

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASCEND ELEMENTS, INC.,
Petitioner,

v.

DUESENFELD GMBH,
Patent Owner.

IPR2024-00948
Patent 11,050,097 B2

Before MEREDITH C. PETRAVICK, CHRISTOPHER M. KAISER, and
KEVIN W. CHERRY, *Administrative Patent Judges*.

KAISER, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

A. *Background and Summary*

Ascend Elements, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–3, 7–10, 12, 13, and 19 (“the challenged claims”) of U.S. Patent No. 11,050,097 B2 (Ex. 1001, “the ’097 patent”). Duesenfeld GmbH (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”). With our authorization, Petitioner filed a Reply to Patent Owner’s Preliminary Response (Paper 7, “Prelim. Reply”), and Patent Owner filed a Preliminary Sur-Reply (Paper 9, “Prelim. Sur-Reply”).

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). *Inter partes* review may not be instituted unless “the information presented in the petition filed under [35 U.S.C.] section 311 and any response filed under [35 U.S.C.] section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). “When instituting *inter partes* 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.” 37 C.F.R. § 42.108(a) (2023).

For the reasons set forth below, upon considering the briefing and the evidence of record, we determine that the information presented in the Petition establishes a reasonable likelihood that Petitioner will prevail with respect to at least one of the challenged claims, and we institute *inter partes* review of all the challenged claims based on all the grounds identified in the Petition.

B. Real Parties-in-Interest

Petitioner identifies Ascend Elements, Inc. as the real party-in-interest. Pet. 60. Patent Owner identifies Duesenfeld GmbH as the real party-in-interest. Paper 4, 1.

C. Related Matters

The parties identify the following related court proceeding: *Duesenfeld GmbH v. Ascend Elements, Inc.*, Case No. 1-23-cv-01194 (D. Del.). Pet. 60; Paper 4, 1. In addition, the parties note that the '097 patent is also being challenged concurrently in IPR2024-00887. Pet. 60; Paper 4, 1.

D. The '097 Patent

The '097 patent is titled “Method for the Treatment of Used Batteries, in Particular Rechargeable Batteries, and Battery Processing Installation” and issued on June 29, 2021. Ex. 1001, codes (45), (54). It is directed to “[a] method . . . for the treatment of used batteries, in particular lithium batteries.” *Id.* at code (57).

The '097 patent describes several prior-art methods of processing used batteries and discusses the disadvantages of each method. *Id.* at 1:25–50. “The invention [of the '097 patent] aims to reduce” these disadvantages. *Id.* at 1:54–55. To do so, the '097 patent describes

a method for the treatment of used batteries, in particular used lithium batteries, such as lithium[-]ion batteries, with the steps (a) comminuting the batteries such that comminuted material is obtained, (b) inactivating of the comminuted material such that an inactive comminuted material is obtained, and (c) filling a transport container with the inactive comminuted material.

Id. at 1:8–15. It also describes

a battery processing installation for the treatment of used batteries, in particular for the treatment of used lithium batteries with (a) a comminuting device for comminuting the batteries

such that comminuted material is obtained, (b) an inactivation device for inactivating the comminuted material and (c) a filling device for filling a transport container with the inactivated comminuted material.

Id. at 1:16–23.

According to the '097 patent, “the inactivation occurs . . . by way of drying the comminuted material.” *Id.* at 1:57–58. By doing this, “the amount of electrolyte that can be obtained from the comminuted material . . . is such that an electrochemical reaction is no longer possible, or only to a negligibly small extent.” *Id.* at 1:63–66. “In addition, no flammable or explosive gas phase forms above the battery fragments, as the organic carbonates of the electrolyte have been removed.” *Id.* at 1:66–2:2. This renders the comminuted material “largely inert,” so that it “can be transported safely, especially if it is packed under vacuum.” *Id.* at 2:2–2:4.

E. Illustrative Claims

Petitioner challenges claims 1–3, 7–10, 12, 13, and 19 of the '097 patent. Claims 1 and 12 are independent and illustrative; they are reproduced below.

1. A method for the treatment of used batteries, comprising the steps:
 - (a) comminuting the batteries such that comminuted material is obtained;
 - (b) inactivating the comminuted material such that an inactivated comminuted material is obtained, wherein the inactivating step is performed during or after the comminuting step; and
 - (c) filling a transport container with the inactivated comminuted material;wherein the inactivating step is performed by drying the comminuted material, and

wherein the drying occurs at a maximum pressure of 300 hPa.

Ex. 1001, 10:45–59.

12. A battery processing installation for treatment of used batteries, comprising:
 - (a) a comminution unit configured to comminute the batteries such that comminuted material is obtained;
 - (b) an inactivation device comprising a drying device configured to inactivate the comminuted material, wherein the inactivation device is configured to perform the inactivating step during or after the comminuting step of the comminution unit;
 - (c) a filling device configured to fill a transport container with the inactivated comminuted material; and
 - (d) a vacuum installation connected to the drying device and configured to generate a vacuum in the drying device.

Ex. 1001, 11:48–61.

F. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 3, 22–52):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 7–10, 12, 13, 19	103	Hanisch, ¹ Dunagan ²
1–3, 7–10, 12, 13, 19	103	Hanisch, Dunagan, Meador, ³ Shin, ⁴ Hayashi ⁵

In support of its unpatentability arguments, Petitioner relies on the declaration of Walter van Schalkwijk, Ph.D. (Ex. 1003).

II. ANALYSIS

A. Legal Standards

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under 35 U.S.C. § 103 that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) if in evidence, “secondary considerations” of non-obviousness, such as “commercial success, long[-]felt but unsolved needs, failure of others, etc.” *Id.* at 17–18. “While the sequence of these questions might be reordered in any particular case,” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the U.S. Court of Appeals for the Federal Circuit has repeatedly emphasized that “it is error to reach a conclusion of obviousness until all

¹ US 9,780,419 B2, issued Oct. 3, 2017 (Ex. 1004).

² US 9,450,277 B2, issued Sept. 20, 2016 (Ex. 1018).

³ US 5,632,863, issued May 27, 1997 (Ex. 1011).

⁴ US 10,396,408 B2, issued Aug. 27, 2019 (Ex. 1010).

⁵ US 9,843,077 B2, issued Dec. 12, 2017 (Ex. 1006).

those factors are considered,” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016). Because Patent Owner does not address objective evidence of non-obviousness, we focus solely on the first three *Graham* factors.

B. Level of Ordinary Skill in the Art

The level of ordinary skill in the pertinent art at the time of the invention is a factor in how we construe patent claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). It is also one of the factors we consider when determining whether a patent claim is obvious over the prior art. *See Graham*, 383 U.S. at 17–18.

Factors pertinent to a determination of the level of ordinary skill in the art include “(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.” *Envtl. Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). “Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case.” *Id.*

Petitioner contends that one of ordinary skill in the art “would have had at least a master’s degree in chemical engineering, mechanical engineering, materials science/engineering, or a related field, and three to five years of experience in design and implementation of battery recycling processes.” Pet. 15–16. Patent Owner argues to the contrary that a person of ordinary skill in the art “would have [had] at least a Bachelor’s degree in

electrical engineering, materials science, chemical engineering, or an equivalent field, as well as at least 2 to 3 years of academic or industry experience in the recycling or processing of lithium-ion batteries.” Prelim. Resp. 13. On the present record, neither party argues that the result would be any different should we adopt a different definition of a person of ordinary skill in the art.

For purposes of this Decision, we adopt Patent Owner’s assessment of the level of ordinary skill in the art, as, on the present record, it appears consistent with the ’097 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

We apply the same claim construction standard used in the federal courts—in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), which is articulated in *Phillips*. *See* 37 C.F.R. § 42.100(b). Under the *Phillips* standard, the “words of a claim ‘are generally given their ordinary and customary meaning,’” which “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, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312–13.

Petitioner argues that “[t]he ’097 Patent expressly defines ‘drying’ to mean ‘the removal of at least one solvent in the conducting salt.’” Pet. 16 (quoting Ex. 1001, 2:23–25). Petitioner also argues that “[a]ll other terms should be given their plain and ordinary meaning under *Phillips* and do not need further construction for the purposes of this Petition.” *Id.* Patent Owner argues that “[n]o claim terms require express construction to

determine that the Petition does not establish a reasonable likelihood of unpatentability of any claim and, thus, deny institution.” Prelim. Resp. 13.

Based on the present record, we need not expressly construe any claim terms at this time.⁶ *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those 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))).

D. Asserted Obviousness over Hanisch, Dunagan, and the Knowledge of a Person of Ordinary Skill in the Art

Petitioner argues that claims 1–3, 7–10, 12, 13, and 19 would have been obvious over Hanisch alone or in combination with Dunagan and in view of the knowledge of a person of ordinary skill in the art. Pet. 22–41. Patent Owner disagrees. Prelim. Resp. 15–34. Based on the current record, we are not persuaded that Petitioner has established a reasonable likelihood of prevailing on this asserted obviousness ground with respect to any challenged claim.

1. Overview of Hanisch

Hanisch is a U.S. patent titled “Method for Reclaiming Active Material from a Galvanic Cell, and an Active Material Separation

⁶ If either party intends to further argue claim construction at trial, including the alleged plain and ordinary meaning of a particular term, they should do so in a clearly designated section of their briefing so as to expressly identify such arguments. *See, e.g.*, 37 C.F.R. § 42.104(b)(3) (content of petition); *see also* Patent Trial and Appeal Board Consolidated Trial Practice Guide, 84 Fed. Reg. 64,280, at 46, 48–45 (Nov. 2019) (available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>). Claim construction arguments should not be relegated to patentability arguments on the facts.

Installation, Particularly an Active Metal Separation Installation,” that issued on October 3, 2017. Ex. 1004, codes (45), (54). It relates to “a method for retrieving active material, in particular lithium or lithium compounds, from a galvanic cell.” *Id.* at 1:8–10. The method includes the steps of “(a) crushing the cells, in particular under inert gas, so that solid cell fragments are also formed, (b) heating the solid cell fragments up to the decomposition temperature, which is high enough to make the binder decompose and/or evaporate, such that heat treated cell fragments are formed, and (c) classifying the heat treated cell fragments.” *Id.* at 1:12–18. “The heating of cell fragments up to the decomposition temperature is preferably carried out under inert gas or in a vacuum.” *Id.* at 4:6–8.

The method of Hanisch additionally “preferably comprises the step that, before heating the cell fragments up to the decomposition temperature, the cell fragments are dried at a drying temperature, so that dry cell fragments and drying vapours are formed, whereby the drying vapours are at least partly condensed.” *Id.* at 3:65–4:2. Hanisch teaches that “[t]his has the advantage that the electrolyte solvent can be retrieved. It is therefore advantageous for the drying temperature to be below 100° C., in particular below 80° C.” *Id.* at 4:3–5.

2. *Overview of Dunagan*

Dunagan is a U.S. patent titled “Systems for Recycling Volatile Battery Sources,” that was issued on September 20, 2016. Ex. 1018, codes (45), (54). It “is directed to systems and methods for the recycling of lithium ion batteries or the like.” *Id.* at code (57). Dunagan’s method “is employed to safely and economically recover valuable materials from Li-ion or like batteries or power sources.” *Id.* at 6:10–12. The method includes the

step of placing “processed material . . . in super sacks or suitable carrier[s], [and] weigh[ing], label[ing] and transport[ing] [it] for end users to reclaim the valuable metals and other materials from the recycled materials.” *Id.* at 6:33–37.

3. *Analysis of Claim 1*

a) *Disputed Limitation: “Wherein the Inactivating Step is Performed by Drying the Comminuted Material”*

Claim 1 recites “wherein the inactivating step is performed by drying the comminuted material.” Ex. 1001, 10:56–57. Petitioner contends that Hanisch teaches or suggests this limitation. Pet. 29–30 (citing Pet. 24–27). Patent Owner disagrees. Prelim. Resp. 18–28.

Although neither party requests construction of the claim term “inactivating,” the parties’ disagreement on this limitation stems mostly from a disagreement regarding how much solvent must be removed from the comminuted material to constitute inactivation of that material. *Id.* at 19–20 (arguing that inactivation requires drying until “the accumulated content of organic carbonates from the electrolyte that are volatile at 80° C. falls short of 3% by volume in the atmosphere above the comminuted material”); *id.* at 23 (arguing that inactivation and drying require that “electrolyte solvent [be] recoverable by condensation”); Pet. 25 (arguing that inactivation requires “evaporat[ing] the electrolyte and solvent from the comminuted material” “such that an electrochemical reaction is no longer possible, or only to a negligibly small extent”).

On the present record, the definition that Patent Owner proposes for inactivation, requiring that the comminuted material be dried until “the accumulated content of organic carbonates from the electrolyte that are volatile at 80° C. falls short of 3% by volume in the atmosphere above the

comminuted material,” is not correct. Prelim. Resp. 19–20 (quoting Ex. 1001, 4:33–36). The ’097 patent provides this benchmark for drying, but it states that achieving this benchmark is merely “preferabl[e],” not required. Ex. 1001, 4:33–36; *see* Ex. 1001, 4:28–32 (stating that achieving a similar, but not identical, benchmark “is beneficial”). Petitioner’s proposed definition falls closer to the mark. The ’097 patent describes drying as “mean[ing] the removal of at least one solvent in the conducting salt.” *Id.* at 2:24–25. Regarding the degree of solvent removal, the ’097 patent states that “the drying is executed such that dimethyl carbonate and/or ethyl methyl carbonate is removed,” and that the drying results in “an electrochemical reaction [being] no longer possible, or only to a negligibly small extent.” *Id.* at 1:63–66, 2:25–27.

Similarly, on the present record, we disagree with Patent Owner’s argument that the ’097 patent defines inactivation or drying in such a way as to require that “the electrolyte solvent [be] recoverable by condensation.” Prelim. Resp. 23 (citing Ex. 1001, 5:11–22). The cited portion of the ’097 patent describes “a preferred embodiment,” which is not necessarily an aspect of the claimed invention. Ex. 1001, 5:11–22.

Thus, on the present record, we take inactivating to require the removal of sufficient amounts of dimethyl carbonate and/or ethyl methyl carbonate from the comminuted material to make an electrochemical reaction either no longer possible or only possible to a negligibly small extent. We encourage the parties to further develop the record on this question at trial.

Petitioner argues that Hanisch discloses inactivating the comminuted material by drying in two of its process steps. First, Petitioner argues that

Hanisch teaches this limitation by teaching low-temperature drying.

Pet. 29–30 (citing Pet. 25–26). In particular, Petitioner argues that Hanisch teaches this by disclosing “pre-dryer 28 [that] comprises a circulation pump 32 and a condenser 34 for condensing electrolyte, which can be removed via the pipe 36.” *Id.* at 26 (quoting Ex. 1004, 5:54–63). Petitioner also argues that Hanisch “claims this limitation in dependent claim 5,” which includes “the steps of: drying the solid cell fragments at a drying temperature to form dry cell fragments and drying vapours and at least partly condensing the drying vapours to retrieve electrolyte solvents.” *Id.* (quoting Ex. 1004, 8:3–10). On the present record, we do not find this argument persuasive.

Although Hanisch teaches the removal of some volatile electrolyte through heating and condensing the resulting vapor in its low-temperature drying process, Petitioner does not direct us to evidence that tends to show that Hanisch’s low-temperature drying removes sufficient vapor to make electrochemical reactions impossible or only possible to a negligibly small extent. Ex. 1004, 5:54–63, 8:3–10.

Petitioner also argues that Hanisch teaches this limitation by disclosing a high-temperature drying process. Pet. 29–30 (citing Pet. 26–27). In particular, Petitioner directs us to Hanisch’s disclosure of “[a]n oven . . . in which there is a decomposition temperature T_z between 400 and 600° C. The binder, for example polyvinylidene fluoride (PVDF), thus decomposes.” *Id.* at 27 (quoting Ex. 1004, 6:8–11). According to Petitioner, a person of ordinary skill in the art “would understand that the temperatures cited would cause the evaporation of the organic solvents from the electrolyte.” *Id.* (citing Ex. 1003 ¶ 103). Patent Owner argues that the high temperatures in Hanisch’s decomposition oven would cause the

solvents to decompose rather than to evaporate. Prelim. Resp. 23 (citing Ex. 1003 ¶ 108; Ex. 2001 ¶ 79). According to Patent Owner, inactivating the comminuted material by drying requires the ability to recover the evaporated solvents, so destroying those solvents via decomposition is not sufficient. *Id.* at 23–25 (citing Ex. 1001, 2:23–27, 5:11–22; Ex. 2001 ¶¶ 80–83; Ex. 2009, A1536).

On the present record, we agree with Patent Owner that Hanisch’s high-temperature decomposition oven would cause the solvents to decompose rather than to evaporate. Patent Owner’s declarant, Vani Dantam, opines that, at the temperatures of Hanisch’s decomposition oven, “the electrolyte and solvents will—like the binder—decompose into other, distinct compounds,” and “volatile electrolyte solvents such as [dimethyl carbonate] and [ethyl methyl carbonate], in the presence of LiPF₆, would rapidly decompose into gases including carbon dioxide, ethane, fluoroethane, and dimethyl ether.” Ex. 2001 ¶ 81. According to Dantam, this decomposition of the solvents would be so complete that “no electrolyte solvents would remain for collection and reuse,” because “the solvents would rapidly decompose into non-electrolyte gases.” *Id.* ¶ 83. The end result would be that “the electrolyte solvent would be destroyed by pyrolysis and none would remain.” *Id.*

On the other hand, we do not agree with Patent Owner that inactivation or drying in the ’097 patent requires the recovery of or ability to recover the solvents that are removed from the comminuted material. Instead, as discussed above, we take inactivating to require the removal of sufficient amounts of dimethyl carbonate and/or ethyl methyl carbonate from the comminuted material to make an electrochemical reaction either no

longer possible or only possible to a negligibly small extent. Given that Hanisch's decomposition oven would destroy the electrolyte solvent such that "none would remain," we determine that Petitioner has shown sufficiently that Hanisch teaches removing enough solvent in its decomposition oven to make an electrochemical reaction either no longer possible or only possible to a negligibly small extent.

b) Disputed Limitation: "Wherein the Drying Occurs at a Maximum Pressure of 300 hPa"

Claim 1 recites "wherein the drying occurs at a maximum pressure of 300 hPa." Ex. 1001, 10:58–59. Petitioner contends that Hanisch teaches or suggests this limitation. Pet. 30–32. Patent Owner disagrees. Prelim. Resp. 28–31.

Petitioner first argues that Hanisch teaches "the heating up takes place under inert gas or in a vacuum," and a person of ordinary skill in the art "would have understood that the pressure of a 'vacuum' is below 300 hPa." *Id.* at 30 (quoting Ex. 1004, 3:6–8; citing Ex. 1003 ¶ 110). On the present record, we agree with Petitioner that Hanisch teaches operating both its pre-dryer and its decomposition oven at a vacuum. Ex. 1004, 3:6–8, 4:6–8. We are not persuaded, however, on the present record, that Petitioner has shown sufficiently that a person of ordinary skill in the art "would have understood that the pressure of a 'vacuum' is below 300 hPa." Pet. 30. As support for this contention, Petitioner cites the declaration of Dr. van Schalkwijk, who testifies that "[a] POSITA would have understood that the pressure of a 'vacuum' is below 300 hPa." Ex. 1003 ¶ 110. Dr. van Schalkwijk does not provide any support for this testimony. *Id.*

Petitioner next argues that, "[t]o the extent that Hanisch does not explicitly disclose this claim limitation, it would have been obvious in view

of the common knowledge of a POSITA . . . that using pressures at or below 300hP[a] when drying the comminuted material would be desirable.”

Pet. 31 (citing Ex. 1003 ¶¶ 68–70, 113–116). Again, the cited testimony of Dr. van Schalkwijk does not cite any support for the witness’s opinion that “a POSITA, in view of the common knowledge in the field before the effective filing date, would have understood that using pressures at or below 300hP[a] when drying the comminuted material would be desirable.”

Ex. 1003 ¶ 113; *see* Ex. 1003 ¶¶ 68–70, 114–116. Dr. van Schalkwijk provides some reasoning to support the opinion that a person of ordinary skill in the art “would . . . conclude that use of reduced pressure when drying comminuted material would be desirable” and the opinion that the chosen pressure would be “under lower ambient pressure,” but no support for the choice of the maximum of 300 hPa recited in claim 1. *Id.* ¶¶ 114–115.

c) Conclusion Regarding Claim 1

Based on the current record, we determine that Petitioner has not shown a reasonable likelihood that it will prevail in demonstrating that claim 1 is unpatentable as obvious over Hanisch alone or in combination with Dunagan and in view of the knowledge of a person of ordinary skill in the art.

4. Claims 2, 3, and 7–10

As discussed above, Petitioner does not show a reasonable likelihood that it will prevail in demonstrating that claim 1 would have been obvious over Hanisch alone or in combination with Dunagan and in view of the knowledge of a person of ordinary skill in the art. Petitioner relies on its arguments with respect to claim 1 in arguing for the obviousness of claims 2, 3, and 7–10, all of which depend from claim 1. Pet. 32–38. Accordingly,

Petitioner does not show a reasonable likelihood that it will prevail in demonstrating that claims 2, 3, and 7–10 would have been obvious over Hanisch alone or in combination with Dunagan and in view of the knowledge of a person of ordinary skill in the art.

5. *Analysis of Claim 12*

a) *Disputed Limitation: “Inactivation Device Comprising a Drying Device Configured to Inactivate the Comminuted Material”*

Claim 12 recites “an inactivation device comprising a drying device configured to inactivate the comminuted material.” Ex. 1001, 11:52–53. Petitioner argues that Hanisch teaches this limitation. Pet. 38 (citing Pet. 24–27, 29–30). Patent Owner disagrees. Prelim. Resp. 31–32 (citing Prelim. Resp. 18–28). Both parties rely on their arguments with respect to the “wherein the inactivating step is performed by drying the comminuted material” limitation of claim 1. As discussed above, we determine that Petitioner has shown sufficiently that Hanisch’s decomposition oven teaches that limitation of claim 1. Based on the parties’ reliance on their claim 1 arguments with respect to the “inactivation device comprising a drying device configured to inactivate the comminuted material” limitation of claim 12, we determine that Petitioner has shown sufficiently that Hanisch’s decomposition oven is “an inactivation device comprising a drying device configured to inactivate the comminuted material.”

b) *Disputed Limitation: “Vacuum Installation Connected to the Drying Device and Configured to Generate a Vacuum in the Drying Device”*

Claim 12 recites “a vacuum installation connected to the drying device and configured to generate a vacuum in the drying device.” Ex. 1001, 11:59–61. Petitioner argues that Hanisch teaches this limitation.

Pet. 39–40 (citing Pet. 30–32). Patent Owner disagrees. Prelim. Resp. 32–33. On the present record, we are not persuaded that Petitioner has shown sufficiently that Hanisch teaches or suggests this limitation.

We begin by noting that the vacuum installation of this limitation must be “connected to the drying device,” which is the device “configured to inactivate the comminuted material.” Ex. 1001, 11:48–61. As discussed above, Petitioner shows sufficiently on the present record that Hanisch’s decomposition oven is such a drying device, but Petitioner does not show sufficiently that Hanisch’s pre-dryer is. Thus, to show a reasonable likelihood of prevailing as to this limitation, Petitioner must show that Hanisch teaches or suggests a vacuum installation connected to the decomposition oven.

Petitioner argues that Hanisch teaches that “heating up takes place under inert gas or vacuum,” and that a person of ordinary skill in the art “would have understood from this disclosure that a vacuum installation connected to the drying device of Hanisch would be needed to allow heating up to occur under a vacuum.” Pet. 39 (citing Ex. 1003 ¶ 135; Ex. 1004, 3:6–8, 4:6–8). On the present record, we agree that Hanisch teaches operating its decomposition oven under a vacuum. Ex. 1004, 4:6–8 (“[t]he heating of cell fragments up to the decomposition temperature is preferably carried out . . . in a vacuum”). But the cited testimony of Dr. van Schalkwijk does not support Petitioner’s argument that a person of ordinary skill in the art “would have understood from this disclosure that a vacuum installation connected to the drying device of Hanisch would be needed to allow heating up to occur under a vacuum.” Pet. 39 (citing Ex. 1003 ¶ 135). Dr. van Schalkwijk testifies that Hanisch’s disclosure “would lead a POSITA to

conclude that Hanisch discloses generating a vacuum in the drying device,” but there is no testimony regarding the need for a vacuum installation to generate the vacuum. Ex. 1003 ¶ 135. Petitioner also cites the testimony of Dr. van Schalkwijk that a person of ordinary skill in the art “would have understood the circulation pump and condenser of Hanisch to be a ‘vacuum installation.’” Pet. 39–40 (citing Ex. 1003 ¶¶ 136–137). But the circulation pump and condenser that Petitioner and Dr. van Schalkwijk refer to are attached to Hanisch’s pre-dryer, not to Hanisch’s decomposition oven. Pet. 39–40; Ex. 1004, 5:59–61, Fig. 1; Ex. 1003 ¶¶ 136–137. Thus, Petitioner shows sufficiently that Hanisch teaches or suggests a vacuum installation attached to Hanisch’s pre-dryer, but not, as Petitioner must show, that Hanisch teaches or suggests a vacuum installation attached to Hanisch’s decomposition oven.

a) Conclusion Regarding Claim 12

Based on the current record, we determine that Petitioner has not shown a reasonable likelihood that it will prevail in demonstrating that claim 12 is unpatentable as obvious over Hanisch alone or in combination with Dunagan and in view of the knowledge of a person of ordinary skill in the art.

6. Claims 13 and 19

As discussed above, Petitioner does not show a reasonable likelihood that it will prevail in demonstrating that claims 1 and 12 would have been obvious over Hanisch alone or in combination with Dunagan and in view of the knowledge of a person of ordinary skill in the art. Petitioner relies on its arguments with respect to claims 1 and 12 in arguing for the obviousness of claims 13 and 19, both of which depend from claim 12. Pet. 41.

Accordingly, Petitioner does not show a reasonable likelihood that it will prevail in demonstrating that claims 13 and 19 would have been obvious over Hanisch alone or in combination with Dunagan and in view of the knowledge of a person of ordinary skill in the art.

E. Asserted Obviousness Over Hanisch, Dunagan, Hayashi, Meador, and Shin

Petitioner argues that claims 1–3, 7–10, 12, 13, and 19 would have been obvious over Hanisch in view of Dunagan and Hayashi, Meador, or Shin. Pet. 41–52. Patent Owner disagrees. Prelim. Resp. 35–39. Based on the current record, we are persuaded that Petitioner has established a reasonable likelihood of prevailing on this asserted obviousness ground with respect to at least one challenged claim.

1. Overview of Hayashi

Hayashi is a U.S. patent titled “Method for Processing Fluorine-Containing Electrolyte Solution,” that issued on December 12, 2017. Ex. 1006, codes (45), (54). It “relates to a safe method for processing a nonaqueous electrolyte solution which is used in a lithium ion battery or the like.” *Id.* at 1:7–9. In particular, Hayashi teaches processing electrolyte solutions that include “lithium hexafluorophosphate,” “dimethyl carbonate,” and “ethyl methyl carbonate.” *Id.* at 4:12–17. “[I]n order to take the electrolyte solution out of the lithium ion battery safely,” Hayashi teaches that “[t]he volatile component of the electrolyte solution is gasified by heating the battery under reduced pressure.” *Id.* at 4:24–34. As one example of temperatures and pressures to be used, Hayashi discloses that “the inside of the battery is depressurized to be 5 kPa and is heated at 80° C. to 150° C.,” which allows the dimethyl carbonate, ethyl methyl carbonate, “and the thermally decomposed fluorine compound . . . to be volatilized.”

Id. at 4:60–67. Hayashi also discloses heating to the same temperature range at a “reduced pressure of less than or equal to 1 kPa.” *Id.* at 3:20–25.

2. *Overview of Meador*

Meador is a U.S. patent titled “Battery Pyrolysis Process,” that was issued on May 27, 1997. Ex. 1011, codes (45), (54). It “relates to a process and apparatus for reclamation of batteries other than lead-acid batteries and more particular[ly] to reclamation and environmentally safe disposal of nickel cadmium, lithium, carbon-zinc, mercury, alkaline, metal hydride, etc. batteries.” *Id.* at 1:5–9. The process of Meador “comprises continually introducing previously crushed batteries into a pyrolysis chamber and conveying them by an auger through the pyrolysis chamber.” *Id.* at 3:17–19. “The chamber is maintained under a slight vacuum to withdraw the off-gases for further processing.” *Id.* at 3:25–27. “The pyrolysis chamber . . . would typically be operated in a temperature range between 350° to 650° F,” and “[t]he vacuum pump . . . maintains a vacuum on [the] pyrolysis chamber . . . of approximately one-half inch of mercury.” *Id.* at 5:59–62.

3. *Overview of Shin*

Shin is a U.S. patent titled “Waste Battery Treatment Apparatus Using Continuous Heat Treatment, and Method for Recovering Valuable Metals from Lithium-Based Battery Using Same,” that was issued on August 27, 2019. Ex. 1010, codes (45), (54). It “relates to a treatment apparatus for recovering metals from a waste battery and a method thereof.” *Id.* at 1:9–11. Shin discloses “a continuous heat treatment process” that includes “a vacuum forming step” and “a heat treatment step.” *Id.* at 2:65–3:8.

4. *Analysis of Claim 1*

a) *Disputed Limitation: “Wherein the Inactivating Step is Performed by Drying the Comminuted Material”*

Claim 1 recites “wherein the inactivating step is performed by drying the comminuted material.” Ex. 1001, 10:56–57. Petitioner contends that Hanisch teaches or suggests this limitation. Pet. 43 (citing Pet. 24–27, 29–30). Patent Owner disagrees. Prelim. Resp. 38–39 (citing Prelim. Resp. 18–28, 31–32). Each party relies on its arguments discussed above with respect to the Hanisch/Dunagan ground. Pet. 43; Prelim. Resp. 38–39. For the reasons discussed above with respect to that ground, we determine that Petitioner has shown sufficiently that Hanisch teaches or suggests “wherein the inactivating step is performed by drying the comminuted material.”

b) *Undisputed Limitation: “Wherein the Drying Occurs at a Maximum Pressure of 300 hPa”*

Claim 1 recites “wherein the drying occurs at a maximum pressure of 300 hPa.” Ex. 1001, 10:58–59. Petitioner contends that Hayashi, Meador, and Shin each teach or suggest this limitation and that a person of ordinary skill in the art would have had reason to combine the teachings of these references with those of Hanisch and Dunagan. Pet. 43–46. On the present record, Patent Owner does not dispute Petitioner’s argument with respect to these additional references. Prelim. Resp. 35–39.

(1) *Combination with Hayashi*

Petitioner argues that Hayashi teaches “processing lithium-ion batteries by heating the battery containing the electrolyte solution under reduced pressure, such that the organic solvents of the electrolyte are evaporated.” Pet. 45 (citing Ex. 1006, 4:33–36). According to Petitioner, this heating under reduced pressure includes “examples in which heating is

carried out at a pressure ‘less than or equal to 1 kPa’ . . . over temperatures ranging from 80°C to 150°C.” *Id.* (citing Ex. 1006, 3:20–25). Petitioner argues that a person of ordinary skill in the art would have been motivated to combine this teaching with the teachings of Hanisch “because of the advantages of improved electrolyte evaporation at a given temperature when lower ambient pressures are used . . . , the attenuation of toxic hydrogen fluoride production during the heating process . . . , and the control over potentially flammable compounds and gasses generated during such heating.” *Id.* at 46 (citing Ex. 1003 ¶¶ 67–71, 150–152; Ex. 1006, 4:12–36, 4:43–67, Table 1). On the present record, Patent Owner does not dispute these arguments. Prelim. Resp. 35–39.

On the present record, we agree with Petitioner that Hayashi teaches a method in which, “in order to take the electrolyte solution out of the lithium ion battery safely, . . . the electrolyte solution is depressurized and gasified . . . by heating the battery under reduced pressure.” Ex. 1006, 4:24–34. This heating and reduced pressure includes a pressure of “5 kPa” and a temperature of “80° C. to 150° C.,” at which conditions dimethyl carbonate and ethyl methyl carbonate that are “included in the electrolyte solution . . . are able to be volatilized.” *Id.* at 4:60–67. Moreover, Dr. van Schalkwijk testifies that evaporating solvents at lower temperatures reduces formation of toxic hydrogen fluoride. Ex. 1003 ¶¶ 67–68 (citing Ex. 1005, 1:20–24, 2:2–27; Ex. 1006, 1:26–29, 2:7–11, 4:12–23). Thus, Petitioner has shown sufficiently that Hayashi teaches the step of drying at a pressure of no more than 300 hPa and that a person of ordinary skill in the art would have had reason to combine that teaching with the method of Hanisch.

(2) *Combination with Meador*

Petitioner argues that Meador “teaches that comminuted materials can be introduced into a pyrolysis chamber and heated to decomposition temperatures” and that this heating can occur in a “pyrolysis chamber [that is] maintained under slight vacuum.” Pet. 43–44 (citing Ex. 1011, 3:17–37). According to Petitioner, this vacuum can be “approximately one-half inch of mercury” or “about one-half to one inch of mercury,” which a person of ordinary skill in the art “would have understood to be the mathematical equivalent of pressures ranging from approximately 16 to 33 hPa.” *Id.* at 44 (citing Ex. 1003 ¶ 146; Ex. 1011, 5:59–60, 6:53–59). Petitioner argues that a person of ordinary skill in the art would have been motivated to combine this teaching with the teachings of Hanisch “because of the advantages of improved electrolyte evaporation at a given temperature when lower ambient pressures are used . . . , the attenuation of toxic hydrogen fluoride production during the heating process . . . , and the control over potentially flammable compounds and gasses generated during such heating.” *Id.* at 46 (citing Ex. 1003 ¶¶ 67–71, 150–152; Ex. 1011, 6:13–49). On the present record, Patent Owner does not dispute these arguments. Prelim. Resp. 35–39.

On the present record, we agree with Petitioner that Meador teaches a method comprising “introducing previously crushed batteries into a pyrolysis chamber” that “is maintained under a slight vacuum.” Ex. 1011, 3:17–26. The conditions in this chamber include “a temperature between 350° to 650° F” and a “vacuum [of] about one-half to one inch of mercury.” *Id.* at 6:56–59. Moreover, Dr. van Schalkwijk testifies that evaporating solvents at lower temperatures reduces formation of toxic hydrogen fluoride. Ex. 1003 ¶¶ 67–68 (citing Ex. 1005, 1:20–24, 2:2–27; Ex. 1006, 1:26–29,

2:7–11, 4:12–23). Thus, on the present record, Petitioner has shown sufficiently that Meador teaches the step of drying at a pressure of no more than 300 hPa and that a person of ordinary skill in the art would have had reason to combine that teaching with the method of Hanisch.

c) Remaining Undisputed Limitations

Claim 1 also recites

A method for the treatment of used batteries, comprising the steps:

- (a) comminuting the batteries such that comminuted material is obtained;
- (b) inactivating the comminuted material such that an inactivated comminuted material is obtained, wherein the inactivating step is performed during or after the comminuting step; and
- (c) filling a transport container with the inactivated comminuted material;

. . . .

Ex. 1001, 10:45–59. Petitioner argues that these limitations would have been obvious over Hanisch in view of Dunagan and Hayashi, Meador, or Shin. Pet. 41–52.

After reviewing Petitioner’s arguments and information regarding the limitations identified immediately above, including the van Schalkwijk Declaration, which are not addressed by Patent Owner at this stage (*see* Prelim. Resp.; Prelim. Sur-Reply), we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that the preamble of claim 1 and the undisputed limitations would have been obvious to a person having ordinary skill in the art in light of Hanisch in view of Dunagan and Hayashi, Meador, or Shin.

d) Conclusion Regarding Claim 1

Based on the current record, we determine that Petitioner has shown a reasonable likelihood that it will prevail in demonstrating that claim 1 is unpatentable as obvious over Hanisch in view of Dunagan and Hayashi, Meador, or Shin.

5. Claims 2, 3, and 7–10

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the '097 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R.

§ 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every challenge raised by Petitioner, especially, as in this case, when Patent Owner does not separately argue those claims. Those challenges, in our view, are best left for trial after full development of the record.

6. Analysis of Claim 12

*a) Disputed Limitation: “Inactivation Device
Comprising a Drying Device Configured to Inactivate the
Comminuted Material”*

Claim 12 recites “an inactivation device comprising a drying device configured to inactivate the comminuted material.” Ex. 1001, 11:52–53. Petitioner argues that Hanisch teaches this limitation. Pet. 48 (citing Pet. 24–27, 29–30, 38). Patent Owner disagrees. Prelim. Resp. 38–39 (citing Prelim. Resp. 18–28, 31–32). Each party relies on its arguments discussed above with respect to the Hanisch/Dunagan ground. Pet. 48; Prelim. Resp. 38–39. For the reasons discussed above with respect to that ground, we determine that Petitioner has shown sufficiently that Hanisch

teaches or suggests “an inactivation device comprising a drying device configured to inactivate the comminuted material.”

b) Undisputed Limitation: “Vacuum Installation Connected to the Drying Device and Configured to Generate a Vacuum in the Drying Device”

Claim 12 recites “a vacuum installation connected to the drying device and configured to generate a vacuum in the drying device.”

Ex. 1001, 11:59–61. Petitioner argues that each of Hayashi, Meador, and Shin teaches this limitation and that a person of ordinary skill in the art would have been motivated to combine the teachings of these references with those of Hanisch. Pet. 49–52 (citing Pet. 30–32, 39–40). On the present record, Patent Owner does not dispute Petitioner’s argument with respect to these additional references. Prelim. Resp. 35–39.

We begin by noting that the vacuum installation of this limitation must be “connected to the drying device,” which is the device “configured to inactivate the comminuted material.” Ex. 1001, 11:48–61. As discussed above, Petitioner shows sufficiently on the present record that Hanisch’s decomposition oven is such a drying device, but Petitioner does not show sufficiently that Hanisch’s pre-dryer is. Thus, to show a reasonable likelihood of prevailing as to this limitation, Petitioner must show that at least one of Hayashi, Meador, or Shin teaches or suggests a vacuum installation connected to the decomposition oven.

Petitioner argues that “Meador teaches that comminuted materials can be introduced into a pyrolysis chamber and heated to decomposition temperatures,” with “the pyrolysis chamber [being] maintained under slight vacuum.” Pet. 49 (citing Ex. 1011, 3:17–37). Petitioner also argues that a person of ordinary skill in the art “would have understood this to include the

‘vacuum installation . . . configured to generate a vacuum in the drying device.’” *Id.* at 49–50 (quoting Ex. 1003 ¶¶ 164–165). Finally, Petitioner argues that a person of ordinary skill in the art would have been motivated “to implement Hanisch using the teachings of . . . Meador . . . that comminuted material or electrolyte could be inactivated under a vacuum.” *Id.* at 51 (citing Ex. 1003 ¶¶ 67–71, 168; Ex. 1011, claim 1). Patent Owner does not dispute these arguments. Prelim. Resp. 35–39.

On the present record, we agree that Meador teaches the use of a vacuum in a pyrolysis chamber similar to Hanisch’s decomposition oven. The conditions in this chamber include “a temperature between 350° to 650° F” and a “vacuum [of] about one-half to one inch of mercury.” *Id.* at 6:56–59. Moreover, Dr. van Schalkwijk testifies that “[t]his vacuum capability applied to the pyrolysis chamber would be understood by a [person of ordinary skill in the art] to correspond to a ‘vacuum installation . . . configured to generate a vacuum in the drying device.’” Ex. 1003 ¶ 165. In addition, Dr. van Schalkwijk testifies that evaporating solvents at lower temperatures reduces formation of toxic hydrogen fluoride. Ex. 1003 ¶¶ 67–68 (citing Ex. 1005, 1:20–24, 2:2–27; Ex. 1006, 1:26–29, 2:7–11, 4:12–23). Thus, on the present record, Petitioner has shown sufficiently that Meador teaches the step of drying under a vacuum, which a person of ordinary skill in the art would understand requires a vacuum installation, and that a person of ordinary skill in the art would have had reason to combine that teaching with the method of Hanisch.

a) Remaining Undisputed Limitations

Claim 12 also recites

12. A battery processing installation for treatment of used batteries, comprising:

- (a) a comminution unit configured to comminute the batteries such that comminuted material is obtained;
- (b) . . . , wherein the inactivation device is configured to perform the inactivating step during or after the comminuting step of the comminution unit;
- (c) a filling device configured to fill a transport container with the inactivated comminuted material; and
- (d)

Ex. 1001, 11:48–61. Petitioner argues that these limitations would have been obvious over Hanisch in view of Dunagan and Hayashi, Meador, or Shin. Pet. 41–52.

After reviewing Petitioner’s arguments and information regarding the limitations identified immediately above, including the van Schalkwijk Declaration, which are not addressed by Patent Owner at this stage (*see* Prelim. Resp.; Prelim. Sur-Reply), we are persuaded that Petitioner sufficiently demonstrates, for purposes of this Decision, that the preamble of claim 12 and the undisputed limitations would have been obvious to a person having ordinary skill in the art in light of Hanisch in view of Dunagan and Hayashi, Meador, or Shin.

b) Conclusion Regarding Claim 12

Based on the current record, we determine that Petitioner has shown a reasonable likelihood that it will prevail in demonstrating that claim 12 is unpatentable as obvious over Hanisch in view of Dunagan and Hayashi, Meador, or Shin.

7. Claims 13 and 19

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the ’097 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R.

§ 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every challenge raised by Petitioner, especially, as in this case, when Patent Owner does not separately argue those claims. *See* Prelim. Resp. 35–39. Those challenges, in our view, are best left for trial after full development of the record.

F. Discretionary Denial Under General Plastic

Patent Owner argues that we should exercise discretion to deny institution under the Board’s precedential decisions in *General Plastic*⁷ and *Valve*⁸ because Petitioner has a significant relationship with URT Umwelt Recyclingtechnik GmbH (“URT”), the petitioner in IPR2024-00887, in which the ’097 patent is also challenged. Prelim. Resp. 39–49.

General Plastic lays out seven non-exclusive factors that we must consider when deciding whether to invoke discretion to deny institution of a petition when an earlier petition challenged the same patent. IPR20216-01357, Paper 19, 9–10. The first of those factors is “whether the same petitioner previously filed a petition directed to the same claims of the same patent.” *Id.* This factor considers not only whether the petitioners who filed the two petitions in question are the same entity, but also whether those petitioners, if they are different entities, have a significant relationship. *Valve*, IPR2019-00062, Paper 11, 9. Where “the first and second petitioners are neither the same party, nor possess a significant relationship under *Valve*, *General Plastic* factor one necessarily outweighs the other *General Plastic*

⁷ *General Plastic Indus. Co. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 (PTAB Sept. 6, 2017) (precedential).

⁸ *Valve Corp. v. Elec. Scripting Prods., Inc.*, IPR2019-00062, Paper 11 (PTAB Apr. 2, 2019) (precedential).

factors.” *Videndum Prod. Sols., Inc v. Rotolight Ltd.*, IPR2023-01218, Paper 12, 6–7 (PTAB Apr. 19, 2024) (director review decision).

The petitioners in the present proceeding and IPR2024-00887 are not the same entity. Prelim. Resp. 41. Patent Owner argues that the two petitioners have a significant relationship under *Valve* because “URT supplied the infringing equipment to [Petitioner].” *Id.* In particular, Patent Owner argues that “URT builds and supplies the accused instrumentality that is at issue in the District Court litigation” in which Petitioner is accused of infringing the ’097 patent, that “URT was aware of . . . the infringement allegations against [Petitioner]” at the time it filed the first petition challenging the ’097 patent, and that every claim challenged in the present Petition was previously challenged in URT’s petition. *Id.* at 42–43. According to Patent Owner, these facts make “[t]he relationship between URT and [Petitioner] . . . akin to the relationship between Valve and HTC” that resulted in discretionary denial of institution in *Valve*. *Id.* at 42.

Petitioner disagrees with Patent Owner, arguing that facts present in *Valve* but absent here, including “both [petitioners being] sued for patent infringement in the same district court case,” “the second petitioner ‘submitt[ing] a declaration from the same expert’ as the first petitioner,” and “the second petitioner ‘ha[ving] access to the Board’s institution decision in the [first] IPR before filing the [second] Petition and us[ing] the institution decision as a guide to address the deficiencies in the [first] IPR,’” should control here. Prelim. Reply 1–2.

On the present record, we do not find the relationship between URT and Petitioner to be significant to the degree that raises concerns under *Valve* and *General Plastic*. In *Valve*, two factors affected the determination that

there was a significant relationship between the two petitioners at issue: “Valve and HTC were co-defendants in the District Court litigation,” and “the petitions . . . challenge[d] the same claims of the [challenged] patent.” IPR2019-00062, Paper 11, 10. Here, one of these factors is absent, and the other is not entirely present. URT and Petitioner are not co-defendants in the related infringement lawsuit, which accuses only Petitioner. Ex. 2014, 1. As for the claims challenged in the two petitions, Patent Owner is correct that all claims challenged in the present proceeding are also challenged in IPR2024-00887, but the reverse is not true. The petition in IPR2024-00887 challenges claims 15–17 of the ’097 patent, none of which is challenged here. *Compare* Pet. 3, with IPR2024-00887, Paper 2, 4–5. Thus, there is a significant difference between the present situation and that in *Valve*.

Patent Owner also argues that “the mere fact that the second petitioner had the benefit of reviewing the first petitioner’s petition (and arguments therein) was enough to find the relationship [between the petitioners] ‘significant.’” Prelim. Sur-Reply 4 (citing *Ericsson Inc. v. Uniloc 2017, LLC*, IPR2019-01550, Paper 8, 11–12 (PTAB Mar. 17, 2020)). The *Ericsson* reasoning is inapposite here. In *Ericsson*, the petitioner “implicitly created [a significant] relationship by using the prior petitioners’ work as a menu and picking and choosing from their work product.” IPR2019-01550, Paper 8, 12. Here, however, Petitioner does not pick and choose arguments from the earlier petition. Instead, Petitioner relies mostly on prior art not asserted in IPR2024-00887, with the only overlap being the Hanisch

reference,⁹ and that reference being used differently in each proceeding. In IPR2024-00887, Hanisch is asserted solely as a secondary reference against claims 9 and 17, but Hanisch here is used as a primary reference against every challenged claim. *Compare* Pet. 3, *with* IPR2024-00887, Paper 2, 4–5.

Finally, Patent Owner argues that the Board previously has “denied institution under *General Plastic* ***without finding*** that the two petitioners ***were related at all***” where “the second petitioner had the benefit of access to substantive arguments and pleadings in the prior petition” and where “the two petitions both advanced significantly similar issues and arguments.” Prelim. Sur-Reply 4–5 (citing *United Fire Protection Corp. v. Engineered Corrosion Solutions, LLC*, IPR2018-00991, Paper 10, 12–18 (PTAB Nov. 5, 2018)). We note that *United Fire Protection* predates the precedential decision in *Valve* as well as the director review decision in *Videndum*, so its relevance is minimal. Moreover, given the difference in asserted references between the present Petition and the petition in IPR2024-00887, we are not persuaded that the arguments in the two allegedly related petitions here are as similar as the arguments in the two petitions at issue in *United Fire Protection*.

For these reasons, we are not persuaded that there is a significant relationship between Petitioner and URT such that the first *General Plastic* factor weighs in favor of exercising discretion to deny institution. Pursuant to *Videndum*, the lack of identity or a significant relationship between the

⁹ The Hanisch reference in the present proceeding is the U.S. patent issued from the PCT application that was published as the Hanisch reference in IPR2024-00887. *Compare* Ex. 1004, *with* IPR2024-00887, Ex. 1013.

petitioners in the present proceeding and IPR2024-00887 means that “*General Plastic* factor one necessarily outweighs the other *General Plastic* factors.” IPR2023-01218, Paper 12, 6–7. Accordingly, we do not exercise discretion to deny institution under *General Plastic*.

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

Patent Owner argues that we should exercise discretion to deny institution under 35 U.S.C. § 325(d) because the Petition “recycles prior art that was expressly evaluated by the Patent Office during examination of the ’097 patent.” Prelim. Resp. 49. In particular, Patent Owner argues that Hanisch “was not only disclosed to the Patent Office, but the Patent Office focused its rejection of [the] initial claims based on Hanisch.” *Id.* (citing Ex. 1002, 213, 330). In addition, Patent Owner argues that “Meador and Hayashi were also submitted to the Office during examination,” and that Meador “was actively discussed during the Office Actions during the prosecution of the ’097 patent.” *Id.* at 51 (citing Ex. 1002, 192, 213, 330, 583). Petitioner disagrees with Patent Owner’s argument and argues that we should not exercise discretion under § 325(d) because the Office’s previous consideration of Hanisch, Meador, and Hayashi with respect to the ’097 patent was limited to rejections of claims other than those challenged here, with the asserted references being used differently from how they are used in the Petition. Pet. 56–60.

In deciding whether to exercise discretion to deny institution under § 325(d), we apply a two-prong test that considers

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2)
- if either condition of first part of the framework is satisfied,

whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6, 8 (PTAB Feb. 13, 2020) (precedential). In determining whether the first prong of this test is met, we consider three factors:

(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;

...

(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].

Id. at 9–11, n.10 (quoting *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)). Should the first prong be satisfied, we consider three factors when determining whether the second prong is satisfied:

(c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;

...

(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.

As discussed above, we determine that the combinations of art as to which Petitioner shows a reasonable likelihood of prevailing rely on Hanisch, Hayashi, and Meador, all of which previously were presented to the Office. Ex. 1001, code (56) (citing Hayashi); Ex. 1002, 213 (relying on Hanisch and relying on Meador), 329 (relying on Meador), 330 (relying on Hanisch). Although Petitioner relies on these references differently from the way the Office relied on them during examination, and although Petitioner presents different arguments than those considered during examination, the first prong of the *Advanced Bionics* test is satisfied when either “the same or substantially the same art” or “the same or substantially the same arguments” were before the Office. Here, we determine that the same or substantially the same art asserted in the Petition was before the Office during examination of the ’097 patent. Accordingly, we move to the second prong of the *Advanced Bionics* test, whether Petitioner “has demonstrated that the Office erred in a manner material to the patentability of challenged claims.” IPR2019-01469, Paper 6, 8.

On the second prong, the Office relied on Hanisch and Meador (although not Hayashi or the combination of Hanisch and Meador) to reject some claims during examination. Ex. 1002, 213, 329, 330 (relying on either Hanisch or Meador, but not both, in several rejections). Specifically, the Office relied on Meador to “teach wherein the comminution device and the drying device are arranged in a container” and on Hanisch to “teach wherein the separation device is an air jet sieving device.” *Id.* We note that these limitations do not appear in any of the claims challenged in the present proceeding. Ex. 1001, 10:45–65, 11:16–31, 11:48–12:3, 12:25–26. Thus, the Office did not rely on any of the references asserted here to reject any of

the claims challenged here, and the record as to the challenged claims is “silent,” meaning that Petitioner “may show the Office erred by overlooking something persuasive.” *Advanced Bionics*, Paper 6, 10. As discussed above, Petitioner has shown a reasonable likelihood of prevailing on its arguments that the challenged claims would have been obvious over Hanisch in view of Dunagan and Hayashi, Meador, or Shin. On the present record, these arguments do not appear in the record of examination of the ’097 patent, so it appears they were overlooked. In addition, Petitioner offers additional evidence in the present proceeding, including the Dunagan and Shin references, as well as the van Schalkwijk declaration, that was not before the Office during examination. Accordingly, we determine that Petitioner “has demonstrated that the Office erred in a manner material to the patentability of challenged claims,” and we do not exercise discretion to deny institution under 35 U.S.C. § 325(d). *Advanced Bionics*, IPR2019-01469, Paper 6, 8.

III. CONCLUSION

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one challenged claim of the ’097 patent, and we institute *inter partes* review on all challenged claims and on all grounds presented.

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted for claims 1–3, 7–10, 12, 13, and 19 of the '097 patent on the grounds asserted in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which shall commence on the entry date of this Decision.

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