18 (citing Ex. 2001 ¶ 59). Patent Owner also contends that Petitioner fails to demonstrate that there

¹⁷ Petitioner relies on Kheterpal for the limited purpose of “explain[ing] that the Bitcoin protocol defines a system in which the creation and distribution of the Bitcoin digital currency is governed by consensus among a peer-to-peer network.” Pet. 25 (citing Ex. 1004, 106–107; Ex. 1010 ¶ 4). Other than its arguments directed to Petitioner’s asserted combination, Patent Owner does not make any particular arguments to Kheterpal’s disclosure.

would have been a reasonable expectation of success in combining the references absent Petitioner's unsupported, conclusory allegations. *Id.* at 18–21. Patent Owner last asserts that “hindsight bias in the Petition is further established by Petitioner's statements in its own patents that post-date the '372 patent but are directed to substantially the same subject matter.” *Id.* at 21.

We have reviewed Patent Owner's arguments and cited evidence and determine, on the current record, that Petitioner provides sufficient arguments and evidence, at this stage of the proceeding, to support its reasoning that a person having ordinary skill in the art would have been motivated to combine Dickerson's mobile power generation system with CryptoKube's mobile Bitcoin miner, as Petitioner proposes.

In this regard, Petitioner asserts that “Smigielski discloses that access to cheap power is desired because one of the biggest costs for digital currency miners is the cost of electricity.” Pet. 20 (citing Ex. 1009 ¶ 90). And based on Smigielski's teachings, Petitioner contends that one of ordinary skill in the art would have been motivated to combine Dickerson's mobile power generation system and CryptoKube's mobile Bitcoin miner in order to utilize the free excess electricity generated by Dickerson's system. *Id.* (citing Ex. 1003 ¶ 94–95; Ex. 1004 ¶¶ 92–93).

At this stage, we find that Petitioner provides a sufficient rationale to combine Dickerson, CryptoKube, Smigielski, and Kheterpal that is supported by the teachings of Smigielski. Pet. 20 (citing Ex. 1009, 90). Smigielski discloses that “[i]n addition to facing the same challenges as data centers, such as network connectivity, availability of electricity, and price,”

blockchain miners face additional unique issues such as short hardware replacement cycles, exchange rates, and competition between miners. Ex. 1009, 90. Smigielski also discloses that “[o]ne of the biggest costs for Bitcoin miners is the cost of electricity,” and as such, blockchain miners “seek out locations where electricity is fairly priced.” *Id.*

Patent Owner argues that one of ordinary skill in the art “would not have considered generators utilizing flared gas at remote oil and gas facilities as suitable to power a cryptocurrency miner like CryptoKube.” Prelim. Resp. 12 (citing Ex. 2001 ¶49). Patent Owner contends that this is because one of ordinary skill in the art would consider Dickerson and CryptoKube as being from “disparate and unrelated fields of art before the invention of the ’372 patent.” *Id.* at 10 (citing Ex. 2001 ¶48). However, based on the current record and for purposes of institution, Patent Owner’s arguments fail to persuade us that one of ordinary skill in the art would not have considered using Dickerson’s mobile power generation system as a suitable power source in order to provide “free or cheap excess electricity.” Pet. 19 (citing Ex. 1003 ¶¶ 91–93; Ex. 1004 ¶¶ 89–91). Here, as Petitioner points out, Dickerson discloses that its mobile system may generate more power than that is “required on an oil field pumping site.” *Id.* (citing Ex. 1005 ¶ 39). More particularly, Dickerson discloses

[f]or example, the amount of gas going to flare might produce about 3 MW of power when only about 250 KW is needed to run the site. Therefore, the system can provide power for both local consumption and also for export to the grid at the same time if utility power lines are accessible from the site.

Ex. 1005 ¶ 39.

Petitioner’s motivation to combine the references relies on Smigielski’s teaching that “[o]ne of the biggest costs for Bitcoin miners is the cost of electricity.” Pet. 20 (citing Ex. 1009, 90). Smigielski also teaches that it is beneficial to use inexpensive and reliable electricity¹⁸ and provides “hydroelectric power,” as an example. Ex. 1009, 90. Thus, we understand Smigielski to reasonably suggest that one of ordinary skill in the art at the time of the invention would have recognized the need to consider various alternative power sources in order to power a block chain mine. *See Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1049 (Fed. Cir. 2019) (quoting *In re Baird*, 16 F.3d 380, 383 (Fed. Cir. 1994)) (When conducting an obviousness analysis, the Board must consider a prior art reference “not only for what it expressly teaches, but also for what it fairly suggests.”).

Patent Owner provides several reasons why Dickerson’s system would not have been a suitable power source for CryptoKube. Prelim. Resp. 14–17. For example, Patent Owner argues that “crypto mining operations are highly computationally and energy-intensive by design” (*id.* at 17 (citing Ex. 1001, 13:29–36, 13:49–58)) and the power provided by Dickerson is “*unreliable* because the system is located ‘in remote areas’ where ‘no utility power is available’” (*id.* at 15 (citing Ex. 1005 ¶ 24; Ex. 1003 ¶ 55)). However, at this stage of the proceeding Petitioner provides a sufficient rationale to combine Dickerson and CryptoKube.

The existence of other possible combinations of features does not

¹⁸ We address Patent Owner’s concerns regarding the reliability of Dickerson’s power below.

make Petitioner’s combination nonobvious. Petitioner was required to show that its proposed combination would have been desirable, but not necessarily the most desirable option available to one of ordinary skill in the art. *Elekta Ltd. v. ZAP Surgical Sys., Inc.*, 81 F.4th 1368, 1374 (Fed. Cir. 2023) (“Nor does an obviousness showing ‘require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide motivation for the current invention.’” (citing *Novartis Pharms. Corp. v. West-WardPharms. Int’l Ltd.*, 923 F.3d 1051, 1059 (Fed. Cir. 2019))). The pertinent question is “‘whether there is something in the prior art as a whole to suggest the *desirability*, and thus the obviousness, of making the combination,’ not whether there is something in the prior art as a whole to suggest that the combination is the *most desirable* combination available.” *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004) (citing *In re Beattie*, 974 F.2d 1309, 1311 (Fed. Cir. 1992)).

Based on the current record, we also disagree with Patent Owner’s contention that Dickerson and CryptoKube are from “disparate and unrelated fields of art” such that one of ordinary skill in the art would not have considered utilizing Dickerson’s mobile power generation system in order to power CryptoKube’s Bitcoin mining system. Prelim. Resp. 10 (citing Ex. 2001 ¶ 48). To the extent that Patent Owner argues that either Dickerson or CryptoKube are not analogous art, we disagree. To qualify as analogous art for § 103 purposes, a reference “must satisfy one of the following conditions: (1) the reference must be from the same field of endeavor; or (2) the reference must be reasonably pertinent to the particular problem with which the inventor is involved.” *K-TEC, Inc. v. Vita-Mix Corp.*, 696 F.3d

1364, 1375 (Fed. Cir. 2012) (citation omitted). In this regard, we note that both Dickerson and CryptoKube are in the same field of endeavor as the '372 patent. *See* Ex. 1001, 6–7 (providing that '372 patent “relates to blockchain mining at an oil or gas facility”). But, even if Dickerson and CryptoKube are not from the same field of endeavor, they are at least reasonably pertinent to the particular problem with which the inventor is involved. Dickerson to the problem of generating electricity from normally flared gas, and CryptoKube to cryptomining. *See* Ex. 1005 ¶ 2; Ex. 1006, 1

We also are not persuaded by Patent Owner’s argument that “Szmigielski *teaches away* from any attempt to combine Dickerson and CryptoKube” because “Szmigielski sets forth the requirement that electrical power for crypto mining must be *reliable*, unlike Dickerson’s variable and even occasional output.” Prelim. Resp. 18 (citing Ex. 2001 ¶ 59). To support its argument, Patent Owner asserts that Dickerson’s “electrical power is *unreliable* because the system is located “in remote areas” where “no utility power is available.” Prelim. Resp. 15 (citing Ex. 1005 ¶ 24; Ex. 2001 ¶ 55). According to Patent Owner, “[t]he main purpose of the Dickerson generator is ‘to generate electricity that is returned to the facility’ rather than powering a power-hungry external load like a crypto miner.” *Id.* (citing Ex. 1005 ¶ 6; Ex. 2001 ¶ 55). And, in circumstances where there is excess power, Patent Owner contends that “Dickerson teaches sending any excess power to the grid if it is connected.” *Id.* Patent Owner also argues that because Dickerson “teaches using diesel generator as a backup source to mitigate unreliability” one of ordinary skill in the art would understand that Dickerson “could not *reliably* supply free or cheap power for crypto

mining.” *Id.* at 16 (citing 1005 ¶ 21; Ex. 2001 ¶ 56).

A reference does not teach away “if it merely expresses a general preference for an alternative invention but does not ‘criticize, discredit, or otherwise discourage’ investigation into the invention claimed.” *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). We disagree, on this record, that the teachings of Dickerson identified by Patent Owner would have discouraged one of ordinary skill in the art from utilizing Dickerson’s mobile power generation system to power CryptoKube’s Bitcoin mining system. Even if the diesel generator in Dickerson were used to mitigate any potential unreliability that may occur, on the whole, when combined with the otherwise free or inexpensive electricity generated using flare gas, Dickerson would still provide cheaper power, as Petitioner suggests.

Patent Owner argues further that the Petition is deficient because it “does not address the reasonable expectation of success prong of obviousness analysis.” Prelim. Resp. 18 (citing *InTouch Technologies, Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1347 (Fed. Cir. 2014)). More particularly, Patent Owner argues that

[g]iven the lack of any provision in CryptoKube to adjust for the variability of available wellhead gas and power output (e.g., as taught by the ’372 patent and discussed above), [one of ordinary skill in the art] did not have a reasonable expectation of success in combining it with Dickerson’s system.

Id. at 18–19 (citing Ex. 2001 ¶ 60). Patent Owner also asserts that “[t]here is no evidence that CryptoKube was or could be equipped” to handle the harsh operating conditions that the remote oil and gas production facilities in Dickerson would be subjected to. *Id.* at 19–20 (citing Ex. Ex. 1005 ¶ 3;

Ex. 1006, 1–4; Ex. 2001 ¶ 61). We disagree.

At the outset, we note that CryptoKube describes that its “data center for . . . bitcoin miner” “[c]an operate from -10c to + 30c.” Ex. 1006, 1. CryptoKube discloses that it cools hardware using “louvered fans,” but that it may also optionally use “supplemental water cooling or evaporative cooling.” Ex. 1008, 1, 16. Thus, one of ordinary skill in the art would have understood CryptoKube to be equipped to handle a wide-range of environmental conditions using equipment similar to the equipment disclosed in the ’372 patent. *See* Ex. 1001, 2:35–43, 15:66–16:3. That “it would take some creativity to carry out the combination does not defeat a finding of obviousness.” *Facebook, Inc. v. Windy City Innovations, LLC*, 953 F.3d 1313, 1333 (Fed. Cir. 2020).

In addition, the Federal Circuit has observed that, while motivation to combine the teachings of the prior art requires an explicit analysis, “a finding of reasonable expectation of success can be implicit.” *See Elekta*, 81 F.4th at 1376 (Fed. Cir. 2023). Moreover, “[e]vidence of reasonable expectation of success, just like evidence of a motivation to combine, ‘may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or in some cases, from the nature of the problem to be solved.’” *Id.* at 1377 (quoting *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1125 (Fed. Cir. 2000); *see also Merck & Cie v. Gnosis S.P.A.*, 808 F.3d 829, 836 (Fed. Cir. 2015) (“KSR does not require an explicit statement of a reasonable expectation of success in every case.”)).

Patent Owner last asserts that “hindsight bias in the Petition is further

established by Petitioner’s statements in its own patents that post-date the ’372 patent but are directed to substantially the same subject matter” (Prelim. Resp. 21–22) and the fact that Petitioner submitted declarations “from the ‘perspective’ of two *different* POSITAs – one in the oil and gas industry and the other in the bitcoin mining industry” (*id.* at 23–24).

Although every determination of obviousness relies to some extent on hindsight, we are not persuaded that Petitioner’s assertion of obviousness here was based on improper reliance on hindsight. Instead, Petitioner relies on Szmigielski to demonstrate that it was known in the art that “access to cheap power is desired because one of the biggest costs for digital currency miners is the cost of electricity.” Pet. 20 (citing Ex. 1009 ¶ 90). And based on Smigielski’s teachings, Petitioner contends that one of ordinary skill in the art would have been motivated to combine Dickerson’s mobile power generation system and CryptoKube’s mobile Bitcoin miner in order to utilize the free excess electricity generated by Dickerson’s system. *Id.* at 20 (citing Ex. 1003 ¶ 94–95; Ex. 1004 ¶¶ 92–93). Therefore, on the current record, we find that Petitioner provides a sufficient rationale to combine Dickerson and CryptoKube that is supported by the teachings of Smigielski. *Id.* (citing Ex. 1009, 90).

Accordingly, on the current record, we determine that Petitioner has provided sufficient arguments and evidence to support its assertion that one of ordinary skill in the art would have been motivated to combine Dickerson, CryptoKube, Szmigielski, and Kheterpal. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated

reasoning with some rational underpinning to support the legal conclusion of obviousness.”).

6. *Analysis of Claim 1*

We now turn our analysis to the scope and content of the prior art and any differences between the prior art and the subject matter of independent claim 1, on a limitation-by-limitation basis. We use Petitioner’s notations to identify the claim elements. *See* Pet. 21–26. Patent Owner does not specifically respond to Petitioner’s contentions directed to individual limitations. *See generally* Prelim. Resp.

a) *[1pre] A system comprising:*

Petitioner asserts “[t]o the extent the preamble is limiting, the Dickerson-CryptoKube combination renders [1pre] obvious.” Pet. 21 (citing Ex. 1003 ¶ 101).¹⁹ Petitioner asserts that “Dickerson describes a mobile power generation system that can generate electricity using flare gas (raw natural gas that is to be flared) at an oil and gas production facility.” *Id.* (citing Ex. 1005 ¶ 2, Abstract). Petitioner further asserts that CryptoKube “discloses a Bitcoin miner system.” *Id.* (citing Ex. 1006, 1–4).

¹⁹ We need not decide whether the preamble of claim 1 is limiting for purposes of this Decision, because Petitioner has demonstrated that it is more likely than not that the cited art teaches the preamble.

b) [1a] a source of combustible gas produced from a facility selected from a group consisting of a hydrocarbon production, storage, or processing facility;

Petitioner asserts that “Dickerson discloses a mobile system ‘for processing and using raw natural gas that is normally flared at the site of oil and gas field operation facilities.’” Pet. 21 (citing Ex. 1005 ¶ 2). More particularly, Petitioner asserts that Dickerson discloses “a membrane separation unit for separating useful fuel gas from **raw natural gas**” and “a gas engine that uses the fuel gas to generate electricity.” *Id.* (citing Ex. 1005 ¶ 6; Ex. 1003 ¶¶ 102–103).

c) [1b] a generator connected to the source of combustible gas to receive a continuous flow of combustible gas to power the generator; and

Petitioner asserts that “Dickerson discloses that the ‘gas genset 102 includes a gas engine 110 and a generator 112 that is driven by the engine 110.’” Pet. 21 (citing Ex. 1005 ¶ 26). According to Petitioner “Dickerson further discloses a continuous flow of combustible gas (e.g., natural gas) because it discloses that ‘[i]n an application where the facility operator contemplates times when raw natural gas flow will be interrupted, a stand-by diesel generator is provided.’” *Id.* at 21–22 (citing Ex. 1005 ¶ 21; Ex. 1003 ¶¶ 104–107).

d) [1c] blockchain mining devices connected to the generator; in which:

Petitioner asserts that the combination of Dickerson CryptoKube “would have (1) Dickerson’s mobile power generation system; and (2) CryptoKube’s mobile Bitcoin miner, wherein the Bitcoin mining devices

(spondooliestech SP35 servers) are connected to and powered by Dickerson's generator." Pet. 23 (citing Ex. 1003 ¶¶ 108–109).

e) [1c_i] the blockchain mining devices each have a mining processor and are connected to a network interface;

Petitioner asserts that CryptoKube's shipping container "is filled with spondooliestech SP35 servers, that is, blockchain mining devices, each necessarily having a mining processor." Pet. 23 (citing Ex. 1004, 1–4). Petitioner further asserts that CryptoKube's system includes an Internet firewall and routers. *Id.* (citing Ex. 1004, 4; Ex. 1023, 00:00:11). According to Petitioner, one of ordinary skill in the art "would have understood that to mine digital currency, the miners need to be connected to a network interface (e.g., a modem or a router) in order to access a distributed, blockchain database that is shared across a network." *Id.* at 24 (citing Ex. 1004 ¶¶ 104–105).

f) [1c_ii] the network interface is connected to receive and transmit data through the internet to a network that stores or has access to a blockchain database;

Petitioner asserts that "CryptoKube is built inside an ISO shipping container and is filled with Bitcoin miners, namely, spondooliestech SP35 servers." Pet. 24 (citing Ex. 1006, 1–4). According to Petitioner, one of ordinary skill in the art "would have understood that to mine Bitcoin, the Bitcoin miner needs to receive and transmit data through the internet to a network that stores or has access to a blockchain database, that is, a distributed database that is shared across a network and stores information in blocks." *Id.* at 24–25 (citing Ex. 1004 ¶¶ 106–107). To support its position,

Petitioner contends that “Kheterpal explains that the Bitcoin protocol defines a system in which the creation and distribution of the Bitcoin digital currency is governed by consensus among a peer-to-peer network.” *Id.* at 25 (citing Ex. 1010 ¶ 4).

g) [1c_iii] the mining processors are connected to the network interface and adapted to mine transactions associated with the blockchain database and to communicate with the blockchain database;

Petitioner asserts that Dickerson’s CryptoKube system includes “Bitcoin miners such as spondooliestech SP35 servers.” Pet. 25 (citing Ex. 1006, 1–4). According to Petitioner, one of ordinary skill in the art would have understood that to mine Bitcoin, the mining processors need to be connected to a network interface and adapted to mine transactions associated with the blockchain database and to communicate with the blockchain database, which is implemented as a public ledger distributed among many peer-to-peer devices connected to the Internet.

Id. (citing Ex. 1004 ¶¶ 108–109; Ex. 1010 ¶ 4).

h) [1c_iv] the network is a peer-to-peer network;

Petitioner asserts that one of ordinary skill in the art “would have understood that Bitcoin mining is conducted on a peer-to-peer network, because the Bitcoin protocol defines a system in which the creation and distribution of Bitcoin digital currency is governed by consensus among a peer-to-peer network.” Pet. 25 (citing Ex. 1004 ¶ 110; Ex. 1010 ¶ 4). As such, one of ordinary skill in the art “would have found it obvious that the network is a peer-to-peer network.” *Id.* (citing Ex. 1004 ¶ 111).

i) [1c_v] the blockchain database is a distributed database stored on plural nodes in the peer-to-peer network; and

Petitioner asserts that one of ordinary skill in the art “would have understood that in the Bitcoin network, the blockchain database is necessarily a distributed database stored on plural nodes in the peer-to-peer network. Indeed, that is the very definition of ‘blockchain.’” Pet. 26 (citing Ex. 1004 ¶¶ 112–113; Ex. 1010 ¶ 4).

j) [1c_vi] the blockchain database stores transactional information for a digital currency.

Petitioner asserts that one of ordinary skill in the art “would have understood that in a Bitcoin network, the blockchain database stores transactional information for a digital currency, which is sole purpose of the Bitcoin-brand digital currency.” Pet. 26 (citing Ex. 1004 ¶¶ 114–115; Ex. 1010 ¶ 4).

7. Conclusion for Claim 1

Petitioner has shown sufficiently that the combination of Dickerson, CryptoKube, Szmigielski, and Kheterpal teaches all limitations of claim 1. Petitioner also has put forth sufficient reasons for combining these references with a reasonable expectation of success. Pet. 19–20 (citing Ex. 1003 ¶¶ 91–99; Ex. 1004 ¶¶ 89–97). Based on the present record, we determine that Petitioner has established that it is more likely than not that it would prevail in showing that the subject matter of claim 1 would have been obvious over the combination of Dickerson, CryptoKube, Szmigielski, and Kheterpal.

8. *Claim 24*

Claim 24 is directed to a method claim that recites “producing electricity using a generator and a source of combustible gas,” and also recites other limitations that are substantially similar to those in claim 1. *Compare* Ex. 1001, 21:48–22:5 *with id.* at 19:52–20:7. Petitioner asserts that claim 24 is unpatentable over Dickerson, CryptoKube, Szmigielski, and Kheterpal by citing its arguments for claim 1, with additional arguments addressing minor differences with claim 24’s limitations. Pet. 42–44 (citing Ex. 1003 ¶¶ 159–173; Ex. 1005 ¶¶ 2, 21, 26, 39, Abstract).

Patent Owner does not argue claim 24 separately from claim 1. *See generally* Prelim. Resp. For the reasons discussed above with regard to claim 1, Petitioner has demonstrated that it is more likely than not that it would prevail with respect to claim 24.

9. *Claims 2–4, 8, 16–23, 25–30, and 34*

Claims 2–4, 8, and 16–23 depend directly or indirectly from claim 1, and claims 25–30 and 34 depend directly or indirectly from independent claim 24. Petitioner provides a clause-by-clause analysis of where each element in dependent claims 2–4, 8, 16–23, 25–30, and 34 is disclosed in, or would have been obvious in view of, Dickerson, CryptoKube, Szmigielski, and Kheterpal. Pet. 26–48. Throughout Petitioner’s analysis, Petitioner cites and relies on the testimony of Dr. Nikolaou and Mr. Kasdorf for evidentiary support. *Id.* (citing Ex. 1003 ¶¶ 116–158, 174–185; Ex. 1004 ¶¶ 116–145, 157–164).

Patent Owner does not specifically address any of the dependent claims. *See generally* Prelim. Resp.

We find Petitioner’s arguments and evidence in support thereof sufficient at this stage of the proceeding for the reasons explained by Petitioner. *See* Pet. 26–48. Accordingly, based on the arguments and evidence on the record before us, we determine, for purposes of this Decision, Petitioner has established that it is more likely than not that it would prevail on dependent claims 2–4, 8, 16–23, 25–30, and 34.

*D. Alleged Obviousness over Dickerson CryptoKube, Belady-989, Szmigielski, and Kheterpal
(Ground 2: Claims 1–4, 8, 10–12, 15–30, 34–37, and 40)*

Petitioner asserts that claims 1–4, 8, 10–12, 15–30, 34–37, and 40 are unpatentable as obvious over Dickerson, CryptoKube, Belady-989, Szmigielski, and Kheterpal. Pet. 48–64. Petitioner also relies on the declaration testimony of Dr. Nickolaou and Mr. Kasdorf to support its arguments. *Id.* (citing Exs. 1003, 1004). Patent Owner’s arguments on the merits are limited to disputing Petitioner’s contentions regarding the proposed the proposed motivation to combine the asserted references. Prelim. Resp. 39–43.

We address Petitioner’s contentions and Patent Owner’s arguments with respect to the motivation to combine Dickerson, CryptoKube, Belady-989, Szmigielski, and Kheterpal. We first provide a brief overview of Belady-989.

1. Overview of Belady-989 (Ex. 1011)

Belady-989 is directed to a gas supply shock absorber for datacenter power generation. Ex. 1011, code (54); *see also id.* ¶ 15 (“A gas supply shock absorber can comprise gas storage that can be charged with

pressurized gas.”). According to Belady-989 “it has become more practical to perform digital data processing at a location remote from the location.” *Id.*

¶ 2. Belady-989 discloses that remote “data centers often consume large quantities of electrical power” and “the cost of obtaining such electrical power is becoming a primary determinant in the economic success of a data center.” *Id.* ¶ 4. Belady-989 further discloses that “data centers are being located in areas where the data centers can obtain electrical power in a cost-effective manner.” *Id.*; *see also id.* ¶ 3 (describing datacenters require “massive amounts of computing processing capability” and “the size and quantity of datacenters continues to increase”). As a result, Belady-989 discloses that

data centers are being located in areas where natural resources, from which electrical power can be derived, are abundant and can be obtained inexpensively. For example, natural gas is a byproduct of oil drilling operations and is often considered a waste byproduct since it cannot be economically captured and brought to market. Consequently, in areas where oil drilling operations are being conducted, natural gas is often available for free, or at a minimal cost. As will be recognized by those skilled in the art, natural gas can be utilized to generate electrical power, such as, for example, through a fuel cell or by generating steam to drive a steam powered electrical generator.

Id.

Belady-989 discloses one drawback to gas that is available at reduced cost is that it “cannot always be provided at a well-maintained pressure.”

Ex. 1011 ¶ 4. In this regard, Belady-989 discloses that the pressure often includes “positive and negative gas pressure spikes where the pressure of the provided gas increases, or decreases, respectively. Not only can such gas

pressure spikes damage equipment that utilizes such gas, but they can also be disruptive to the entire gas supply network.” *Id.* To address this drawback, Belady-989 discloses using a gas supply shock absorber in order to “absorb and level out gas pressure spikes by storing gas during positive pressure spikes and then releasing the stored gas during negative pressure spikes.” *Id.* ¶ 5.

2. *Motivation to Combine Dickerson, CryptoKube, Belady-989, Szmigielski, and Kheterpal.*

Petitioner asserts that “Belady-989 discloses that data centers often consume large quantities of electrical power, and should be located in areas where natural resources (e.g., flare gas), from which electrical power can be derived, are abundant and can be obtained inexpensively.” Pet. 51 (citing Ex. 1003 ¶ 193; Ex. 1011 ¶ 4). Petitioner identifies that Dickerson discloses the need for “auxiliary means for providing electricity . . . when there will likely be periods when the production facility will require electricity but **will be generating no or low levels of raw natural gas.**” *Id.* at 50–51 (citing Ex. 1005 ¶ 21). Consequently, Petitioner contends that one of ordinary skill in the art “would have understood that the flow of raw natural gas from the oil and gas facility may fluctuate and would have been motivated to further improve the Dickerson-CryptoKube combination by employing Belady-989’s gas supply shock absorber, among other reasons, because doing so will improve the energy usage efficiency.” *Id.* at 51 (citing Ex. 1003 ¶ 193).

In the asserted combination, Petitioner proposes combining “Dickerson’s mobile power generation system” with “CryptoKube’s mobile Bitcoin miner, wherein the Bitcoin mining devices (spondooliestech SP35

servers) are connected to and powered by Dickerson’s generator,” and then employing “Belady-989’s gas supply shock absorber.” Pet. 51 (citing Ex. 1003 ¶ 195). According to Petitioner, one of ordinary skill in the art “would have been motivated to combine Dickerson, CryptoKube and Belady-989, to use Belady-989’s gas supply shock absorber to improve energy usage efficiency.” *Id.* (citing Ex. 1003 ¶¶ 193–194). Petitioner argues that its motivation is supported by Szmigielski’s disclosure that “[i]ndustrial miners face almost the same issues as data centers: access to relatively cheap power, good network access.” *Id.* (quoting Ex. 1009, 88).

In response, Patent Owner argues that Petitioner fails to establish that one of ordinary skill in the art would have been motivated to combine Dickerson, CryptoKube, Belady-989, Szmigielski, and Kheterpal for the same reasons discussed with respect to Ground 1. Prelim. Resp. 39. In addition, Patent Owner argues that Petitioner does not explain how one of ordinary skill in the art “was supposed to combine the Belady-989 gas shock absorber with Dickerson, nor does Petitioner address the reasonable expectation of success in even a cursory fashion.” *Id.* at 40.

Instead, Patent Owner argues that “there are several reasons why [one of ordinary skill in the art] would not be motivated to combine Belady-989[’s] shock absorber with Dickerson or with CryptoKube.” *Id.* at 41. For example, Patent Owner argues that Dickerson already discloses using “a stand-by diesel generator” to address periods where there is “no or low levels of raw natural gas,” and Petitioner “has not presented any evidence beyond its conclusory assertion of ‘improv[ing] the energy usage efficiency’ that [one of ordinary skill in the art] would consider layering the complex

gas shock absorber in Belady-989 on top of the proven solutions already provided by Dickerson.” *Id.* (citing Ex. 2001 ¶ 77). Patent Owner argues further that one of ordinary skill in the art “would not be motivated to add Belady-989’s gas shock absorber because doing so would not solve the unreliability of Dickerson’s ‘excess’ electrical output for powering a power-hungry external load like CryptoKube.” *Id.* at 42 (citing Ex. 2001 ¶ 80). Patent Owner last argues that “Belady-989’s gas shock absorber was incompatible with crypto mining’s need for reliable power as articulated by Szmigielski.” *Id.* (citing Ex. 1009, 90; Ex. 2001 ¶ 81).

We have reviewed Patent Owner’s arguments and cited evidence and determine, on the current record, that Petitioner provides sufficient arguments and evidence, at this stage of the proceeding, to support its reasoning that a person having ordinary skill in the art would have been motivated to combine Dickerson’s mobile power generation system with CryptoKube’s mobile Bitcoin miner and apply Belady-989’s gas supply shock absorber to improve energy usage efficiency, as Petitioner proposes.

Petitioner has shown sufficiently that Belady-989 discloses using flare gas to power data centers that “consume large quantities of electrical power.” Pet. 51 (citing Ex. 1011 ¶ 4). A person of ordinary skill in the art is a person of ordinary creativity. *See KSR*, 550 U.S. at 421. It follows readily that a person of ordinary skill and creativity reasonably would have understood how to incorporate Belady’s gas supply shock absorber into Dickerson’s mobile power generation system to power CryptoKube’s mobile Bitcoin miner in a configuration necessary to harness the benefit of Belady’s gas supply shock absorbers. We credit Dr. Nikolaou’s declaration testimony

to that effect. *See, e.g.*, Ex. 1003 ¶¶ 187–195.

Patent Owner argues that Petitioner “has not presented any evidence beyond its conclusory assertion of ‘improv[ing] the energy usage efficiency’ that a [one of ordinary skill in the art] would consider layering the complex gas shock absorber in Belady-989 on top of the proven solutions already provided by Dickerson.” Prelim. Resp. 41 (citing Ex. 2001 ¶ 77). However, we find that with support from its expert, Petitioner has sufficiently explained—at this preliminary stage and for the purposes of institution—that one of ordinary skill in the art “would have been motivated to combine Dickerson, CryptoKube and Belady-989, to use Belady-989’s gas supply shock absorber to improve energy usage efficiency.” Pet. 51 (citing Ex. 1003 ¶¶ 193–194).

We also find unavailing Patent Owner’s arguments that there is inadequate reasoning to combine Belady-989 with Dickerson and CryptoKube because it would have been “incompatible with crypto mining’s need for reliable power as articulated by Szmigielski” and failed to solve the problem with “the unreliability of Dickerson’s ‘excess’ electrical output.” Prelim. Resp. 42 (citing Ex. 2001 ¶¶ 80–81). However, at this stage of the proceeding and for purposes of institution, Petitioner has shown sufficiently that Szmigielski teaches that “[i]ndustrial miners face almost the same issues as data centers: access to relatively cheap power, good network access.” Pet. 51 (citing Ex. 1009, 88). Petitioner has also shown sufficiently that Belady-989 discloses producing electrical power from inexpensive flare gas that is adequate to power datacenters that consume large quantities of electrical power. Pet. 52 (citing Ex. 1011 ¶¶ 4, 28).

From at least these disclosures, a person of ordinary skill and creativity reasonably would have recognized that Dickerson and Belady-989 generate enough electricity to power a data center that “consume[s] large quantities of electrical power” and utilized that “relatively cheap power” in order to power to power a cryptocurrency miner like CryptoKube. *See, e.g.*, Ex. 1003 ¶¶ 187–195. *See KSR*, 550 U.S. at 421 (“[T]he [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.”).

Accordingly, on the current record, we determine that Petitioner has provided sufficient arguments and evidence to support its assertion that one of ordinary skill in the art would have been motivated to combine Dickerson, CryptoKube, Belady-989, Szmigielski, and Kheterpal.

3. *Claims 1–4, 8, 10–12, 15–30, 34–37, and 40*

Petitioner argues that the combination of Dickerson, CryptoKube, Belady-989, Szmigielski, and Kheterpal renders obvious claims 1–4, 8, 10–12, 15–30, 34–37, and 40. Pet. 48–64. Petitioner provides a clause-by-clause analysis of where each element in claims 1–4, 8, 10–12, 15–30, 34–37, and 40 is disclosed in, or would have been obvious in view of, Dickerson, CryptoKube, Belady-989, Szmigielski, and Kheterpal. Pet. 48–64. Throughout Petitioner’s analysis, Petitioner cites and relies on the testimony of Dr. Nikolaou and Mr. Kasdorf for evidentiary support. *Id.* (citing Exs. 1003, 1004).

Patent Owner’s arguments on the merits are limited to disputing Petitioner’s contentions regarding the proposed the proposed motivation to combine the asserted references. Prelim. Resp. 39–43.

Based on our review of the current record, we determine that the information presented supports sufficiently, for purposes of institution, Petitioner’s assertions regarding the limitations of these claims. Accordingly, based on the arguments and evidence on the record before us, we determine, for purposes of this Decision, Petitioner has established that it is more likely than not that it would prevail on claims 1–4, 8, 10–12, 15–30, 34–37, and 40.

*E. Alleged Obviousness over Dickerson CryptoKube, Belady-989, Boot, Szmigielski, and Kheterpal
(Ground 3: Claims 1–4, 7–12, 15–30, 34–37, and 40)*

Petitioner asserts that claims 1–4, 7–12, 15–30, 34–37, and 40 are unpatentable as obvious over Dickerson, CryptoKube, Belady-989, Boot, Szmigielski, and Kheterpal. Pet. 64–70. Petitioner also relies on the declaration testimony of Dr. Nickolaou and Mr. Kasdorf to support its arguments. *Id.* (citing Exs. 1003, 1004). Patent Owner disputes Petitioner’s contentions. Prelim. Resp. 45–49. We address Petitioner’s contentions and Patent Owner’s arguments below, beginning with the motivation to combine Dickerson, CryptoKube, Belady-989, Boot, Szmigielski, and Kheterpal. We first provide a brief overview of Boot.

1. Overview of Boot (Ex. 1012)

Boot is directed to “an independent power system configured to provide electrical power to an electric submersible pumping system

positioned in a well that produces petroleum products.” Ex. 1012 1:50–53. Boot’s power system includes a generator with an engine that is provided with a source of combustible gases from petroleum products of a well. *Id.* at 1:55–57. Boot describes that “[i]n the past, such gases have often been vented or flared at the well 118.” *Id.* at 4:6–7. Boot also discloses that its system includes a load bank that can be activated to take-up any excess power to maintain a minimum load to keep its engine within its preferred operating parameters. *Id.* at 3:8–14.

2. *The Parties’ Arguments*

Petitioner asserts that “[s]imilar to Dickerson, Boot discloses a mobile power generation system that can generate electricity using flare gas (raw natural gas that is to be flared) at an oil and gas production facility that is isolated from a power grid.” Pet. 67 (citing Ex. 1012, 1:5–10, 4:6–7, Abstract). Petitioner asserts further that any excess power in Boot that exceeds the power required by the oil field pumping site may “be dissipated as heat in a load bank 110.” *Id.* (citing Ex. 1012, 3:8–14). Petitioner also notes that Boot discloses that “the flare gas can be derived from more than one oil pumps or more than one well heads.” *Id.* (citing Ex. 1012, 3:42–46, Fig. 2; Ex. 1003 ¶ 283).

Based on these teaching, Petitioner asserts that one of ordinary skill in the art “would have found it obvious to improve the Dickerson-CryptoKube-Belady-989 combination by further including Boot’s teachings including using Boot’s load bank to absorb excess power, and gathering oil and gas from multiple wells on a multi-well pad.” Pet. 67 (citing Ex. 1003 ¶ 284; Ex. 1004 ¶ 236). According to Petitioner, one of ordinary skill in the art

“would have been motivated to include Boot’s load bank because Boot teaches that the load bank can help keep the engine within its preferred operating parameters (for instance not running at too low a speed and hence too low a temperature). *Id.* (citing Ex. 1003 ¶ 285; Ex. 1004 ¶ 237; Ex. 1012, 3:8–14). Petitioner further asserts that one of ordinary skill in the art would have been motivated to combine the references “in order to increase gas supply and increase the amount of electricity generated” based on Boot’s disclosure of “gather[ing] oil and gas from multiple wells on a multi-well pad.” *Id.* at 67–68 (citing Ex. 1003 ¶ 286; Ex. 1004 ¶ 238).

In response, Patent Owner argues that Petitioner fails to establish that one of ordinary skill in the art would have been motivated to combine Dickerson, CryptoKube, Belady-989, Boot, Szmigielski, and Kheterpal for the same reasons discussed with respect to Grounds 1 and 2. Prelim. Resp. 45. In addition to arguing that “Petitioner does not address [a] reasonable expectation of success in combining Boot with any of the other three references,” Patent Owner asserts that “Ground 3 fails to identify ‘with particularity . . . the evidence that supports the grounds for the challenge to each claim.’” Prelim. Resp. 45–46 (citing 35 U.S.C. § 312(a)(3)).

More particularly, Patent Owner argues that

Petitioner’s analysis of limitation 1[b] implies that it is relying on Boot for the “generator” limitation. Petition, 69–70. If that is the case, the Petition is silent on what role, if any, Dickerson’s generator or other components play in the proposed combination. In this regard, for limitation 1[c], which recites “blockchain mining devices connected to the generator,” the Petition cites to Ground 2 without any further explanation. Petition, 70. However, Ground 2 does not include Boot so it is unclear whether Petitioner is relying on Boot’s, Dickerson’s or Belady-

989's generator for element 1[c].
Id. (citing Ex. 2001 ¶ 84).

We have reviewed Patent Owner's arguments and cited evidence and determine, on the current record, that Patent Owner demonstrates a deficiency in Petitioner's position with respect to its mapping of claim 1 to the asserted prior art. We agree with Patent Owner that rather than present Ground 3 with particularity, the Petition simply refers to Grounds 1 and 2 with inconsistent results. As Patent Owner explains, in Ground 3, Petitioner relies only on Boot as disclosing "a generator connected to the source of combustible gas to receive a continuous flow of combustible gas to power the generator." Pet. 69–70 (mapping limitation 1[b] to Boot). However, with respect to limitation 1[c]'s recitation of "blockchain mining devices connected to the generator," Petitioner relies on its assertions related to Ground 2, which does not include Boot. *See id.* at 70 (mapping limitation 1[c] to Ground 2). *See Microsoft Corp. v. FG SRC, LLC*, 860 Fed. App'x 708, 713 (Fed. Cir. 2021) ("It is not the Board's job to cobble together assertions from different sections of a petition or citations of various exhibits in order to infer every possible permutation of a petitioner's arguments. Arguments in a petition must be made with particularity, not opacity.").

Accordingly, Petitioner has not demonstrated that it is more likely than not that it would prevail on its assertions that claims 1–4, 7–12, 15–30, 34–37, and 40 would have been obvious over Dickerson, CryptoKube, Belady-989, Boot, Szmigielski, and Kheterpal.

*F. Alleged Obviousness over MAGS, Polivka, Szmigielski, and Kheterpal
(Ground 4: Claims 1–4, 8, 16–22, 24–30, and 34)*

Petitioner asserts that claims 1–4, 8, 16–22, 24–30, and 34 are unpatentable as obvious over MAGS, Polivka, Szmigielski, and Kheterpal. Pet. 77–99. Petitioner also relies on the declaration testimony of Dr. Nickolaou and Mr. Kasdorf to support its arguments. *Id.* (citing Exs. 1003, 1004). Patent Owner’s arguments on the merits are limited to disputing Petitioner’s contentions regarding the proposed motivation to combine MAGS, Polivka, Szmigielski, and Kheterpal. Prelim. Resp. 51–58. We address Petitioner’s contentions and Patent Owner’s arguments below. We first provide a brief overview of the asserted references.

1. Overview of MAGS (Ex. 1013)

MAGS is directed to a paper describing Pioneer Energy’s Mobile Alkane Gas Separator (MAGS) system. Ex. 1013.²⁰ The MAGS system discloses that its system

separates flare gases that naturally occur at drilling sites into three streams: one can be captured in tanks and shipped off for sale, another powers generators that run the drilling operation, and a third powers MAGS itself. Pioneer sold its first MAGS unit in late 2014 to a company operating in North Dakota, where flare gases are most often simply burned onsite, the gases wasted.

Id. at 2.

2. Overview of Polivka (Ex. 1015)

Polivka discloses a shipping container that is adapted into a mobile

²⁰ Petitioner contends that “[s]ome of the engineering details of MAGS” are described in US Patent Publication No. 2015/0368566 (“Young,” Ex. 1014)

crypto-currency miner. Ex. 1015, 1–35. Polivka discloses that it can be configured to carry various crypto-currency miners including Spondoolies-Tech SP31 and Bitmain Antminer S19. *Id.* at 15. Polivka identifies a desire for cheap electricity. *Id.* at 15, 21.

3. *Motivation to Combine MAGS, Polivka, Szmigielski, and Kheterpal.*

Petitioner asserts that “MAGS separates **flare gases** that naturally occur at drilling sites into three streams: one can be captured in tanks and shipped off for sale, another **powers generators** that run the drilling operation, and a third powers MAGS itself.” Pet. 81–82 (citing Ex. 1013, 2). Petitioner asserts further that “Polivka discloses a mobile Bitcoin miner that can be easily transported to a remote oil and gas production facility” and “can be powered by gas using a combustion engine.” *Id.* at 82 (citing Ex. 1015, 1–10, 18). Petitioner points to Smigielski as teaching “that one of the biggest costs for digital currency miners is the cost of electricity and access to cheap power is desired.” *Id.* at 82 (citing Ex. 1009, 90).

Based on these teachings, Petitioner contends that one of ordinary skill in the art “would have understood that MAGS can produce cheap or free electricity using flare gases that would be otherwise flared at the well site” (Pet. 82 (citing Ex. 1003 ¶¶ 353–355; Ex. 1004 ¶¶ 291–293)), and as such, would have been motivated to couple Polivka’s “digital currency miner to MAGS to utilize the cheap or free electricity generated from flare gas.” *Id.* (citing Ex. 1003 ¶¶ 356–359; Ex. 1004 ¶¶ 296–297). Petitioner also asserts that “[b]oth MAGS and the Polivka system are containerized,” and thus, “it would have been easy to combine the two by (1) connecting the

two systems, or (2) placing the respective equipment of the two systems into a single container.” *Id.* (citing Ex. 1014 ¶ 162, Fig. 4; Ex. 1015, 1–5; Ex. 1003 ¶ 360). According to Petitioner, one of ordinary skill in the art “would have had a reasonable expectation of success in the combination at least because ‘the first MAGS field unit was tested in the spring of 2014 and units were sent to North Dakota later that fall.’” *Id.* at 83 (citing Ex. 1003 ¶ 360; Ex. 1004 ¶ 298; Ex. 1013, 3).

In response, Patent Owner offers arguments to Petitioner proposed ground based on MAGS, Polivka, Szmigielski, and Kheterpal that essentially mirror those that were offered for Ground 1 based on Dickerson, CryptoKube, Szmigielski, and Kheterpal. *See* Prelim. Resp. 51–58; *see also id.* at 51 (citing Ex. 2001 ¶ 93) (“The relevant aspects of these references as presented by Petitioner are similar to Dickerson and CryptoKube such that many of the same reasons would lead [one of ordinary skill in the art] to *not* combine these references.”). For example, Patent Owner argues MAGS and Polivka are from “disparate and unrelated fields of art before the invention of the ’372 patent,” and as such, one of ordinary skill in the art would not have combined the references aside from Petitioner’s conclusory statements. *Id.* at 52 (citing Ex. 2001 ¶ 94). Patent Owner argues further argues that one of ordinary skill in the art would not have considered MAGS as a suitable power source because its power is unreliable and likely to be insufficient to power Polivka’s miner. *Id.* at 54–55 (citing Ex. 2001 ¶¶ 97–98); *see also id.* at 56 (citing Ex. 1009, 90; Ex. 2001 ¶ 102) (arguing Szmigielski teaches away from the combination of MAGS and Polivka for these same reasons). Patent Owner also contends that Petitioner fails to demonstrate that there

would have been a reasonable expectation of success in combining the references absent Petitioner’s conclusory assertions. *Id.* at 55–56 (citing Ex. 2001 ¶ 101). Patent Owner last asserts that “hindsight bias in the Petition is further established by Petitioner’s statements in its own patents that post-date the ’372 patent.” *Id.* at 57 (citing Ex. 2001 ¶ 103).

On this record, and given the similarity of arguments regarding motivation to combine and reasonable expectation of success between the instant Ground and Ground 1, Petitioner establishes that it is more likely than not that it would prevail on its arguments for obviousness over MAGS, Polivka, Szmigielski, and Kheterpal. Petitioner asserts that one of ordinary skill in the art would have been motivated to combine Polivka’s digital currency miner with the MAGS system in order “to utilize the cheap or free electricity generated from flare gas.” Pet. 82 (citing Ex. 1003 ¶¶ 356–357; Ex. 1004 ¶¶ 294–295). We have considered Patent Owner’s arguments and evidence to the contrary, and although Patent Owner raises a number of concerns with Petitioner’s proposed motivations and combinations, the question of whether it would have been obvious to combine MAGS, Polivka, Szmigielski, and Kheterpal is an issue best resolved on a full record.

Accordingly, at this stage, Petitioner has demonstrated that it is more likely than not that it would prevail on its assertions that claims 1–4, 8, 16–22, 24–30, and 34 would have been obvious over MAGS, Polivka, Szmigielski, and Kheterpal.

*G. Alleged Obviousness over MAGS, Polivka, Belady-989,
Szmigielski, and Kheterpal
(Ground 5: Claims 1–4, 8, 10–12, 15–30, 34–37, and 40)*

Petitioner asserts further that claims 1–4, 8, 10–12, 15–30, 34–37, and 40 are unpatentable as obvious over MAGS, Polivka, Belady-989, Szmigielski, and Kheterpal. Pet. 99–112. Petitioner also relies on the declaration testimony of Dr. Nickolaou and Mr. Kasdorf to support its arguments. *Id.* (citing Exs. 1003, 1004).

Petitioner asserts that “Belady-989 discloses data centers often consume large quantities of electrical power, and should be located in areas where natural resources (e.g., flare gas), from which electrical power can be derived, are abundant and can be obtained inexpensively.” Pet. 100 (citing Ex. 1011 ¶ 4). Petitioner asserts further that Szmigielski teaches that “[i]ndustrial miners face almost the same issues as data centers: access to relatively cheap power, good network access.” *Id.* (citing Ex. 1009, 88). According to Petitioner, one of ordinary skill in the art “would have understood that the flow of raw natural gas from the oil and gas facility may fluctuate and would have been motivated to further improve the MAGS-Polivka combination by employing Belady-989’s gas supply shock absorber because doing so will improve the energy usage efficiency.” *Id.* (citing Ex. 1003 ¶¶ 437–438). Petitioner concludes that “the combined device would have (1) the MAGS mobile power generation system; (2) the Polivka mobile Bitcoin miner, wherein the Bitcoin mining devices (e.g., spondooliestech SP35 servers) are connected to and powered by MAGS; and (3) Belady-989’s gas supply shock absorber.” *Id.* (citing Ex. 1003 ¶ 439).

In response, Patent Owner offers arguments to Petitioner proposed

ground based on MAGS, Polivka, Belady-989, Szmigielski, and Kheterpal that essentially mirror those that were offered for Ground 4 based on MAGS, Polivka, Szmigielski, and Kheterpal. *See* Prelim. Resp. 67, 70. In addition, Patent Owner argues that Petitioner does not explain how one of ordinary skill in the art would have combined Belady-989's gas shock absorber system with the MAGS system with a reasonable expectation of success. *Id.* at 67–68. According to Patent Owner, such a combination would require “a substantial amount of experimentation and changes to MAGS and Belady-989 would be required to determine whether these systems could operate together.” *Id.* at 69 (citing Ex. 2001 ¶ 117).

On this record, and given the similarity of arguments regarding motivation to combine and reasonable expectation of success between the instant Ground and Grounds 1, 2, and 4, Petitioner establishes that it is more likely than not that it would prevail on its arguments for obviousness over MAGS, Polivka, Belady-989, Szmigielski, and Kheterpal. Petitioner asserts that one of ordinary skill in the art would have been motivated to improve the combination of Polivka and MAGS by employing Belady-989's gas supply shock absorber in order “to improve energy usage efficiency.” Pet. 100 (citing Ex. 1003 ¶¶ 437–438; Ex. 1009, 88; Ex. 1011 ¶ 4). We have considered Patent Owner's arguments and evidence to the contrary, and although Patent Owner raises a number of concerns with Petitioner's proposed motivations and combinations, the question of whether it would have been obvious to combine MAGS, Polivka, Belady-989, Szmigielski, and Kheterpal is an issue best resolved on a full record.

Accordingly, Petitioner has demonstrated at this stage that it is more

likely than not that it would prevail on its assertions that claims 1–4, 8, 10–12, 15–30, 34–37, and 40 would have been obvious over MAGS, Polivka, Belady-989, Szmigielski, and Kheterpal.

H. 35 U.S.C. § 101 – Patent Eligibility – Ground 6

Petitioner asserts that the subject matter of claims 1–4, 7–12, 15–30, 34–37, and 40 is ineligible for patent protection under 35 U.S.C. § 101. Pet. 112–119. Petitioner also relies on the declaration testimony of Dr. Nickolaou to support its arguments. *Id.* (citing Ex. 1003). Patent Owner responds to Petitioner’s assertions. Prelim. Resp. 72–85 (citing Ex. 2001).

We have considered Patent Owner’s arguments and evidence to the contrary, and although Patent Owner raises a number of concerns with respect to Petitioner’s assertions, the question of whether the subject matter of claims 1–4, 7–12, 15–30, 34–37, and 40 is ineligible is an issue best resolved on a full record. At this stage of the proceeding, we note that during prosecution the Examiner expressly stated that “[w]ith regard to any rejections under 35 USC § 101 based upon the *Alice Corporation Pty. Ltd. v. CLS Bank* guidelines, the Examiner finds that the claimed invention amounts to significantly more than a judicial exception or an abstract idea.”

Ex. 1002, 42. The Examiner also stated that “the claimed invention demonstrates a practical application” because the ’372 patent’s Specification “clearly teaches and describes blockchain mining at hydrocarbon facility.” *Id.* Therefore, because we institute post-grant review all other challenges, we also institute post-grant review as to Petitioner’s challenge on Ground 6. *See SAS Inst.*, 138 S. Ct. at 1359–60.

V. CONCLUSION

Based on the present record, we determine that Petitioner has established that it is more likely than not that it would prevail in showing that at least one of the challenged claims of the '372 patent is unpatentable. Accordingly, post-grant review is instituted as to all challenged claims and all proposed grounds of unpatentability. 37 C.F.R. § 42.208(a); *see SAS Inst.*, 138 S. Ct. at 1359–60; *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1359–60 (Fed. Cir. 2018).

At this preliminary stage, we have not made a final determination with respect to the patentability of the challenged claims or any underlying factual and legal issues.

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that pursuant to 35 U.S.C. § 324(a), a post-grant review of claims 1–4, 7–12, 15–30, 34–37, and 40 of the '372 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 324(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this decision.

PGR2023-00039
Patent 11,574,372 B2

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