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Paper 54
Date: March 12, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NESTE OIL OYJ,
Petitioner,

v.

REG SYNTHETIC FUELS, LLC,
Patent Owner.

Case IPR2013-00578
Patent No. 8,231,804

Before RAMA G. ELLURU, SHERIDAN K. SNEDDEN, and
CHRISTOPHER L. CRUMBLEY, *Administrative Patent Judges*.

CRUMBLEY, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318 and 37 C.F.R. § 42.73

I. BACKGROUND

On September 20, 2013, Neste Oil Oyj (“Neste”) filed an Amended Petition (Paper 5, “Pet.”) requesting *inter partes* review of claims 1–5 and 8 of U.S. Patent No. 8,231,804 (Ex. 1033, “the ’804 patent”). The owner of the ’804 patent, REG Synthetic Fuels, LLC¹ (“REG”), expressly waived the filing of a Patent Owner’s Preliminary Response. Paper 9. In a March 13, 2014, Decision to Institute (Paper 10, “Dec.”), we instituted trial on claims 1–5 and 8 based on the following grounds:

1. Whether claims 1–4 and 8 are unpatentable under 35 U.S.C. § 102 as anticipated by Craig²;
2. Whether claims 1–3, 5 and 8 are unpatentable under 35 U.S.C. § 102 as anticipated by Dindi³;
3. Whether claims 1–3 and 8 are unpatentable under 35 U.S.C. § 102 as anticipated by Kubíčka⁴; and

¹ On June 24, 2014, REG Synthetic Fuels, LLC filed updated Mandatory Notices informing the Board that it had acquired Syntroleum Corporation, the originally-named Patent Owner in this proceeding. Paper 21. REG also informed the Board that it had filed with the Office a Power of Attorney for U.S. Patent No. 8,231,804, retaining the same counsel that previously represented Syntroleum. *Id.*

² Ex. 1035, U.S. Patent No. 4,992,605 (issued Feb. 12, 1991).

³ Ex. 1036, U.S. Published Patent Application No. 2008/0312480 (filed June 13, 2008).

⁴ Ex. 1064, David Kubíčka et al., *Transformation of Plant Oils to Hydrocarbons*, APROCHEM 2007, 1149 (Apr. 16–18, 2007). An English translation of Kubíčka was submitted as Ex. 1063; our references to “Kubíčka” herein are to the English language document.

4. Whether claim 5 is unpatentable under 35 U.S.C. § 103 as having been obvious over the combined teachings of Kubička and Gusmão⁵.

Dec. 19–20.

Following institution, REG filed a Patent Owner Response to the Petition (Paper 16, “PO Resp.”), and Neste filed a Reply (Paper 24, “Pet. Reply”). REG also filed a Motion to Amend pursuant to 37 C.F.R. § 42.121 (Paper 17, “Mot.”), to which Neste filed an Opposition (Paper 25, “Pet. Opp.”), and REG filed a Reply (Paper 30, “PO Reply”).

Both parties filed Motions to Exclude Evidence, followed by Oppositions and Replies. We decide these Motions in separate Decisions, issued concurrently with this Final Written Decision. Papers 52, 53.

Neste supported its Petition with the Declaration of Michael T. Klein, Sc.D. (Ex. 1034, “first Klein Declaration”), and submitted a Second Declaration of Dr. Klein (Ex. 1072, “second Klein Declaration”) with its Reply and Opposition to the Motion to Amend. Cross-examination of Dr. Klein was taken during two depositions. Exs. 2025, 2069. REG filed a Motion for Observation Regarding Cross-Examination on the second deposition of Dr. Klein (Paper 39), and Neste filed a Response (Paper 46).

Along with its Reply and Opposition to the Motion to Amend, Neste also filed the Declaration of Maureen D. Queler, Neste’s counsel, to support

⁵ Ex. 1041, J. Gusmão et al., *Utilization of Vegetable Oils as an Alternative Source for Diesel-Type Fuel: Hydrocracking on Reduced Ni/SiO₂ and Sulphided Ni-Mo/γ-Al₂O₃*, 5 CATALYSIS TODAY 533 (1989).

its contention that Kubíčka was publicly available and thus prior art to the '804 patent. Ex. 1088.

With its Patent Owner Response and Motion to Amend, REG filed the Declaration of Dr. H. Henry Lamb. Ex. 2020, "first Lamb Declaration". REG filed a Second Declaration of Dr. Lamb with its Reply on its Motion to Amend (Ex. 2066, "second Lamb Declaration"), and Neste took the cross-examination of Dr. Lamb during two depositions. Exs. 1073, 1140. Neste filed a Motion for Observation Regarding Cross-Examination on Dr. Lamb's second deposition (Paper 36), and REG filed a Reply (Paper 44).

REG also filed the Declaration of Ramin Abhari (Ex. 2001, "first Abhari Declaration") to support its contention that Dindi is not prior art to the '804 patent, and submitted a Second Declaration with its Reply in support of the Motion to Amend (Ex. 2055, "second Abhari Declaration"). Neste cross-examined Mr. Abhari following his first Declaration. Ex. 1074.

Oral hearing was requested by both parties and was held on November 13, 2014. A transcript of the oral hearing is included in the record. Paper 51, "Tr."

We have jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, addresses issues and arguments raised during trial. For the reasons discussed below, we determine that Neste has met its burden to prove, by a preponderance of the evidence, that claims 1–5 and 8 of the '804 patent are *unpatentable*. We also determine that the substitute claims proposed by

REG improperly enlarge the scope of the claims in violation of 35 U.S.C. § 316(d)(3), and thus, we *deny* the Motion to Amend.

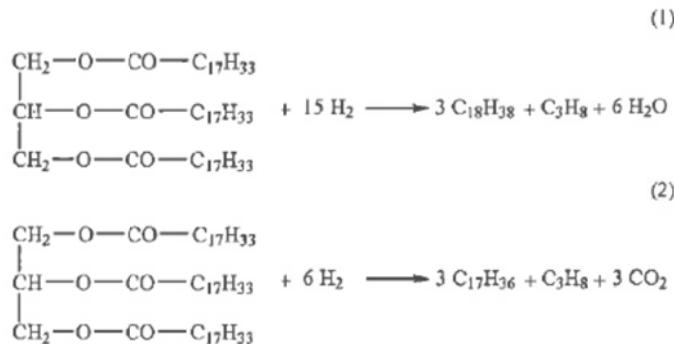
A. The '804 Patent

The '804 patent is directed to paraffin compositions containing mainly even carbon number paraffins, and methods of making such compositions.

Ex. 1033, Abstract. Specifically, such compositions are useful in phase change materials (“PCMs”) which exploit the latent heat of the paraffins as a passive thermal storage device. *Id.* at 1:29–35. For example, the compositions can be incorporated into the wall boards of a house, where they will absorb heat during the warm part of the day by undergoing a solid-liquid phase transition, and then return the heat to the air by refreezing during cooler portions of the day. *Id.* at 1:39–48.

The specification of the '804 patent discloses that the thermal storage capacity of the PCMs is determined by their latent heat, and that the latent heat of even carbon number paraffins is higher than the latent heat of odd carbon number paraffins with similar melting points. *Id.* at 1:56–63; *id.* at Table 1. The '804 patent, therefore, seeks to increase the production of paraffins via reaction pathways that result in a greater proportion of even carbon number paraffins. *Id.* at 3:33–35. Specifically, the '804 patent discloses one method that hydrogenates and deoxygenates naturally occurring fatty acids and esters, such as bio-oils, to produce primarily even carbon number paraffins. *Id.* at 4:9–7:67.

As the '804 patent notes, deoxygenation of a triglyceride, such as the ones found in bio-oil feedstocks, proceeds along one of two reaction pathways:



Id. at 3:15–25. As shown above, reaction pathway (1) depicts deoxygenation through hydrogenolysis, which results in a paraffin having the same number of carbon atoms as the fatty acid. Reaction pathway (2) depicts deoxygenation through decarboxylation, which results in a paraffin having one fewer carbon atom than the fatty acid feedstock. *Id.* at 3:26–32. As naturally occurring fatty acid feedstocks typically contain primarily even carbon number fatty acids, the '804 patent discloses a catalyst reaction which selectively prefers the hydrogenolysis pathway, resulting in primarily even carbon number paraffins. *Id.* at 4:2–8. During the disclosed process, the fatty acids are also hydrogenated such that any double bonds are saturated. *Id.* at 3:26–27.

B. The Challenged Claims

Of the previously issued claims challenged in this proceeding, only claim 1 is independent, while claims 2–5 and 8 depend directly from claim

1. Claim 1 is illustrative of the claimed subject matter of the '804 patent and is reproduced below:

1. A phase change material composition comprising at least 75 wt % even carbon number paraffins, wherein the paraffins are produced by hydrogenation/hydrogenolysis of naturally occurring fatty acids and esters.

Ex. 1033, 12:29–32.

REG also proposes substitute claims 12–17, should the Board find any of the original claims unpatentable. Mot. 3–4. Claim 12 is the sole independent proposed claim, while claims 13–17 alter the dependencies of original claims 2–5 and 8, but do not propose additional limitations. Claim 12 is illustrative of the proposed substitute claims and is reproduced below:

12. (Substitute for original claim 1 should Claim 1 be found unpatentable) A phase change material composition comprising a liquid product of at least 75 wt% even carbon number paraffins in the C₁₂-C₂₄ range, wherein the paraffins of the liquid product are produced by hydrogenation/hydrogenolysis of naturally occurring fatty acids and esters, without distillation after the hydrogenation/hydrogenolysis.

Id. at 3 (underlining in original, designating language added through proposed amendment of claim 1).

II. DISCUSSION

A. *Claim Construction*

In an *inter partes* review, “[a] claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the

patent in which it appears.” 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Tech., LLC*, No. 2014-1301, 2015 WL 448667, at *5-*8 (Fed. Cir. Feb. 4, 2015) (“Congress implicitly adopted the broadest reasonable interpretation standard in enacting the AIA,” and “the standard was properly adopted by PTO regulation”). Under this standard, we construe claim terms using “the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.” *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). We presume that claim terms have their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning is the meaning that the term would have to a person of ordinary skill in the art in question.”) (internal quotation marks omitted). However, a patentee may rebut this presumption by acting as his own lexicographer, providing a definition of the term in the specification with “reasonable clarity, deliberateness, and precision.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Only those terms which are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

For purposes of our Decision to Institute, we gave each claim term its broadest reasonable interpretation, as understood by one of ordinary skill in the art and as consistent with the specification of the ’804 patent. First, we

determined that the preamble of claim 1, *a phase change material composition*, merely expressed an intended use and, therefore, was not limiting on the scope of the claim. Dec. 9. We also construed *hydrogenation/hydrogenolysis* as “hydrogenation and hydrogenolysis.” *Id.* at 11. Neither party challenged these constructions during trial. PO Resp. 17; *see generally* Pet. Reply.

During trial, several additional arguments were raised by the parties that—while not seeking explicit constructions of any particular claim term—are relevant to the scope of the claims as construed. We address these contentions below.

1. Product-by-Process Claim

As both parties acknowledge, claim 1 is a product-by-process claim. While the scope of a product-by-process claim for infringement purposes is limited by the process, when determining patentability the claim is considered only in view of the resulting product. *See Amgen Inc. v. F. Hoffman-La Roche Ltd.*, 580 F.3d 1340, 1370 n.14 (Fed. Cir. 2009) (“a patent is invalid if a product made by the process recited in a product-by-process claim is anticipated by or obvious from prior art products, even if those prior art products are made by different processes”). Only if the process of manufacture results in “structural and functional differences” in the product can the process distinguish the claim over the prior art. *Id.* at 1370; *see Greenlant Sys., Inc. v. Xicor LLC*, 692 F.3d 1261, 1268 (Fed. Cir. 2012).

REG argues that the process recited in claim 1 results in “novel functional and structural features” in the claimed PCM. PO Resp. 9. According to REG, the complex nature of biological feedstocks, as well as the single-step hydrogenation/hydrogenolysis process, yields a “resulting composition [that] is a complex mixture of even and odd carbon number paraffins of various chain lengths, as well as other cyclical and oligomeric molecules.” *Id.* at 9–10. As a result, the PCMs are said to have both high and low melting point constituents, leading to specific functional qualities that are beneficial in a PCM. *Id.* at 10–11.

We are unpersuaded that the product of claim 1 exhibits structural or functional differences that may be relied upon to distinguish over the prior art. Even if we were to assume that the process of claim 1 excludes distillation of the product—an argument we reject below—REG has not presented credible evidence that an undistilled product would contain a complex mix of components, or exhibit the alleged functionally distinct behavior. REG relies on the testimony of Dr. Lamb, who testifies that:

[T]hese products are compositionally distinct from . . . products that are obtained through purification processes such as distillation or from other sources. *See, e.g., Craig, col. 11, ll. 45-50, Ex. 1035.* This is because processes such as distillation, for example, will separate components in a mixture according to their relative volatility (which is how Craig obtains its light, middle, and heavy fractions). As a result, distilled products will be stripped of their light and heavy components, which in turn, has the effect of altering the phase-change behavior of the composition.

Ex. 2020 ¶ 34.

Dr. Lamb, however, provides no basis for his testimony that distilled products exhibit altered phase-change behavior; nor does he provide any objective evidence that undistilled products exhibit complex behavior. The passage of Craig cited by Dr. Lamb merely states that Craig's resulting product is a "complex mixture of C₁₅–C₁₈ paraffinic hydrocarbons" that "could not be duplicated from petroleum or other sources." Ex. 1035, 11:45–50. Craig is silent regarding the phase change behavior resulting from such complexity.

Indeed, the specification of the '804 patent contradicts Dr. Lamb's testimony. First, the specification does not mention the "complexity" of the mixture of components as being relevant to its suitability as a PCM; rather, the specification highlights the latent heat of even carbon number paraffins—as contrasted with odd number paraffins—as making them suitable for use as PCMs. Ex. 1033, 1:60–2:20. Nor does the specification highlight distillation as affecting PCM suitability. To the contrary, it contemplates that a product that is distilled to separate out C₁₈ paraffins "can be sold as a PCM for narrow temperature control applications." *Id.* at 12:10–11.

REG has not provided any evidence of comparative testing that shows differences in the behavior of distilled and undistilled products. Given this lack of objective support, and the contradictory teachings of the specification of the '804 patent, we decline to credit Dr. Lamb's conclusory testimony on this point. 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little

or no weight.”). We conclude that REG has not presented credible evidence that the product of claim 1 exhibits structural or functional differences over the prior art; therefore, the process of claim 1 cannot be used to distinguish the product over prior art products.

2. “Direct Product” of Hydrogenation/Hydrogenolysis

Even if we were to determine that the record establishes that an undistilled product of hydrogenation/hydrogenolysis exhibits distinct functional properties, we are not persuaded that claim 1 requires the absence of distillation. REG argues that the product of claim 1 is a “direct product” of the hydrogenation/hydrogenolysis process, relying on the specification and prosecution history of the ’804 patent. PO Resp. 18–22.

First, we note that the express language does claim 1 does not exclude additional processing steps after hydrogenation/hydrogenolysis. REG emphasizes that the “claimed composition is the *product of* the hydrogenation/hydrogenolysis process.” *Id.* at 18. This is not an accurate representation of the claim, however. The composition of claim 1 comprises at least 75 wt % even carbon number paraffins, wherein *paraffins* are produced by hydrogenation/hydrogenolysis. It is not a requirement of claim 1 that the *composition* be formed by hydrogenation/hydrogenolysis. Claim 1 does not address whether additional steps may be performed after production of the paraffins by hydrogenation/hydrogenolysis; therefore, we see no reason why the express language of the claim should be interpreted to impose such a limit.

Regarding the specification, REG directs our attention to Figure 1, which discloses two product streams 111A and 115, which REG contends “result[] directly from the [] hydrogenation/hydrogenolysis process *after separation of non-liquid organic products.*” *Id.* at 18–19 (citing Ex. 1033, Figure 1) (emphasis added). As highlighted in the quoted sentence, however, REG concedes that the disclosed process encompasses some steps, such as separation, after the hydrogenation/hydrogenolysis process. We discern no principled reason why a product that has undergone separation after hydrogenation/hydrogenolysis is still a “direct” product, whereas a product that has undergone distillation is not. Furthermore, as discussed in the preceding section, the specification expressly contemplates distillation of the product after hydrogenation/hydrogenolysis, providing further evidence that the claims are not limited to “direct products” of hydrogenation/hydrogenolysis. Ex. 1033, 12:10–11.

B. Determination of Whether Kubíčka and Dindi are Prior Art

As a threshold issue, we must determine whether the references cited by Neste have been established to be prior art to the ’804 patent. There is no dispute that Craig and Gusmão qualify as prior art under 35 U.S.C. § 102(b). REG challenges whether Kubíčka is prior art under 35 U.S.C. § 102(b), arguing that Neste has failed to establish that it was published over a year prior to the filing date of the ’804 patent, December 10, 2008. PO Resp. 51–

53. Neste asserts that Dindi is prior art under 35 U.S.C. § 102(e) because it was filed on June 13, 2008⁶ (Pet. 21); REG attempts to disqualify Dindi as prior art by antedating its filing date. PO Resp. 41–50. We discuss Kubíčka and Dindi in detail below.

1. Public Availability of Kubíčka

According to Neste, Kubíčka “was presented at the APROCHEM 2007 Waste Forum on April 17, 2007.” Pet. 34. This is reflected in the program of the APROCHEM 2007 conference. Ex. 1061, 4. As REG correctly notes, however, this is not evidence that the Kubíčka paper was published as of the conference date. PO Resp. 52. As the only grounds of unpatentability a petitioner may raise in an *inter partes* review are those based on prior art consisting of patents or printed publications (35 U.S.C. § 311(b)), we must determine whether Kubíčka was published prior to December 10, 2007.

Neste has presented no evidence that the papers from the APROCHEM 2007 conference were distributed at the conference itself, nor does Neste attempt to establish that the conference typically made papers available within a certain period of time. Rather, Neste asserts that Kubíčka was “publicly available at the Technical University of Ostrava library in

⁶ REG argues that Neste has not established that Dindi is entitled to the June 15, 2007 filing date of its provisional application (PO Resp. 50–51), but Neste does not appear to assert a date earlier than Dindi’s filing date of June 13, 2008.

Ostrava-Poruba, Czech Republic as of May 22, 2007, and made available on-line as of April 30, 2007.” Pet. Reply 15. For support, Neste provides the testimony of Maureen D. Queler, detailing her research into the public availability of the paper and correspondence with staff members of the University of Ostrava. Ex. 1088. Neste also cites to a translation of an entry from the library catalog from the University of Ostrava Central Library (Ex. 1102) and a translation of a webpage obtained from the Internet Archive’s Wayback Machine (Ex. 1130), both of which Neste alleges establish the May 22, 2007 or April 30, 2007 publication dates.

As we note in our accompanying Decision on Patent Owner’s Motion to Exclude (Paper 53), the critical exhibits cited by Ms. Queler in her Declaration as establishing Kubíčka’s public availability—including Exhibits 1102 and 1130—are inadmissible hearsay, or lack sufficient authentication. Given the exclusion of these exhibits, the record does not support Neste’s contention that Kubíčka was available as of May 22, 2007 or April 30, 2007. As such, Neste has failed to carry its burden of proving the public availability of Kubíčka prior to December 10, 2007, and Kubíčka has not been shown to be prior art under 35 U.S.C. § 102(b).

2. Antedation of Dindi

REG contends that Dindi is not prior art to the ’804 patent, because Mr. Abhari invented the subject matter of the claims prior to the June 13, 2008 filing date of Dindi. PO Resp. 41. To remove Dindi as a prior art reference, the record must establish either: (1) a conception and reduction to

practice before the filing date of Dindi; or (2) a conception before the filing date of the Dindi patent combined with diligence and reduction to practice after that date. *See Taurus IP, LLC v. DaimlerChrysler Corp.*, 726 F.3d 1306, 1323 (Fed. Cir. 2013). Under either approach, however, it must be proven that conception occurred prior to June 13, 2008. *See id.*

Conception is “the formation, in the mind of the inventor of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice.” *Coleman v. Dines*, 754 F.2d 353, 359 (Fed. Cir. 1985) (citing *Gunter v. Stream*, 573 F.2d 77, 80 (CCPA 1978)) (emphasis omitted). This requires more than accidental creation; there must be evidence that the inventor appreciated that he made “something new.” *Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1063–64 (Fed. Cir. 2005). “The conception analysis necessarily turns on the inventor’s ability to describe his invention with particularity. Until he can do so, he cannot prove possession of the complete mental picture of the invention.” *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994).

Proof of conception must be by “corroborating evidence which shows that the inventor disclosed to others his completed thought expressed in such clear terms as to enable those skilled in the art to make the invention.” *Coleman*, 754 F.2d at 359 (citing *Field v. Knowles*, 183 F.2d 593, 601 (CCPA 1950)); *see also Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577 (Fed. Cir. 1996) (corroboration requirement “arose out of a concern that inventors testifying in patent infringement cases would be tempted to

remember facts favorable to their case by the lure of protecting their patent or defeating another’s patent”). The sufficiency of corroboration is determined according to a “rule of reason.” *Price v. Symsek*, 988 F.2d 1187, 1195 (Fed. Cir. 1993). This, however, does not dispense with the requirement that some independent evidence provide corroboration. *Coleman*, 754 F.2d at 360. The requirement of “independent” corroboration requires evidence other than the inventor’s testimony. *In re NTP, Inc.* 654 F.3d 1279, 1291–92 (Fed. Cir. 2011).

As Patent Owner, the burden of production on antedation lies with REG, who must offer evidence showing Mr. Abhari’s prior invention. *See Mahurkar*, 79 F.3d at 1576. The ultimate burden of persuasion in an *inter partes* review, however, remains on Neste, as Petitioner, to prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); *see Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1329 (Fed. Cir. 2008) (“ultimate burden never shifts, however much the burden of going forward may jump from one party to another as the issues in the case are raised and developed”).

In the case at hand, REG has offered evidence of prior invention, including the testimony of Mr. Abhari (Exs. 2001, 2055) and supporting documentary evidence such as gas chromatography data (Ex. 2004). REG having met its burden of production, Board evaluates the record as a whole to determine whether Neste, who bears the burden of persuasion, has proven by a preponderance of the evidence that Dindi is prior art. *See Mahurkar*, 79 F.3d at 1578.

Determination of Evidence to be Considered

At the outset, as we note that in our accompanying Decision on Petitioner’s Motion to Exclude, we have determined that several of the exhibits provided by Neste to corroborate Mr. Abhari’s testimony are inadmissible as hearsay or for lacking proper authentication. Paper 52. We, therefore, will not consider this evidence as part of this Decision.

Neste has also objected to several of the exhibits submitted along with REG’s Reply Brief regarding the Motion to Amend, as being beyond the scope of proper reply evidence. *See* Paper 33, 2. Specifically, Neste identified the following exhibits: 1) Exhibits 2057 and 2058, relevant to prior conception; 2) Exhibits 2053 and 2061, relevant to suitability for intended use; and 3) Exhibits 2062–2064, relevant to diligence. *Id.* We advised Neste that it could raise such objections at the oral hearing, and the Board would determine, upon reviewing the record as a whole, whether the exhibits constitute improper reply. *Id.* at 3.

Our Rules limit the scope of replies, and any supporting evidence, to responding to arguments made in the corresponding opposition or patent owner response. 37 C.F.R. § 42.24. As explained in our Trial Practice Guide:

While replies can help crystalize issues for decision, a reply that raises a new issue or belatedly presents evidence will not be considered . . . Examples of indications that a new issue has been raised in a reply include new evidence necessary to make out a *prima facie* case for the patentability or unpatentability of an original or proposed substitute claim, and new evidence that could have been presented in a prior filing.

Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,767 (Aug. 14, 2012).

Upon review, we determine that Exhibit 2053 constitutes improper reply evidence, as it is new evidence that could have been presented with REG’s Patent Owner Response. The exhibit, a February 19, 2008 internal Syntroleum Corp. memorandum authored by Mr. Abhari, was first provided to Neste during Mr. Abhari’s first deposition (Ex. 1074, 109:7–8), and cited for the first time in REG’s Reply to Neste’s Opposition to the Motion to Amend. PO Reply, 6.

During cross-examination, Mr. Abhari testified that he “did not really search for [Exhibit 2053] very hard” prior to submitting his first Declaration. Ex. 1074, 116:10–11. He also noted that he “did not have any problem finding it once [he] really looked for it,” about two weeks prior to his deposition. *Id.* at 119:2–5. These concessions by Mr. Abhari demonstrate that Exhibit 2053 could have been presented in a prior filing, if Mr. Abhari had searched diligently for the memorandum prior to that point.

We also note that Exhibit 2053, relied upon in Mr. Abhari’s Second Declaration, is not linked to rebutting any particular fact or argument set forth by Neste. Rather, Mr. Abhari asserts generally that he appreciated the potential use of even carbon number paraffins as PCMs by “late 2007 or early 2008,” and cites Exhibit 2053 as evidence of that fact. Ex. 2055 ¶ 28. By contrast, other evidence cited in Mr. Abhari’s Second Declaration is linked directly to assertions made by Dr. Klein. *See, e.g., id.* ¶ 38 (citing Ex. 2062 to rebut alleged gaps in diligence identified by Dr. Klein in Ex. 1082).

We conclude from this that REG is relying on Exhibit 2053 to make out its *prima facie* case of prior invention, which should have been established in its Patent Owner Response. For these reasons, we determine that Exhibit 2053 is improper reply evidence, and will not be considered.

Two other objected-to exhibits were also the subject of evidentiary objections made in Neste's Motion to Exclude, in which we determined that the exhibits are inadmissible. We, therefore, need not address whether Exhibits 2057 and 2062 are improper reply evidence.

The remaining exhibits objected to by Neste as being improper reply appear to be responsive to particular arguments made in Neste's Reply or Opposition to the Motion to Amend, and reasonably could not have been submitted earlier without knowing in advance what arguments Neste would present. Therefore, we will consider Exhibits 2058, 2061, and 2063–2064.

Evidence Allegedly Supporting Conception

The evidence of record establishes the following timeline of events prior to Dindi's June 13, 2008 filing date. In May of 2007, Mr. Abhari testifies that he ran a sample of canola oil through a slurry reactor containing a nickel molybdenum (NiMo) oxide catalyst. Ex. 2001 ¶ 14. On May 31, 2007, a sample obtained from that reactor was subjected to gas chromatography analysis, and resulted in the plot submitted as Exhibit 2004. According to Mr. Abhari, the large peak on Exhibit 2004 corresponds to n-octadecane, or n-C₁₈, an even carbon number paraffin. Ex. 2001 ¶ 21. The record establishes that further test runs and GC analyses were run from

June to August of 2007. Ex. 2007.

On July 19, 2007, Mr. Abhari informed his colleagues that he intended to contact Intertek PARC, regarding testing using its P-63 reactor unit. Ex. 2009. As of August 15, 2007, Mr. Abhari's project was in the testing queue at PARC, and remained in the queue until at least December 6, 2007. Ex. 2010. Though Mr. Abhari testifies that the testing was for the purpose of reducing to practice the invention of the '804 patent, none of the emails contained in Exhibits 2009 or 2010 discuss the purpose of the proposed PARC testing. Ex. 2001 ¶ 35.

Given the delays at the PARC facility, Mr. Abhari contacted SwRI, another testing facility, regarding use of its reactor as a pilot plant on October 19, 2007. Ex. 2011. Mr. Abhari proposed an objective of “[c]onvert[ing] 1,200 gallons of bio-feedstock to synthetic diesel product using SwRI's large (2 gal/h) fixed-bed hydrogenation unit.” *Id.* No mention was made of phase change materials or the significance of even carbon number paraffins.

Testing at SwRI continued into 2008; on March 12, 2008, SwRI reported to Mr. Abhari that the product of the reaction runs was between 91% and 98% C₁₄–C₁₈. Ex. 2058. The correspondence between SwRI and Mr. Abhari does not indicate any significance of even carbon number paraffins or phase change materials. Data continued to be received from SwRI through July 2008. *Id.*

Finally, by March 6, 2008, Mr. Abhari had contacted Dawn Mantz of Microtek Labs. Ex. 2061.⁷ In his testimony, Mr. Abhari does not specify the nature of the material sent to Microtek Labs, or how it was produced. Mr. Abhari does testify, however, that “Microtek specializes in PCM technology and is a provider of thermal performance products,” which he contends implies that he must have appreciated that the material might have use as a PCM on or before March 6, 2008. Ex. 2055 ¶ 30.

Analysis

Upon reviewing the record as a whole under the “rule of reason,” we determine that the evidence does not establish, by corroborating evidence, that Mr. Abhari conceived the invention of the challenged claims prior to June 13, 2008. No evidence, other than the testimony of the inventor, shows that Mr. Abhari appreciated the significance of the claimed invention, in particular a composition having over 75 wt% even carbon number paraffins. *See Invitrogen*, 429 F.3d at 1063. While the test results of May 31, 2007 (Ex. 2004) may establish that Mr. Abhari manufactured such a product on that date, the test results themselves do not indicate that any special significance was attached to the results. We are presented only with Mr.

⁷ In response to Neste’s objection that Exhibit 2061 is inadmissible hearsay, REG argued that the exhibit was not being offered for the truth of the matters asserted in the email, but rather to corroborate Mr. Abhari’s testimony that he contacted Microtek. Paper 43, 13. We, therefore, do not consider the content of the email, but solely cite the exhibit as evidence that Mr. Abhari had contacted Ms. Mantz at Microtek.

Abhari's uncorroborated testimony that he recognized the significance of the May 31, 2007 test results.

Nor does the fact that Mr. Abhari undertook steps to arrange pilot plant testing indicate an appreciation that he had made something new. The correspondence between Mr. Abhari and the PARC and SwRI test facilities does not indicate what process Mr. Abhari was attempting to test. Exs. 2009, 2010, 2011, 2058. Indeed, Mr. Abhari mentioned only the production of "diesel product"—not PCMs—in his initial proposal to SwRI. Ex. 2011. Again, the only evidence that Mr. Abhari was seeking to test the production of a PCM within the scope of the challenged claims comes from Mr. Abhari's own testimony.

Finally, while Mr. Abhari's contact with Microtek may be circumstantial evidence that he wished to discuss PCMs with Ms. Mantz,⁸ we cannot determine from Exhibit 2061 what specific product or process Mr. Abhari had in mind. The exhibit cannot demonstrate that Mr. Abhari recognized the significance of the product of the challenged claims, because there is no evidence—other than Mr. Abhari's testimony—that the email was in regard to such a product.

Similarly, we cannot conclude from any of the foregoing evidence that Mr. Abhari disclosed his invention to anyone, as required for proof of conception. *See Coleman*, 754 F.2d at 359. The test results in May of 2007,

⁸ As noted above, we do not consider the content of the email, as REG is not offering it to prove the truth of the matters asserted.

and the test results from SwRI, are not communications from Mr. Abhari. The correspondence with PARC, SwRI, and Microtek, on the other hand, do not contain anything resembling a disclosure of the invention of the challenged claims.

Applying the rule of reason to these facts as a whole, we cannot conclude that the record establishes, by corroborated evidence, that Mr. Abhari conceived of the invention of the challenged claims prior to the June 13, 2008 filing date of Dindi. We, therefore, find that Neste has met its burden of proving that Dindi is prior art to the challenged claims under 35 U.S.C. § 102(e).

C. Anticipation by Dindi

Neste contends that claims 1–3, 5, and 8 are unpatentable as anticipated by Dindi. Pet. 21–30. We instituted trial on this ground, finding persuasive Neste’s unchallenged analysis in its Petition of how the elements of the challenged claims are taught by Dindi. Dec. 14–15. In its Response, REG does not address the merits of Neste’s proposed ground, instead devoting its attention to its attempt to antedate Dindi. PO Resp. 41–50. At oral hearing, REG’s counsel did not concede that Dindi anticipates the claims if the Board determines it to be prior art, but acknowledged that REG had not put forth any arguments addressing the merits of Neste’s proposed ground. Tr. 28–29.

Our Scheduling Order in this case cautioned REG that “any arguments for patentability not raised in the [Patent Owner Response] will be deemed

waived.” Paper 11, 3. The Board’s Trial Practice Guide, furthermore, states that the Patent Owner Response “should identify all the involved claims that are believed to be patentable *and state the basis for that belief.*” *Office Patent Trial Practice Guide*, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012) (emphasis added). By addressing only the antedation of Dindi, REG conveyed to the Board and Neste that antedation was the only basis for its belief that the challenged claims are patentable. As the Board has stated, our governing statute and Rules “clearly place some onus on the patent owner, once trial is instituted, to address the material facts raised by the petition as jeopardizing patentability of the challenged claims.” *Johnson Health Tech Co. Ltd. v. Icon Health & Fitness, Inc.*, Case IPR2013-00463, slip op. 12 (PTAB Jan. 29, 2015) (Paper 41).

In our Decision to Institute, we concluded that Neste had made a threshold showing that Dindi taught all the limitations of the challenged claims, sufficient for us to conclude that there was a reasonable likelihood that Neste would prevail in showing that the challenged claims were anticipated by Dindi. Dec. 14–16. We must now determine whether the preponderance of the evidence of record supports a finding that Dindi anticipates the challenged claims. 35 U.S.C. § 316(e). Given REG’s waiver of argument on the merits, the record now contains the same arguments and evidence regarding the merits of Dindi’s alleged anticipation as it did at the time of our Decision to Institute. Accordingly, the preponderance of the evidence of record now supports a finding that Neste has set forth how all limitations of the challenged claims are taught by Dindi.

For instance, Example 10 of Dindi discloses the production of paraffins from soybean oil, resulting in 92.5 wt % C₁₆ and C₁₈. Ex. 1036 ¶ 76. This meets claim 1's requirement of at least 75 wt % even carbon number paraffins, as well as claim 2's requirement of at least 80 wt %. Claim 3's requirement of n-hexadecane and n-octadecane is also met. As we have determined that the claims are product-by-process claims, the remaining process limitations of claim 1 are not relevant to the anticipation inquiry.

Similarly, with respect to claim 5, Example 14 of Dindi processes refined coconut oil, resulting in a product containing 91 wt% even carbon number paraffins, including 43.5% C₁₂ and 17.5% C₁₄. *Id.* ¶ 81. This meets claim 5's requirement that the even carbon number paraffins comprise n-dodecane and n-tetradecane. Finally, the Examples of Dindi utilize cobalt/nickel/molybdenum or nickel/molybdenum catalysts, meeting claim 8's requirement of a catalyst containing nickel, molybdenum, cobalt, and/or tungsten. *See id.* ¶¶ 76, 78.

Based on this evidence, we determine that Neste has proven, by a preponderance of the evidence, that Dindi discloses all the product elements⁹

⁹ In addition, we note that, even if the process limitations of the claims were relevant to patentability, Dindi discloses that its products are formed by hydrogenation/hydrogenolysis of naturally occurring fatty acids such as soybean oil. *See Ex. 1036 ¶¶ 38, 39, 76.*

of claims 1–3, 5, and 8. We, therefore, conclude that Dindi anticipates claims 1–3, 5, and 8.

D. Anticipation by Craig

Neste contends that Craig anticipates claims 1, 3, 4, and 8 of the '804 patent. Pet. 10–19. Neste primarily relies on Table 9 of the reference, which discloses naturally occurring feedstocks such as canola oil, rapeseed oil, and palm oil, and the makeup of the hydrocarbon product produced from each feedstock. Ex. 1035, Table 9. The Table lists the results of GC-MS (gas chromatography-mass spectrometry) analysis of the products, expressed as peak area percentages of each hydrocarbon (e.g., C₁₆, C₁₇, C₁₈, etc.). *Id.* For example, hydrotreating of “Canola Oil, Premium Quality, 210–343 °C cut” results in a product having peak area percentages of 3.1 % C₁₆, 78.28% C₁₈, and 1.38% C₂₀. *Id.*

REG directs a number of criticisms against Table 9 of Craig. First, REG argues that, to the extent that the Table reports the product of “cuts” of the biological feedstocks, it is reporting product that has been distilled to obtain isolated fractions of the product of an hydrogenation/hydrogenolysis process. PO Resp. 25. This argument, however, is grounded in REG’s contention that claim 1 requires that the PCM be the “direct product” of hydrogenation/hydrogenolysis (*id.* at 27), a claim construction we rejected above. Claim 1 does not exclude the use of additional processing steps after the hydrogenation/hydrogenolysis process; REG expressly acknowledges this fact, noting the claimed invention is “obtained directly from

hydroprocessing a biological feedstock (*albeit after separating out other components such as water, light hydrocarbon gases, hydrogen, catalyst, etc.*)” *Id.* (emphasis added). Thus, we determine that distillation of the Craig products does not remove them from the scope of the challenged claims.

REG also notes that Table 9 reports “hydrocarbons,” which is broader than the claimed “paraffins.” *Id.* at 33. As such, REG argues, even if the reported percentages of even carbon number hydrocarbons are greater than 75%, it cannot be determined whether those are entirely even carbon number *paraffins*. *Id.* We do not find this argument persuasive because, as Neste notes, the specification of Craig describes Table 9 as showing “GCMS analysis of the 210°–343° C. fraction” which “showed its composition to be C₁₅–C₁₈ *paraffins*.” Ex. 1035, 11:10–12 (emphasis added). The record supports Neste’s contention that the “hydrocarbons” of Table 9, viewed in light of the Craig specification, would have been understood by one of ordinary skill in the art to refer to paraffins. Ex. 1072 ¶ 74; Ex. 1073, 37:5–9 (REG’s expert Dr. Lamb agrees that Table 9 reports area percentage of paraffins).

Craig’s Table 9 also contains a footnote, which states that “[t]he summation of yields of C₁₅–C₂₄ accounts for on average 90% of the total peak area.” Ex. 1035, Table 9. REG argues that “at least one possible interpretation is that the percentages reported in Table 9 fail to account for an additional 10% of material that falls outside of the C₁₅–C₂₄ range.” PO

Resp. 35. As such, REG contends that the peak area percentages of Table 9 must be multiplied by 90% to determine the actual percentage present. *Id.*

We do not consider REG’s “possible interpretation” of the footnote to be a reasonable one. As Table III of Dr. Lamb’s Declaration shows, the total area reported for each of the feedstocks of Table 9 ranges from 84.34 to 98.81. Ex. 2020 ¶ 51. Averaging the total areas for each of the eight feedstocks results in an average reported area of 92.16. *Id.* The most reasonable conclusion is that the footnote of Table 9, in stating that “summation of yields of C₁₅–C₂₄ accounts for on average 90% of the total peak area,” is referring to this fact. This is further supported by the fact that, as Neste notes, the footnote also refers to the reported percentages as “Percentage of *Total* GCMS Peak Area.” Ex. 1035, Table 9 (emphasis added). In other words, the percentages of Table 9 already account for the, on average, unreported 10% of the product; there is no need to reduce the reported percentages again to compensate, as REG proposes.

Finally, REG points out that Table 9 discloses area percentages from a GCMS plot, whereas the challenged claims require weight percentages. PO Resp. 33–34. Neste concedes that these are not the same measure, but advances two alternative arguments. First, Dr. Klein testifies that it is common practice in the art to use peak areas on a gas chromatography trace to approximate weight percentage of various components. Ex. 1034 ¶ 24. Second, Dr. Klein states that “relative response factors” may be used to convert peak area percentages to weight percentages. *Id.* ¶¶ 25–26.

We disagree with Neste’s first contention that GCMS area percentages can, on their own, be used to approximate weight percentages. On cross-examination, the only support Dr. Klein could provide for his statement that area percent and weight percent is a commonly used approximation was the disclosure of Dindi. Ex. 1072, 64:20–66:15. As Dr. Lamb notes, however, Dindi discloses the use of a different type of gas chromatography, GC-FID, for quantification of compounds in a sample. Ex. 2020 ¶ 41 (citing Ex. 1036 ¶ 63). Furthermore, Dr. Klein could not state the accuracy of the approximation between GCMS area percentages and weight percentages. Ex. 1072, 51:5–52:8. Without more, we cannot conclude that Table 9’s GCMS area percentages establish, by a preponderance of the evidence, weight percentages within the ranges claimed.

Turning to Neste’s argument that relative response factors can be used to convert GCMS peak area percentages into weight percentages, Dr. Klein first used relative response factors reported by Hsu to conclude that, for example, Table 9 discloses that Canola Oil, Premium Quality results in 83.66% even carbon number paraffins. Ex. 1034 ¶¶ 26, 39. REG responded by arguing that using Hsu’s relative response factors was inappropriate, because “response factors are not only sensitive to the type of detector being used for the GC experiment . . . but are also specific to the actual machine

being used. PO Resp. 34; *see also* Ex. 2023,¹⁰ 140 (“[t]he use of [relative response factors] obtained from literature values will always need some correction due to different experimental conditions and instrumentation”). Because Craig does not disclose a relative response factor, or state what machine is used, REG contends that Craig does not provide enough information to convert peak area percentages accurately to weight percentages using relative response factors.

In his Second Declaration, Dr. Klein calculated weight percentages using relative response factors found in the Göröcs and Chaurasia¹¹ references cited by Dr. Lamb in his testimony. Ex. 1072 ¶ 84. Dr. Klein also assumed that the entire unreported area of Table 9 was comprised of odd carbon number paraffins, to address another of Dr. Lamb’s criticisms. *Id.* Dr. Klein compared the results from these three conversions in Table 2 of his Second Declaration. *Id.* ¶ 88.

Based on our review of the testimony of Drs. Klein and Lamb, as well as the cited supporting evidence, we conclude that Dr. Klein’s Table 2 provides sufficient evidence that Table 9 discloses products with even

¹⁰ N. Göröcs, et al., *The Determination of GC–MS Relative Molar Responses of Some n-Alkanes and their Halogenated Analogs*, 51 J. OF CHROMATOGRAPHIC SCI. 138–145 (2013) (“Göröcs”).

¹¹ Ex. 2024, C. Chaurasia, et al., *Quantitation of Fatty Acids and Hydroxy Fatty Acids by Gas Chromatography/Mass Spectrometry. Predictively Useful Correlations of Relative Response Factors with Empirical Formula*, 30 J. OF MASS SPECTROMETRY 1018–22 (1995) (“Chaurasia”).

carbon number paraffins within the weight percentage range of claim 1. For example, the lowest calculated weight percentage for Canola Premium is 82.31 wt %, over 7% higher than the 75 wt % claimed. While the relative response factors of Hsu, Göröcs, and Chaurasia lead to different calculated weight percentages, the differences between the highest and lowest calculated value for each feedstock are modest, ranging from 0.26% (Canola Premium) to 1.17% (Rapeseed Oil 210–343 °C cut). Given the slight degree of variation, we consider it unlikely that any variations and corrections required by the experimental conditions would result in a weight percentage that is 7% lower than that reported by Dr. Klein.

We cannot, however, draw the same conclusion with regard to claim 2's requirement of at least 80 wt% even carbon number paraffins. Only two samples are calculated in Dr. Klein's Table 2 to fall within this range: Canola Premium (lowest value of 82.31 wt%) and Rapeseed Oil 343 °C + cut (lowest value of 80.03 wt%). Ex. 1072 ¶ 88. Considering the variation in Dr. Klein's calculated weight percentages, these values are too close to claim 2's 80 wt% boundary to conclude that Neste has established, by a preponderance of the evidence, that Table 9 of Craig discloses compounds that fall within the scope of claim 2.

Regarding the other dependent claims, we note that REG does not argue their patentability independently of claim 1. Nevertheless, we find that the additional elements of these claims are also disclosed by Craig. The “canola oil, premium quality” example of Table 9 discloses that the product is over 75% even carbon number paraffins and contains both n-hexadecane

(C₁₆) and n-octadecane (C₁₈), satisfying claim 3. Ex. 1035, Table 9. Similarly, the “rapeseed oil 343 °C + cut” example discloses that the product is over 75% even carbon number paraffins and contains both n-octadecane (C₁₈) and n-docosane (C₂₂), satisfying claim 4. *Id.* Finally, the process of Craig occurs in the presence of cobalt-molybdenum, nickel molybdenum, or other transition metal based catalysts, meeting claim 8’s requirement of a catalyst containing nickel, molybdenum, cobalt, and/or tungsten. *Id.* at 2:60–65.

For the foregoing reasons, we conclude that Neste has proven, by a preponderance of the evidence, that claims 1, 3, 4, and 8 are anticipated by Craig. The preponderance of the evidence does not support that claim 2 is anticipated by Craig.

E. Grounds of Unpatentability That Rely on Kubíčka

As discussed above, we determine that Neste has failed to meet its burden of proving that Kubíčka is prior art to the ’804 patent. Accordingly, Neste cannot carry its burden of proving unpatentability on either instituted ground based on Kubíčka.

III. MOTION TO AMEND CLAIMS

Because we have found claims 1–5 and 8 to be unpatentable as anticipated by at least one of Craig or Dindi, we turn to REG’s Motion to Amend Claims. Dispositive here is 35 U.S.C. § 316(d)(3)’s prohibition on enlarging the scope of the claims via a motion to amend. “A new claim enlarges if it includes within its scope any subject matter that would not have

infringed the original patent.” *Thermalloy, Inc. v. Aavid Eng’g, Inc.*, 121 F.3d 691, 692 (Fed. Cir. 1997).

Neste argues that REG impermissibly broadened the scope of the claims when it proposed claim 12, which requires that the PCM comprise “a liquid product of at least 75 wt % even carbon number paraffins in the C₁₂-C₂₄ range.” Pet. Opp. 1–2. By contrast, claim 1 requires that the PCM comprise “at least 75 wt % even carbon number paraffins.” The key distinction between these claims, Neste contends, is claim 12’s requirement that the even carbon number paraffins make up 75 wt % of a liquid product *component* of the PCM, rather than 75 wt % of the *entire* PCM as required in claim 1. Neste hypothesizes, as an example highlighting this distinction, “a PCM in which the ‘liquid product’ made up only 10% of the overall PCM, with the remaining 90% comprising some other material.” *Id.* at 1. In such a situation, the even carbon number paraffins would be 75 wt% of the liquid product, but only 7.5 wt% of the overall PCM. Such a PCM would fall within the scope of claim 12, but not claim 1.

Seemingly acknowledging this defect in its proposed claims, REG argues that claim 12, which uses the transitional phrase *comprising*, should be interpreted—contrary to its typical construction—to signify a closed-ended claim. PO Reply 1. In other words, REG asks that we construe its use of *comprising*, in this instance, to mean *consisting of*. As support for this argument, REG directs us to its prior arguments, which it contends signal an intent to make the claims closed-ended, and cites to the Federal

Circuit’s decision in *Dippin’ Dots, Inc. v. Mosey*, 476 F.3d 1337 (Fed. Cir. 2007).

At the outset, we do not read the *Dippin’ Dots* decision to permit us to read a transitional phrase directly in contradiction to its typical meaning. The issue presented in that case was whether, in a method claim with multiple steps, the use of the transitional phrase *comprising* made only the number of steps in the process open-ended, or whether the transitional phrase also “reached into” the individual steps of the process. *Id.* at 1343. While the court determined that the steps themselves were not open-ended, it also reconfirmed the well-established rule that “the term ‘comprising’ raises a presumption that the list of elements is nonexclusive.” *Id.*; see *Promega Corp. v. Life Techs. Corp.*, 773 F.3d 1338, 1350 (Fed. Cir. 2014). We do not understand the Federal Circuit to have held, as REG characterizes the decision, that “per the patentee’s intent the term [comprising] may be closed-ended.” PO Reply 1.

Here, REG is not arguing that the *comprising* transitional phrase is open-ended in the preamble, but does not reach into subsequent elements, as was the case in *Dippin’ Dots*; rather, REG argues that *comprising* should be construed at odds with its presumed meaning. We do not discern any reason to adopt such a drastic construction in this case. If REG intended for *comprising* to mean *consisting of*, as it now argues, the proper place for expressing a preference for such a construction would have in the Motion to Amend. See *Idle Free Sys., Inc. v. Bergstrom, Inc.*, Case IPR2012-00027, slip op. at 7 (PTAB June 11, 2013) (Paper 26) (requiring that a motion to

amend identify how any new claim terms are to be construed). Or, more appropriately, if REG intended for the claim to have been closed-ended, it should have drafted the claim using a closed-ended transitional phrase such as *consisting of*, rather than expecting the Board and the public to divine such an “intent” implied by its patentability arguments.¹²

For these reasons, we decline to construe the term *comprising*, as used in proposed claim 12, as anything but its presumed, open-ended meaning. Under such a construction, it is clear that the scope of claim 12 encompasses products that claim 1 does not, as Neste has pointed out in its examples. Therefore, we conclude that the proposed claims impermissibly enlarge the scope of the claims, and deny REG’s Motion to Amend.

IV. CONCLUSION

We conclude that Neste has demonstrated by a preponderance of the evidence that claims 1–5 and 8 of the ’804 patent are unpatentable under 35 U.S.C. § 102, as anticipated by the disclosure of at least one of Craig or

¹² At oral hearing, REG raised for the first time an argument that “the Board has the power to entertain subsequent amendments,” and that if we disagreed with REG’s argument regarding claim 12’s *comprising* transitional phrase, REG would accept entry of an amended claim using the transitional phrase *consisting of*. Tr. 90–91. Whether the Board has such power is beside the point, because we note that—as REG acknowledges—it did not seek authorization to file a second Motion to Amend as permitted by our Rules. *Id.* at 91; see 37 C.F.R. § 42.121(c). We decline to *sua sponte* enter an amendment to REG’s claims, as it would deprive Neste of the ability to address the patentability of such claims via briefing and evidence.

Dindi. Proposed substitute claims 12–18 are not entered, as REG’s Motion to Amend is denied.

V. ORDER

In consideration of the foregoing, it is
ORDERED that claims 1–5 and 8 of U.S. Patent No. 8,231,804 are
unpatentable;
FURTHER ORDERED that Patent Owner’s Motion to Amend Claims is *denied*; and
FURTHER ORDERED that, because this is a final decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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