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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOYOTA MOTOR CORP. and AISIN SEIKI CO., LTD.,

Petitioners,

v.

INTELLECTUAL VENTURES II LLC,

Patent Owner.

Case No. IPR2017-01494¹

U.S. Patent No. 7,683,509

**PATENT OWNER'S NOTICE OF APPEAL TO THE
U.S. COURT OF APPEALS FOR THE FEDERAL CIRCUIT**

¹ IPR2018-00440 has been joined with the current proceeding.

Pursuant to 28 U.S.C. § 1295(a)(4)(A); 35 U.S.C. §§ 141(c), 142, and 319; 37 C.F.R. §§ 90.2(a) and 90.3; and Rule 4(a) of the Federal Rules of Appellate Procedure, notice is hereby given that Patent Owner Intellectual Ventures II LLC (“Patent Owner”) hereby appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision of the Patent Trial and Appeal Board (“Board”) entered on December 12, 2018 (Paper 36) and from all underlying orders, decisions, rulings, and opinions that are adverse to Patent Owner related thereto or included therein, including those within the Decision on Institution of *Inter Partes* Review entered on December 13, 2017 (Paper 10). A copy of the Final Written Decision (Paper 36) is attached hereto as Attachment A.

For the limited purpose of providing the information requested in 37 C.F.R. § 90.2 (a)(3)(ii), Patent Owner identifies that the issues on appeal include, but are not limited to: (1) the Board’s judgment that claims 1, 2, 4, and 15 of U.S. Patent No. 7,683,509 are unpatentable; (2) the Board’s claim constructions; and (3) all other decisions or findings of the Board that are adverse to Patent Owner.

Simultaneous with this submission, Patent Owner is electronically filing a copy of this Notice of Appeal and its Attachment A with the Patent Trial and Appeal Board. In addition, Patent Owner is electronically filing a copy of this Notice of Appeal, including attachment, with the Clerk’s Office for the United States Court of Appeals for the Federal Circuit, together with the required fees.

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Toyota Motor v. Intellectual Ventures II

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: April 24, 2019

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ATTACHMENT A

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOYOTA MOTOR CORP., AISIN SEIKI CO., LTD., and
AMERICAN HONDA MOTOR CO., INC.,
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

Case IPR2017-01494¹
Patent 7,683,509 B2

Before KRISTEN L. DROESCH, JOHN A. HUDALLA, and
AMANDA F. WIEKER, *Administrative Patent Judges*.

DROESCH, *Administrative Patent Judge*.

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

DECISION DENYING PATENT OWNER'S MOTION TO STRIKE
37 C.F.R. § 42.71(a)

¹ Case IPR2018-00440 has been joined with this proceeding

I. INTRODUCTION

A. Background

Toyota Motor Corp. and Aisin Seiki Co., Ltd. filed a Petition requesting an *inter partes* review of claims 1, 2, 14, and 15 (“challenged claims”) of U.S. Patent No. 7,683,509 B2 (Ex. 1001, “’509 Patent”). Paper 3 (“Pet”). Intellectual Ventures II LLC (“Patent Owner”) timely filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). We instituted an *inter partes* review of challenged claims 1, 2, 14, and 15 on all grounds of unpatentability raised in the Petition, pursuant to 35 U.S.C. § 314. Paper 10 (“Inst. Dec.”).

After institution of review, Patent Owner filed a Patent Owner Response (Paper 17, “PO Resp.”).

On April 26, 2018, we joined IPR2018-00440 with this proceeding, on American Honda Motor Co., Inc.’s motion. Paper 20. Hereinafter, we refer collectively to all petitioning entities, i.e., Toyota Motor Corp., Aisin Seiki Co., Ltd., and American Honda Motor Co., Inc., as “Petitioner.”

Petitioner filed a Reply (Paper 24, “Reply”) to Patent Owner’s Response, to which Patent Owner filed a Sur-Reply (Paper 29, “Sur-Reply”). Patent Owner also filed a Motion to Strike Petitioner’s Reply (Paper 30, “Mot. Str.”), to which Petitioner filed an Opposition (Paper 32, “Opp. Mot. Str.”).

Petitioner relies on a Declaration of David L. Trumper, Ph.D. (Ex. 1114, “Trumper Declaration”) to support its Petition. Patent Owner relies on a Declaration of Joseph J. Beaman, Jr., Sc.D. (Ex. 2004, “Beaman Declaration”) to support its Patent Owner Response. All witnesses were

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cross-examined, and transcripts of their depositions are in the record.
Ex. 1137 (“Beaman Deposition”); Ex. 2006 (“Trumper Deposition”).

Oral argument was held on September 18, 2018, and a transcript is included in the record. Paper 35 (“Tr.”).

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, Petitioner has shown by a preponderance of the evidence that challenged claims 1, 2, 14, and 15 of the ’509 Patent are unpatentable.

B. Related Proceedings

The parties represent that the ’509 Patent is at issue in the following proceedings: *In the Matter of Certain Thermoplastic-Encapsulated Electric Motors, Components Thereof, and Products and Vehicles Containing Same*, ITC Inv. No. 337-TA-1052; *In the Matter of Certain Thermoplastic-Encapsulated Electric Motors, Components Thereof, and Products and Vehicles Containing Same II*, ITC Inv. No. 337-TA-1073; *Intellectual Ventures II LLC v. Honda Motor Co., Ltd.*, Case No. 1:17-cv-00294 (D. Del.); *Intellectual Ventures II LLC v. Aisin Seiki Co., Ltd.*, Case No. 1:17-cv-00295 (D. Del.); *Intellectual Ventures II LLC v. Toyota Motor Corp.*, Case No. 1:17-cv-00300 (D. Del.); *Intellectual Ventures II LLC v. Toyota Motor Corp.*, Case No. 2:17-cv-07681 (C.D. Del.); and *Intellectual Ventures II LLC v. Aisin Seiki Co., Ltd.*, Case No. 2:17-cv-13551 (E.D. Mich.). Pet. 51; Paper 6, 2; Paper 8, 2; Paper 9, 2.

According to Patent Owner, the ’509 Patent also is at issue in Case IPR2017-01539. Paper 6, 2.

C. The '509 Patent (Ex. 1001)

The '509 Patent discloses a fluid-cooled electromagnetic field-functioning device, such as a motor, generator, transformer, solenoid, or relay, comprising one or more electrical conductors, a monolithic body of phase change material substantially encapsulating the conductors, and at least one coolant channel substantially encapsulated within the body of phase change material. *See Ex. 1001, Abstract.*

The '509 Patent discloses a motor/generator used as a power source for a hybrid electric vehicle. *See Ex. 1001, 15:48–50.*

Figure 14 of the '509 Patent is reproduced below.

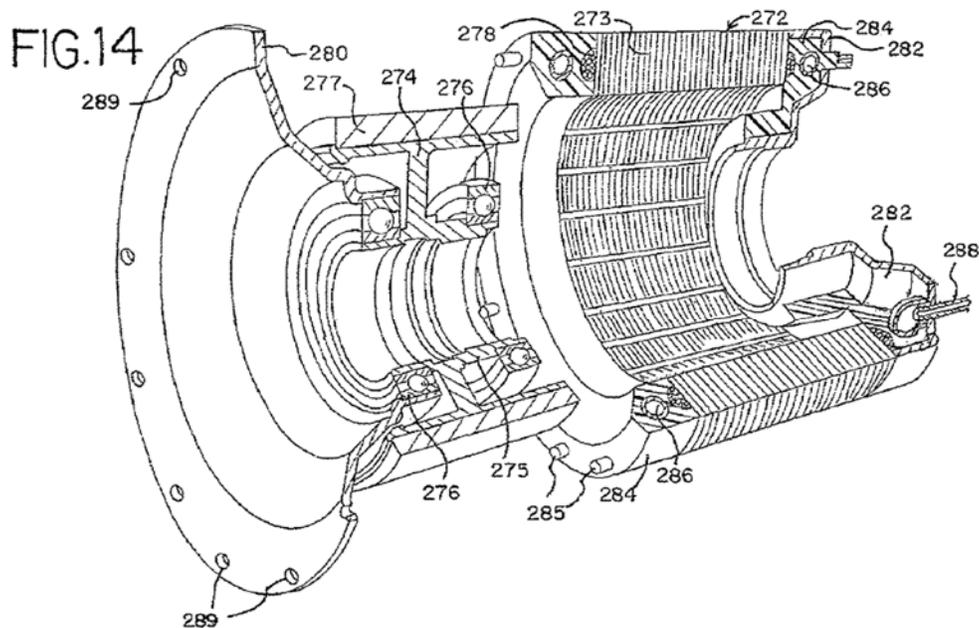


Figure 14 depicts an exploded partial cross section view of motor/generator 270. *See Ex. 1001, 4:29–31, 4:34–35.* Motor/generator 270 includes stator assembly 272 and rotor 274 rotatably mounted to stator assembly 272 with bearings 276. *See id.* at 15:51–54. Stator assembly 272 is made of steel laminated core 273 and windings 278. *See id.* at 15:51–59. Windings 278 and the laminations making core 273 are substantially encapsulated by

body 284 of phase change material. *See id.* at 15:63–65. Two liquid-tight coolant channels 286 also are substantially encapsulated in body 284 of phase change material. *See id.* at 16:12–13. Channels 286 may be molded into body 284 when it is formed, preferably by putting a metal, plastic, or thermoplastic conduit in place before body 284 is solidified. *See id.* at 16:12–19. Fittings 288 are needed to introduce and remove liquid from coolant channels 286 and also are partially encapsulated in body 284 of phase change material. *See id.* at 16:19–22.

The '509 Patent also discloses a solenoid valve which may, for example, be part of a fuel injector. *See Ex. 1001, 18:33–34, 19:1–2.*

Figures 20 and 21 of the '509 Patent are reproduced below.

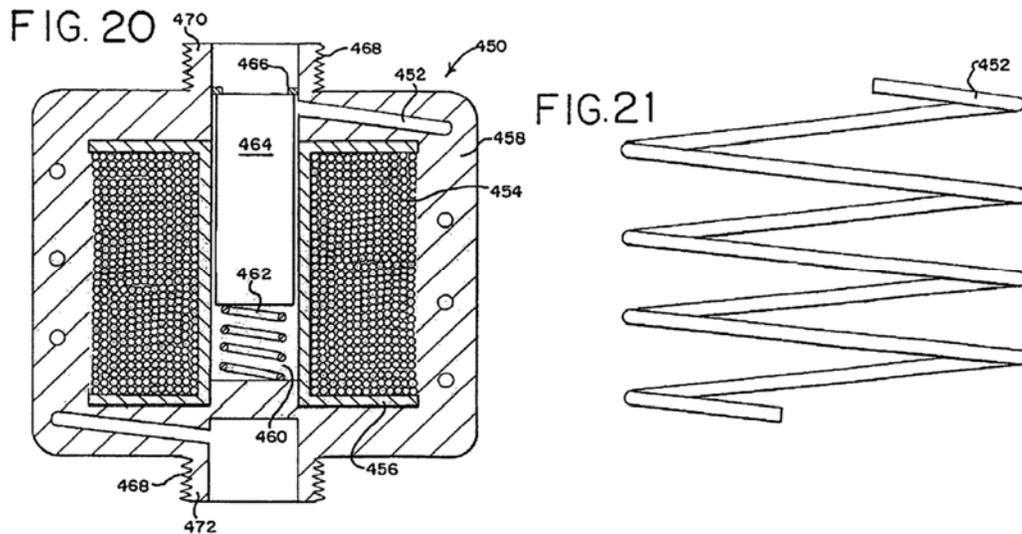


Figure 20 depicts solenoid valve 450, and Figure 21 depicts conduit 452 formed in a helical shape. *See Ex. 1001, 19:1–2, 19:6–7.* Solenoid valve 450 is cooled by a heat transfer fluid. *See id.* at 19:3–4. Solenoid valve 450 includes conductor 454 in the form of wire windings on bobbin 456. *See id.* at 19:7–9. Bobbin 456, wire 454, and conduit 452 are placed in a mold and a thermoplastic is molded around the pieces to encapsulate them and form

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body 458. *See id.* at 19:9–12. Central channel 460 is left for placement of spring 462 and plunger 464. *See id.* at 19:13–15. Pipe threads 468 may be molded onto body 458 to form inlet 470 and outlet 472 connections. *See id.* at 19:16–18. The '509 Patent further discloses:

the present invention contemplates using the various methods on other devices than those in which it is specifically shown in the drawings. For example, while small spindle motors would not typically be cooled by a liquid that flows into and out of the motor, there may be may be applications where this is practical. Then the cooling channels shown in the devices of FIGS. 12–16 and 20–21 could be used in the body of phase change material encapsulating the stator.

Ex. 1001, 20:63–21:4.

The '509 Patent also discloses:

U.S. Pat. No. 6,659,737 [(Ex. 3001)] (hereby incorporated herein by reference) discloses a pump that can be modified according to the present invention so that the thermoplastic encapsulating the stator body is also used to form the housing for the device. In such an embodiment, the stator would be constructed without the shaft and held on a core pin in a mold. The inside surface of the mold would form the outside of the housing. The housing would have a larger inlet than depicted in the '737 patent, one that would allow the motor shaft and impeller to be added to the stator after the molding operation. The flow path through the plastic could be formed by either injecting gas into the molten plastic in the mold so as to produce channels, or by molding around a plurality of conduits filled with ice or wax which could later be removed to leave an integrated flow path through the body. In either manner, a fluid inlet port and a fluid outlet port could be formed in the body of injection molded thermoplastic, and the pathway through the body would be confined within the body. Thus the pathway is a defined pathway through a housing that is formed, at least in part, out of the same monolithic body that encapsulates the conductor. Rather than having a two-part housing that is separately molded and attached to an

encapsulated stator, one monolithic body would be formed that encapsulates the stator and forms the flow channels through the device.

Ex. 1001, 20:29–53; *see generally* Ex. 3001 (“’737 Patent”).

D. Illustrative Claim

Of the challenged claims, claims 1 and 14 are independent, with claims 2 and 15 dependent from claims 1 and 14, respectively. Claim 14 is illustrative and reproduced below:

14. A fluid-cooled motor comprising:
- a) at least one electrical conductor;
 - b) a monolithic body of injection molded thermoplastic material substantially encapsulating the at least one conductor; and
 - c) a non-linear heat transfer fluid pathway in the monolithic body, with at least one fluid inlet and at least one fluid outlet to said pathway to allow for passage of heat transfer fluid through the pathway, wherein the monolithic body of injection molded thermoplastic material substantially encapsulates a stator of the motor.

Ex. 1001, 24:39–50.

E. Asserted Grounds of Unpatentability

We instituted an *inter partes* review challenging the patentability of the following claims of the ’509 Patent on the following grounds and prior art (Pet. 23–50; Inst. Dec. 19):

Claims	Statutory Basis	Reference(s)
1, 2, 14, and 15	§ 102(b)	Stephan ²
1, 2, 14, and 15	§ 103(a)	Stephan, Raible ³ , and Neal ⁴

² Ex. 1102, 1–31, DE 10307696 A1, published October 2, 2003 (“Stephan”), filed with an English translation (Ex. 1102, 15–32) and certification of translation (Ex. 1102, 33).

³ Ex. 1103, U.S. Patent No. 5,368,438, issued Nov. 29, 1994 (“Raible”).

⁴ Ex. 1105, U.S. Patent No. 6,362,554 B1, issued Mar. 26, 2002 (“Neal”).

II. ANALYSIS

A. Claim Construction

For petitions filed before November 13, 2018, we interpret the claims of an unexpired patent that will not expire before issuance of a final written decision using the broadest reasonable interpretation in light of the specification. *See* 37 C.F.R. § 42.100(b) (2016); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). Under the broadest reasonable interpretation standard, claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

1. “fluid-cooled” (claims 1 and 14 preambles)

Patent Owner argues that “fluid-cooled” recited in the preambles of claims 1 and 14 is a claim limitation, and proposes a construction for “fluid cooled.” *See* PO Resp. 7–12. As demonstrated in the analysis below, the term “fluid-cooled” is not in dispute. Therefore, we need not provide an explicit construction for “fluid-cooled.” *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017), *cert. denied*, 138 S. Ct. 1695 (April 30, 2018) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

2. *“monolithic body” (claims 1 and 14)*

Prior to institution of review, the parties proposed differing claim constructions for “monolithic body.” *See* Pet. 14–16; Prelim. Resp. 4–5; Inst. Dec. 6–8. In our Institution Decision, declined to construe “monolithic body” as excluding a body formed by multiple pieces joined together, and instead we determined that the broadest reasonable interpretation of “monolithic body” consistent with the ’509 Patent Specification is “a body formed as a single piece.” Inst. Dec. 7–8; *see* Ex. 1001, 5:62–63 (“Monolithic is defined as being formed as a single piece.”).

Patent Owner agrees with our construction (*see* PO Resp. 6), and Petitioner does not address the claim construction for “monolithic body” in its Reply (*see* Reply 7–14). Accordingly, we maintain our determination that the broadest reasonable interpretation of “monolithic body” in light of the ’509 Patent Specification is “a body formed as a single piece.”

3. *“heat transfer fluid” (claims 1 and 14)*

Prior to institution of review, Patent Owner proposed a claim construction for “heat transfer fluid.” *See* Prelim. Resp. 14–16. In our Institution Decision, we determined that the broadest reasonable interpretation of “heat transfer fluid” consistent with the ’509 Patent Specification is “liquids or gases, or combinations thereof, that are capable of heat transfer.” Inst. Dec. 8–9; *see* Ex. 1001, 5:5–7 (“The term ‘heat transfer fluid’ as used in the present application includes both liquids and gases, as well as combination thereof.”).

Patent Owner does not contest our construction (*see* PO Resp. 7), and Petitioner does not address the claim construction for this phrase (*see* Reply 7–14). Accordingly, we maintain our determination that the broadest

reasonable interpretation of “heat transfer fluid” in light of the ’509 Patent Specification is “liquids or gases, or combinations thereof, that are capable of heat transfer.”

4. “pathway” / “non-linear heat transfer fluid pathway”(claims 1 and 14)

Prior to institution of review, Patent Owner asserted that the broadest reasonable interpretation of “heat transfer fluid pathway” is “channel for liquid or gas coolant.” Prelim. Resp. 8–9. Patent Owner contended that a person of ordinary skill in the art would understand that “pathway” is a structural element because the claims recite additional fluid inlet and fluid outlet structures of the pathway. *See id.* at 8. Patent Owner asserts that the ’509 Patent Specification consistently discloses the pathway structure as a channel. *See id.* at 8 (quoting Ex. 1001, Abstract, 3:47–56, 8:34–35).

Petitioner did not offer an initial explicit construction for “heat transfer fluid pathway.” *See Pet.* 14–16. In our Institution Decision, “we adopte[d] Patent Owner’s construction of ‘pathway’ as ‘channel,’ because it is consistent with the ’509 Patent Specification.” Inst. Dec. 9. In accordance with our construction for “heat transfer fluid,” we stated that “we construe the broadest reasonable construction of ‘heat transfer fluid pathway’ as ‘channel for liquids or gases, or combinations thereof that are capable of heat transfer.’” *Id.* at 10.

Also prior to institution of review, Patent Owner asserted that the broadest reasonable interpretation of “non-linear . . . pathway” was a “channel that cannot be formed by a simple core pin in an injection mold tool.” Prelim. Resp. 9. Petitioner did not offer an initial explicit construction for “non-linear . . . pathway.” *See Pet.* 14–16. In our Institution Decision, “we construe[d] the broadest reasonable interpretation

of ‘non-linear . . . pathway’ as a ‘channel that cannot be formed by a simple core pin in an injection mold tool.’” Inst. Dec. 10; *see* Ex. 1001, 18:15–17 (“By ‘non-linear’ it is meant that the chamber or flow path cannot be formed by a simple core pin in an injection mold tool.”).

In its Response, Patent Owner characterizes “the Board’s construction [in the Institution Decision] of ‘pathway’ to mean a structural ‘channel,’” and, consequently, agrees with its characterization of the Board’s construction. PO Resp. 3, 12. Patent Owner asserts that the construction

means that the claimed “non-linear heat transfer fluid pathway in the monolithic body” is not just a route that fluid takes in accordance with the laws of fluid dynamics, within general boundaries defined by the walls of a chamber that temporarily holds fluid. Instead, the claimed pathway includes a structural “channel” that is “in the monolithic body” and directs fluid flow along a specific route between the inlet and the outlet.

Id. at 3–4. In support of its characterization of the Board’s construction, and assertion that its characterization of the Board’s construction should be maintained, Patent Owner provides references to testimony by its witness, Dr. Beaman, and various citations to ’509 Patent disclosure of channels. *See id.* at 13–14 (citing Ex. 1001, Abstract, 3:47–56, 8:34–35; Ex. 2004 ¶¶ 39–42).

When addressing the teachings of Stephan, Patent Owner also implicitly construes a “pathway” as “confined to a structural ‘channel’ in a monolithic body.” PO Resp. 22, 24 (similar argument, citing Ex. 2004 ¶ 56); *see also* Sur-Reply 5 (implicitly construing “pathway” as “structurally confined to a specific route in the monolithic body”). Patent Owner argues, with supporting testimony by Dr. Beaman, “[a] person of ordinary skill in the art would understand that a channel defines a specific route that fluid

will flow within a structure; it does not merely hold fluid within general constraints (such as between the walls of a chamber), or merely partially obstruct fluid flow, without defining a specific route of fluid flow.” Resp. 22 (citing Ex. 2004 ¶ 52); *see id.* at 5 (similar argument); Sur-Reply 3 (similar argument). Patent Owner further argues that “pathway” requires “a structural channel in the monolithic body that directs the flow of fluid along a specific route between the inlet and the outlet.” PO Resp. 24 (citing Ex. 2004 ¶ 56); *see id.* at 4 (arguing same). Patent Owner also contends that a “pathway” requires a “single route,” a “particular route,” or “an orderly flow along a single route,” and cannot include “multiple routes,” “chaotic and unpredictable fluid flow,” and “turbulent fluid flow, including eddies and corkscrew fluid flow patterns.” *Id.* at 23–24 (citing Ex. 2004 ¶¶ 53–55); *see id.* at 4 (arguing same); *see also id.* at 25–27 (similar arguments by analogy to a lake and a cylindrical water tank, citing Ex. 2004 ¶¶ 57–59); Tr. 28:5–29:9 (similar arguments by analogy to a parking garage and a tank).

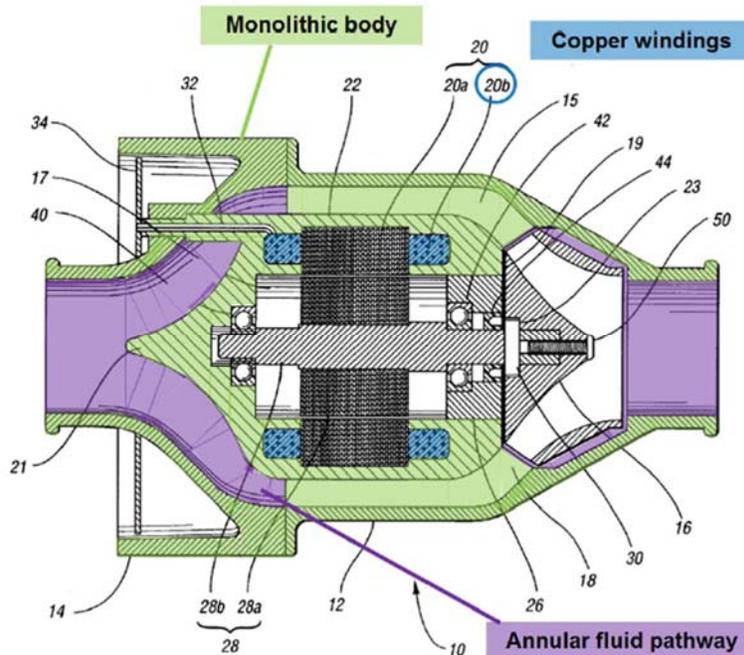
In reply, Petitioner contends that Patent Owner’s application of the construction for “pathway” includes many additional limitations that should not be read into the claims. *See Reply 7.* Petitioner argues that Patent Owner’s asserted features are not recited in the claims, and the ’509 Patent does not address any specific flow pattern the fluid should have through the pathway, and that the added limitations would make the claimed invention impossible to practice. *See id.* at 8; *see also id.* at 8–11 (reproducing Ex. 1139, Figs. 107, 109; citing Ex. 1137, 11:4–12; Ex. 1139, 251–253; addressing main flow and secondary flow of fluid in a confined non-linear pathway, separation of flow from surface, parallel flow paths, and turbulence). Petitioner contends that, in contrast to Patent Owner’s

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arguments, the term channel must cover and cannot exclude pathways having turbulent and chaotic flow including corkscrew patterns and eddies with particles taking different trajectories from the inlet to the outlet of the pathway. *See id.* at 10–11 (citing PO Resp. 22–24; Ex. 2004 ¶¶ 52–55).

Petitioner also contends that Patent Owner’s “narrow application of ‘channel’ also conflicts with the disclosed ‘pump embodiment’ of the ’509 patent,” and Federal Circuit precedent recognized by the PTAB. Reply 11 (quoting *Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276–77 (Fed. Cir. 2008); *America, Inc., v. Norman IP Holdings, LLC*, Case IPR2014-00564 (PTAB Aug. 26, 2015) (Paper 36); citing *Canon Inc., v. Intellectual Ventures II, LLC*, Case IPR2014-00631 (PTAB Aug. 19, 2015) (Paper 50)). Petitioner argues that in the case before use, there is no evidence of disclaimer, and points out that challenged claims 2 and 15 are directed to pumps. *See id.* at 11 (citing Ex. 1001, claims 2, 5). Petitioner argues that the “pump embodiment” of the ’509 Patent is based on a modification of the pump disclosed in the ’737 Patent, and asserts that Patent Owner has acknowledged that Figure 1 of the ’737 Patent, as modified to include a monolithic body, provides a diagram of the “pump embodiment” described in the ’509 Patent. *See id.* at 12 (citing Case IPR2017-01495, Paper 19, 11–13; Ex. 1001, 20:28–53, 20:47–21:4; Case IPR2017-01538, Paper 18, 11–13; Ex. 1138, 46:6–22).

Figure 1 of the ’737 Patent with Patent Owner’s annotations is reproduced below.

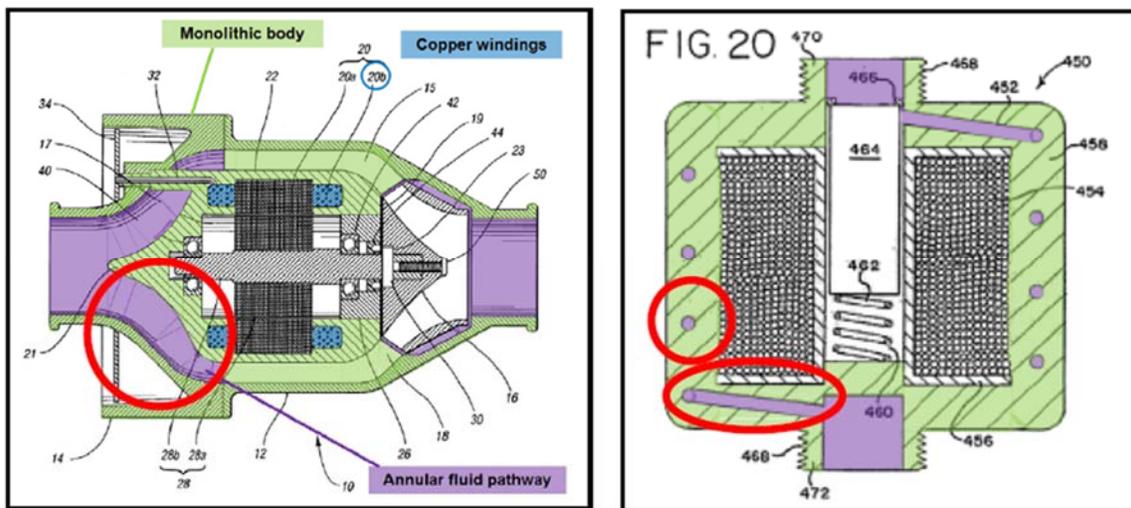


Reproduced Figure 1 of the '737 Patent with annotations depicts a monolithic body shaded in green, an annular fluid pathway shaded in purple, and copper windings shaded in blue. *See* Reply 13. According to Petitioner, “[i]n describing annotated Figure 1, [Patent Owner] stated that ‘the monolithic body of injected molded thermoplastic (green) forms the pump housings 12, 14 and stator assembly 22. A confined annular fluid pathway (purple) is embedded within the walls of the body, and the walls substantially encapsulate the windings 20b (blue).’” *Id.* (citing Case IPR2017-01495, Paper 19, 12; Case IPR2017-01495, Ex. 2009 ¶ 56). Petitioner contends the '509 Patent describes the pathways (shaded in purple) in the “pump embodiment” as “channels.” *See id.* (quoting Ex. 1001, 20:49–53). According to Petitioner, “based on [Patent Owner]’s own description, it is clear that impeller 16 would cause the fluid particles to follow in different, unpredictable, and likely turbulent paths through the pathway of the pump body.” *Id.* at 13–14. Petitioner asserts “the walls

forming the pathway of the ‘pump embodiment’ increase and then decrease in diameter as fluid flows from the inlet to the outlet,” thereby “allow[ing] for the fluid particles to flow around the molded stator portion, with fluid particles taking different pathways around the molded stator.” *See id.* at 14. According to Petitioner, “the term ‘channel’ must cover pathways having turbulent flow with particles taking different trajectories from the inlet to the outlet of the pathway.” *Id.* at 14 (citing PO Resp. 22–24; Ex. 2004 ¶¶ 52–55).

In its sur-reply, Patent Owner assert that “Petitioner misunderstands the pump embodiment, which, entirely consistently with the other embodiments of the specification shows that the pathway is a structural channel in the monolithic body.” Sur-Reply 4. Patent Owner also alleges, “the pump embodiment itself includes a structural channel in the monolithic body confining fluid flow to a specific route.” *Id.*

Figure 1 of the ’737 Patent with Patent Owner’s annotations, and Figure 20 of the ’509 Patent with Patent Owner’s annotations, are reproduced below.



Reproduced Figure 1 of the '737 Patent with Patent Owner's annotations depicts a monolithic body shaded in green, an annular fluid pathway shaded in purple, copper windings shaded in blue, and a red circle pointing out part of the annular fluid pathway; reproduced Figure 20 of the '509 Patent with annotations depicts monolithic body 458 shaded in green, and inlet 470, outlet 472, and conduit 452 shaded in purple and a red circle pointing out part of the fluid pathway. *See* Sur-Reply 4; Ex. 1001, 19:1–18. According to Patent Owner, the annotated figures “show that both embodiments have a structural channel in the monolithic body that confines fluid flow to a specific route.” Sur-Reply 4.

We do not agree with Patent Owner's arguments advocating a narrow construction for “pathway” such that it requires: (1) a structural channel in the monolithic body that directs the flow of fluid along a specific route between the inlet and the outlet,” (2) a “single route,” (3) a “particular route,” and/or (4) “an orderly flow along a single route.” We also do not agree with Patent Owner's contentions that the claimed “pathway” cannot include “multiple routes,” “chaotic and unpredictable fluid flow,” and “turbulent fluid flow, including eddies and corkscrew fluid flow patterns.” As pointed out correctly by Petitioner, these features are not recited in the claims, nor are these features addressed in the '509 Patent Specification. Patent Owner's witness, Dr. Beaman, does not disclose an underlying factual basis to support his testimony that

a person of ordinary skill in the art would understand that a channel defines a specific route that fluid will flow within a structure; it does not merely hold fluid within general constraints (such as between the walls of a chamber), or merely partially obstruct fluid flow, without defining a specific route of fluid flow.

Ex. 2004 ¶ 52. Dr. Beaman also does not disclose an underlying factual basis to support his opinion that a “pathway” would otherwise require a structural channel that would constrain the flow of a fluid to a specific defined route, a consistent route, and an orderly flow along a single route, yet preclude multiple routes, turbulent fluid flow including eddies and corkscrew patterns, and chaotic and unpredictable fluid flow. *See id.* ¶¶ 53–57. In addition, the recitation of “a non-linear heat transfer pathway,” does not limit the claims to a single pathway, a single channel, a single route, or otherwise preclude multiple routes. “[A]n indefinite article ‘a’ or ‘an’ in patent parlance carries the meaning of ‘one or more’ in open-ended claims containing the transitional phrase ‘comprising.’” *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000).

We agree with Petitioner that Patent Owner’s construction of “pathway” addressing chaotic and turbulent flows is undermined by Patent Owner’s arguments in the related proceedings addressing the “pump embodiment” disclosed in the ’737 Patent and describing the pump as including an annular fluid pathway.

Finally, to the extent that Patent Owner suggests⁵ that Figure 20 of the ’509 Patent Specification illustrates the asserted “channel” because Figure 20 depicts a single pathway formed by conduit 452 having a relatively narrow cross-section relative to the cross-section of body 458 that,

⁵ Patent Owner’s suggestion is reinforced by its analogy using a depiction of a cylindrical water tank having a relatively large radius relative to the radii of the cylindrical inlet and outlet. *See* PO Resp. 26–27; Ex. 2004 ¶¶ 58–59; *see also* Tr. 28:15–18 (“[W]e’re just going to have to decide how wide does the pathway need to be a path - - a pathway versus a tank.”).

according to Patent Owner, confines fluid flow to a specific route, (*see, e.g.*, Sur-Reply 4 (reproducing Ex. 1001, Fig. 20 with annotations)), we decline to read limitations into the claims from the '509 Patent Specification.

Specifically, we decline to attribute any cross-sectional shape and relative dimensions for the cross-sectional shape to the construction of “pathway” as “channel.” Although claims are construed in the context of the patent, it is well settled that limitations from the specification are not to be read into the claims. *See Comark Comm'cns Inc. v. Harris Corp.*, 156 F.3d 1182, 1186–87 (Fed. Cir. 1998).

Accordingly, we maintain our determination that the broadest reasonable interpretation of “pathway” in light of the '509 Patent is “channel.” The broadest reasonable interpretation of “pathway” does not include any additional limitations on “channel” or the fluid flow dynamics therein.

B. Principles of Law

A claim is unpatentable as anticipated under 35 U.S.C. § 102 “if each and every limitation is found either expressly or inherently in a single prior art reference.” *King Pharm., Inc. v. Eon Labs, Inc.*, 616 F.3d 1267, 1274 (Fed. Cir. 2001).

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art;

(2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of non-obviousness, when in evidence.⁶ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Whether a combination of elements produced a predictable result weighs in the ultimate determination of obviousness. *Id.* at 416–417.

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). The burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must support its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

C. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17.

⁶ Patent Owner does not present objective evidence of non-obviousness. *See generally* PO Resp.

Petitioner contends, citing testimony by its witness, Dr. Trumper, that a person of ordinary skill in the art would have “a bachelor’s degree in mechanical or electrical engineering, or an equivalent degree, and at least two years of experience in the design of electric motors.” Pet. 13 (citing Ex. 1114 ¶ 30). Petitioner also asserts a person of ordinary skill in the art “would be familiar with the fundamentals of electric motor design and operation, the concept of encapsulating various components in an electric motor, the types of materials that could be used for encapsulation and their thermal and dimensional properties (*e.g.*, CLTE), and thermofluid concepts,” as well as “various techniques for manufacturing encapsulated motors, including by the use of injection molding.” *Id.* (citing Ex. 1114 ¶¶ 30–31).

In its Response, Patent Owner contends, citing testimony of its witness Dr. Beaman, “a person of ordinary skill in the art would have a Bachelor’s degree in mechanical engineering and at least one year of experience, but no more than two years, in the application of heat transfer for electromechanical devices.” PO Resp. 16 (citing Ex. 2004 ¶ 25). According to Patent Owner, Dr. Trumper’s testimony misstates the level of ordinary skill in the art because Dr. Trumper asserts that a person of ordinary skill in the art may have a Bachelor’s degree in electrical engineering and “at least two years of experience in the design of electric motors.” *Id.* (citing Ex. 1114 ¶ 31). Patent Owner asserts that “Dr. Beaman’s testimony that a person of ordinary skill in the art would have a degree in mechanical engineering, not electrical engineering, is more credible in view of the fact that ‘the emphasis of the ’509 Patent is on heat transfer, not the electrical components of a motor or other electromagnetic device.’” *Id.* (quoting Ex. 2004 ¶ 23); *see also id.* at 15–16 (arguing the

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field of the invention of the '509 Patent is “cooling systems for electromagnetic devices,” and Dr. Trumper’s “testimony does not adequately identify the field of the invention”; reproducing Ex. 1001, 1:6–9; Ex. 1114 ¶ 31; citing Ex. 1001, claims 1, 3, 4, 5, and 14; Ex. 2004 ¶ 21; Ex. 2006, 12:5–17).

Patent Owner argues that Dr. Trumper misstates the level of ordinary skill in the art, which “appears to be designed to inaccurately suggest that Dr. Trumper himself—who has degrees in electrical engineering but not mechanical engineering (Ex. 1114, 68)—is a person of ordinary skill in the art.” *See* PO Resp. 16–17. Patent Owner contends that Dr. Trumper’s opinions, therefore, are not from the legally correct perspective that would have been necessary for Petitioner to make out any case of obviousness. *See id.* at 17. Patent Owner contends that Dr. Trumper’s opinions should be disregarded or given little weight. *See id.*

In reply, Petitioner argues that Patent Owner’s position that a person of ordinary skill in the art must have a mechanical engineering degree and excluding an electrical engineering degree conflicts with the definition that Patent Owner proposed in other proceedings. *See* Reply 3–4. According to Petitioner, “[i]n a parallel action before the U.S. International Trade Commission (ITC) . . . , [Patent Owner] and its expert in that proceeding, Dr. Hamid Toliyat, broadly propose that a skilled artisan ‘would have a degree in electrical engineering, mechanical engineering, materials engineering, manufacturing engineering and/or a related field.’” *Id.* at 4 (citing Ex. 1136 ¶¶ 26–27) (emphasis added by Petitioner). Petitioner also asserts that when it confronted Patent Owner’s witness Dr. Charles A. Garris for the '509 Patent (IPR2017-01539) and related Patent No. 7,928,348

(IPR2017-01495 and IPR2017-01538) with Patent Owner’s inconsistent positions on the level of ordinary skill, Dr. Garris admitted that a person with only an electrical engineering degree along with relevant experience would meet the definition of a person of ordinary skill in the art. *See id.* at 5 (quoting Ex. 1138, 22:12–17, 23:14–21). Petitioner further asserts that Dr. Garris admitted that a person without a mechanical engineering degree would meet the definition of a person of ordinary skill in the art. *See id.* (citing Ex. 1138, 24:18–22). According to Petitioner, the correct definition of a person of ordinary skill in the art, as proposed by Patent Owner in the ITC, and by Patent Owner’s witness in other proceedings, includes a person having an electrical engineering degree. *See id.* (citing Pet. 13; Ex. 1114 ¶¶ 30–31; Ex. 1138, 22:12–17, 23:14–21, 24:18–22; Ex. 1136 ¶¶ 26–27).

Petitioner also argues that Patent Owner’s witness, Dr. Beaman, “attempts to unnecessarily and incorrectly cap the experience that a [person of ordinary skill in the art] may have to a narrow range of ‘at least one year of experience, but **no more than two years** in the application of heat transfer for electromechanical devices.” *See Reply 5* (quoting Ex. 2004 ¶ 25). Petitioner contends that Dr. Beaman also states that a person of ordinary skill in the art “would have **no more than very limited knowledge** about the types of materials that would be used for encapsulation and their thermal and dimensional properties (*e.g.*, CLTE)’ and ‘various techniques for manufacturing encapsulated motors, including by the use of injection molding.” *Id.* at 5–6 (quoting Ex. 2004 ¶ 25). Petitioner asserts that Dr. Beaman’s limits on the person of ordinary skill in the art also conflicts with Dr. Garris’s definition for U.S. Patent No. 7,928,348, which requires at least two years of experience. *See id.* at 6 (citing IPR2017-01495, Paper 19,

32, Ex. 2009 ¶ 23). Petitioner asserts that, “during his deposition, Dr. Garris indicated for both the ’509 patent and the ’348 patent that more experience, not less, could be required.” *Id.* (citing Ex. 1138, 22:12–17, 23:1–21, 24:8–17).

Petitioner contends that under either party’s definition, Dr. Trumper can readily apply the viewpoint of a person of ordinary skill in the art based on his Ph.D. in electrical engineering, long tenure as professor in the mechanical engineering department at MIT, extensive experience in application of heat transfer for electromechanical devices, and other relevant experience detailed in his Declaration and CV. *See* Reply 6–7 (citing Ex. 1114 ¶¶ 2–27, pp. 68–114).

We do not agree with Patent Owner’s arguments and agree with Petitioner that Patent Owner’s definition of a person of ordinary skill in the art is limited needlessly. Although Patent Owner is correct that the ’509 Patent Specification discloses that the field of the invention is directed to electromagnetic devices that include heat exchange mechanisms (*see* PO Resp. 3; *see generally* Ex. 1001), we do not agree that the definition of a person of ordinary skill in the art should be limited to a person having a mechanical engineering degree merely because “the emphasis of the ’509 Patent is on heat transfer, not the electrical components of a motor or other electromagnetic device.” Patent Owner’s definition needlessly excludes persons who earned a bachelor’s degree in electrical engineering or other related degrees, but also had experience working on electromagnetic devices that include heat exchange mechanisms. As pointed out by Petitioner, Patent Owner’s definition of a person of ordinary skill in the art is undermined by conflicting testimony by Patent Owner’s witnesses,

Dr. Garris and Dr. Toliyat, in related proceedings. Patent Owner's arguments also overlook that Dr. Trumper, in addition to addressing formal education, explained that a person of ordinary skill in the art "would have . . . two years of **experience in the design of electric motors**. . . [and] would be familiar with the fundamentals of electric motor design and operation . . . , and **thermofluid concepts**." Ex. 1114 ¶ 31 (emphasis added).

Based upon our review of the '509 Patent and the types of problems and solutions described in the '509 Patent and applied prior art, we determine that a person of ordinary skill in the art would have a bachelor's degree in mechanical engineering, electrical engineering, chemical engineering, or an equivalent degree, and two years of experience in the design of electric motors and electromagnetic devices, including familiarity with the design, operation, materials, and fabrication of such devices, including their thermal and fluid characteristics. The evidence of record demonstrates sufficiently that Dr. Trumper and Dr. Beaman each have sufficient education (*see* Ex. 1114 ¶ 3, Appendix A. p. 68; Ex. 2004 ¶ 5) and experience (*see* Ex. 1114 ¶¶ 2, 4–27, Appendix A, pp. 68–114; Ex. 2004 ¶¶ 6–8) to offer testimony from the perspective of a person of ordinary skill in the art in this proceeding. For these reasons, we decline to disregard or give little weight to Dr. Trumper's testimony.

shutoff sections 36 and peripheral ring 32 with permanent magnets 12, and circuit carrier ring 16 provided with drive coils 10. *See id.* ¶¶ 21–25.

Figure 6 of Stephan is reproduced below.

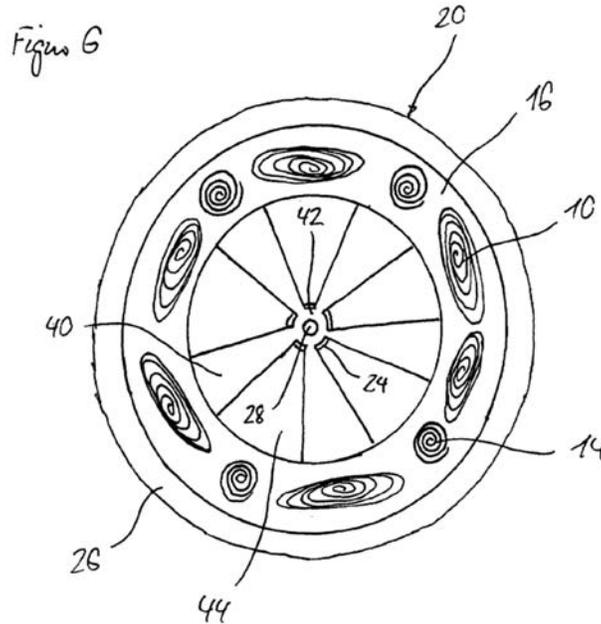


Figure 6 depicts a top view of schematic representations of housing half 20. *See Ex. 1102* ¶ 19. Housing half 20 includes circuit carrier ring 16 including drive coils 10 and positioning coils 14, funnel segments 44 and shutoff segments 40. *See id.* ¶ 32. Funnel segments 44 have approximately the same contour as the corresponding funnel section 22 of the first housing half. *See id.* ¶ 35. Positioning coils 14 in cooperation with permanent magnets 12 facilitate a specific rotation angle positioning of the rotor 8 when drive coils 10 are off. *See id.* ¶ 32. When shutoff sections 36 of rotor 8 are arranged congruently above shutoff segment 40, flow can pass without hindrance. *See id.* ¶ 33. When shutoff sections 36 of rotor 8 are arranged congruently above funnel segments 44, no flow can pass through. *See id.* ¶¶ 32–33. Intermediate positions are possible in which element 4 functions as a variable restrictor. *See id.* ¶ 33

Stephan discloses that rotor 8 and housing halves 18, 20 may be made of injection molded thermoplastic material, with circuit carrier rings 16 and drive coils 10 encapsulated therein. *See id.* ¶¶ 8, 38–39, 41. Housing halves 18 and 20 can be glued, welded, or riveted together. *See id.* ¶ 23.

b. Analysis of Claims 1 and 14

*“A fluid-cooled electromagnetic field-functioning device” (claim 1) /
“A fluid-cooled motor” (claim 14)*

Petitioner asserts that Stephan discloses a “fluid-cooled electromagnetic field functioning device” and a “fluid-cooled motor” based on Stephan’s disclosure that current flows through drive coils 10 to create a magnetic field to cause rotor 8 with permanent magnets 12 to rotate and coolant to flow through the pump. *See Pet.* 23–25 (reproducing Ex. 1102, Fig. 1 with annotations; citing Ex. 1102 ¶¶ 11, 26–28, 41; Ex. 1114 ¶¶ 58–60). Patent Owner does not dispute Petitioner’s contentions addressing the preamble recitation. *See PO Resp.* 21–31.

Based on Petitioner’s cited evidence, we find that Stephan discloses a fluid-cooled electromagnetic field-functioning device and a fluid-cooled motor. *See Ex.* 1102, ¶¶ 11, Fig. 1.

“at least one electrical conductor” (claims 1 and 14)

Petitioner contends that Stephan discloses “at least one electrical conductor” based on Stephan’s description of drive coils 10. *See Pet.* 25 (citing Ex. 1102 ¶¶ 26–28, Ex. 1002 ¶¶ 61–62). Patent Owner does not dispute Petitioner’s contentions addressing the at least one electrical conductor. *See PO Resp.* 21–31. We find that, based on Petitioner’s cited supporting evidence, Stephan’s drive coils 10 teach or suggest at least one electrical conductor. *See Ex.* 1102 ¶¶ 26–28, Fig. 2.

“monolithic body of injection molded thermoplastic material substantially encapsulating at least one conductor” (claims 1 and 14) and “the monolithic body of injection molded thermoplastic material substantially encapsulates a stator”(claim 14)

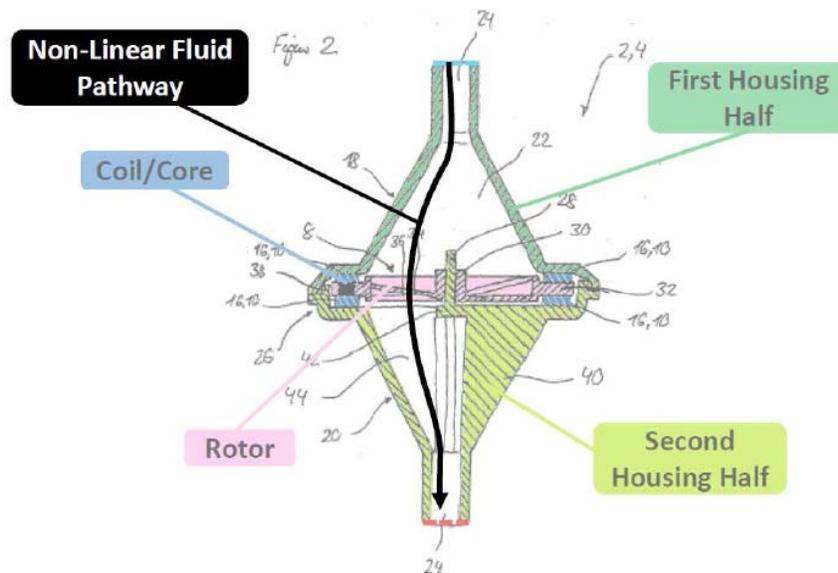
Petitioner asserts that Stephan discloses “a monolithic body of injection molded thermoplastic material substantially encapsulating the at least one conductor,” as recited in claims 1 and 14, and “the monolithic body of injection molded thermoplastic material substantially encapsulates a stator of the motor,” as recited in claim 14, based on Stephan’s disclosure of drive coils 10 and carrier rings 16 encapsulated with thermoplastic material of the welded-together housing halves 18, 20. *See* Pet. 41–43 (citing Ex. 1102 ¶¶ 8, 23, 38, 39, 41; Ex. 1114 ¶¶ 106–108), 48–50 (citing Ex. 1102 ¶¶ 8, 23, 38, 39, 41, Abstract; Ex. 1114 ¶¶ 127–128). Petitioner contends that, under the construction of “monolithic body” adopted and discussed above in Section II.A.2., Stephan’s disclosure of welding two injection molded thermoplastic housing parts to form a single housing discloses a “monolithic body.” *See id.* at 42–43 (citing Ex. 1102 ¶¶ 8, 23, 39, 41; Ex. 1114 ¶ 109). Patent Owner does not dispute Petitioner’s contentions addressing this limitation. *See* PO Resp. 21–31.

Based on Petitioner’s cited supporting evidence, we find Stephan discloses a monolithic body of injection molded thermoplastic material substantially encapsulating the at least one conductor and the monolithic body of injection molded thermoplastic material substantially encapsulates a stator of the motor. *See* Ex. 1102 ¶¶ 23, 38, 39, 41, Fig. 2.

“non-linear heat transfer fluid pathway in the monolithic body, with at least one fluid inlet and at least one fluid outlet to said pathway to allow for passage of heat transfer fluid through the pathway”(claims 1 and 14)

Petitioner contends that Stephan discloses “a non-linear heat transfer fluid pathway in the monolithic body,” as recited in claims 1 and 14, based on Stephan’s disclosure of “a fluid pathway for coolant extending through housing 6 having upper funnel section 22 and a lower section with alternating funnel segments 44, shutoff segments 40 as well as ring section 42 and shaft 28.” Pet. 43 (citing Ex. 1102 ¶¶ 7, 11, 23, 26–29, 31, 32, 35, 41, Figs. 2, 6; Ex. 1114 ¶ 111). In support of its assertions, Petitioner reproduces Figure 2 of Stephan with annotations. *See id.* at 44.

Figure 2 of Stephan with Petitioner’s annotations is reproduced below:



According to Petitioner, “[a]nnotated Figure 2 [] shows an inlet (light blue) and an outlet (red) of a non-linear fluid pathway (black).” *See* Pet. 43 (citing Ex. 1102 ¶ 29). Petitioner asserts “the fluid pathway in *Stephan* is non-linear because, as shown in [] annotated Figure [2] above, fluid cannot pass

directly through *Stephan*'s pump without taking a non-linear path.” *Id.* at 44 (citing Ex. 1114 ¶ 113). Petitioner contends that at least the hub 30, and shaft cause entering or exiting fluid to deviate from a linear path from an inlet to an outlet. *See id.* (citing Ex. 1114 ¶ 113).

Petitioner further asserts that, consistent with the '509 Patent Specification's definition for “non-linear,” discussed above in Section II.A.4, the flow path in *Stephan* cannot be formed with a simple core pin because “the fluid pathway of *Stephan* is created in part by injection molding a lower section with alternative funnel segments 44 and shutoff segments 40, which cannot be accomplished using a simple core pin.” *Id.* at 44–45 (citing Ex. 1001, 18:15–17; Ex. 1110, 1:10–19, 2:59–63; Ex. 1114 ¶ 114). Petitioner also asserts that *Stephan*'s fluid pathway constitutes a “heat transfer fluid pathway.” *See id.* at 45–46 (citing Ex. 1104, 2:28–45, 8:8–12, 10:26–41; Ex. 1114 ¶¶ 115–116; Ex. 1111; Ex. 1001, 1:61–62).

Patent Owner argues that *Stephan* does not disclose a “pathway” because *Stephan*'s fluid flow is not within a structural “channel” in the monolithic body. *See* PO Resp. 21. Patent Owner and its witness, Dr. Beaman, characterize *Stephan*'s first housing half 22 and second housing half 20 as forming a “chamber.” *See id.* at 5, 22–27; Sur-Reply 3, 5; Ex. 2004 ¶¶ 50–51, 53–59. As such, Patent Owner argues that even if the internal motor components (i.e., hub 30 and shaft 28) of *Stephan* prevent the flow of fluid directly from the inlet to the outlet, those components do not form a channel in the monolithic body. *See* PO Resp. 22 (citing Ex. 2004 ¶ 52). Referencing Petitioner's annotated reproduction of *Stephan*'s Figure 2, Patent Owner argues: (1) “the black line drawn by Petitioner[] inaccurately depicts *Stephan*'s fluid flow,” because “once the fluid enter[s]

through the inlet into the larger chamber, the fluid would take many routes to the outlet”; (2) “the actual flow inside Stephan’s chamber would be much more chaotic than the curved route shown on Petitioner’s annotated [F]igure [2]”; and (3) the fluid would “take multiple routes in accordance with the laws of fluid dynamics.” *Id.* at 22–23 (citing Ex. 2004 ¶¶ 53–55; Ex. 2006, 45:5–8). Patent Owner argues Stephan’s “rotating rotor 8 with vane blade sections 34 would not draw fluid through the pump along a consistent route, but would cause turbulent fluid flow, including eddies and corkscrew fluid flow patterns.” *Id.* at 23 (citing Ex. 2004 ¶ 54). Patent Owner asserts “the resulting flow of fluid through Stephan’s chamber is chaotic and unpredictable, not an orderly flow along a single route as depicted in Petitioner’s annotated [F]igure” 2 of Stephan. *Id.* at 24.

We do not agree with Patent Owner’s arguments, because, as discussed above in Section II.A.4., Patent Owner’s arguments are premised on adding limitations not recited in the claims to the construction for “pathway.” As discussed above in Section II.A.4., we do not agree with Patent Owner’s arguments importing additional limitations to the construction of “pathway.” Therefore, we do not agree with Patent Owner’s arguments asserting alleged deficiencies of the fluid flow within Stephan’s pump.

Similar to its previous arguments, Patent Owner argues:

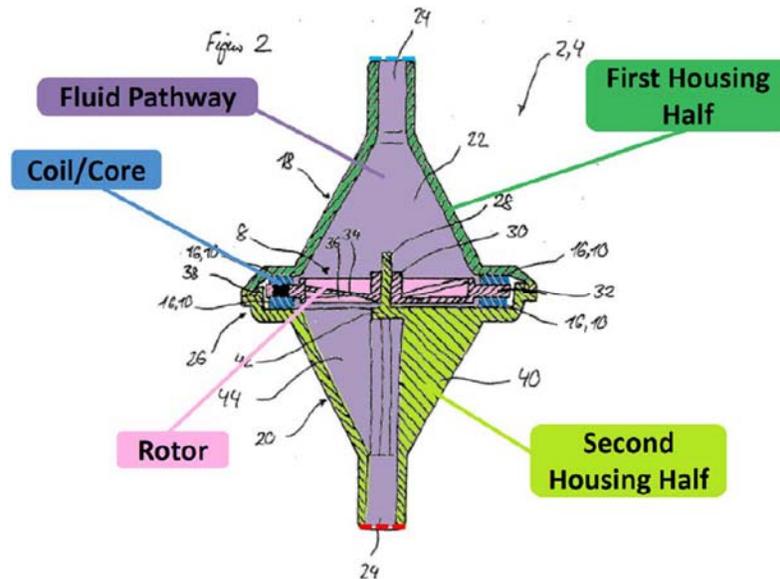
a person of ordinary skill in the art would also understand that the chamber defined by [Stephan’s] first housing half and [] second housing half is not itself a channel in a monolithic body. . . . While there are walls surrounding the entire chamber that contain the fluid between the walls in the most general sense, the chamber does not include a structural channel in the

monolithic body that directs the flow of fluid along a specific route between the inlet and the outlet.

Id. at 24 (citing Ex. 2004 ¶ 56); Sur-Reply 2 (quoting PO Resp. 24 (emphasis omitted)); *see id.* at 24–25 (citing Ex. 2004 ¶ 56; similar arguments regarding the fluid flow in chamber). In support of its arguments, Patent Owner analogizes Stephan’s “chamber” to a lake with both inlets and outlets, and to a cylindrical tank. *See id.* at 25–27 (citing Ex. 2004 ¶¶ 57–59). Patent Owner also argues Stephan’s inlet and outlet do not meet the “non-linear heat transfer fluid pathway” limitation because the limitation requires a complete pathway between the inlet and outlet, and the inlet and outlet together would not be “non-linear.” *See id.* at 30–31.

Petitioner replies that the black arrow of Petitioner’s annotated Figure 2 of Stephan does not disclose the structure of the pathway, but shows the general flow of fluid as the fluid moves from the inlet to the outlet. *See Reply 16.* Petitioner contends that Stephan discloses the claimed “pathway” because the structure of the pathway is formed by the inner surfaces of the upper and lower housings 18, 20. *See id.* (citing Pet. 3, 29–32, 43–46; Ex. 1114 ¶¶ 78–80, 111–116).

Figure 2 of Stephan with Petitioner’s annotations is reproduced below.



Annotated Figure 2 of Stephan shows the first housing half 22 in green, second housing half 20 in yellow, rotor 8 in pink, coil/core 10, 16 in blue, inlet and outlet line connections 24 in blue and red, and fluid pathway in purple. *See* Reply 16. Petitioner contends that annotated Figure 2 “shows how the inner surfaces of first housing half 18 and second housing half 20 form the fluid pathway (purple).” *Id.*

As discussed above in Section II.A.4, we also do not construe “pathway” as requiring additional limitations related to cross-sectional dimensions of a structure. Therefore, we do not agree with Patent Owner’s arguments asserting alleged deficiencies of the structure of Stephan’s pump and the fluid flow therein. Petitioner’s Reply arguments are consistent with the following arguments in its Petition: (1) Stephan “discloses a fluid pathway for a coolant extending through housing 6 having upper funnel section 22 and lower section with alternating funnel segments 44[,] shutoff segments 40 as well as ring section 42[,] and shaft 28” (Pet. 29, 43); and (2) “the fluid pathway of *Stephan* is created in part by injection molding a lower section with alternating funnel segments 44 and shutoff segments 40”

(Pet. 31, 45). Patent Owner also does not meaningfully respond to Petitioner’s arguments directed to Stephan’s disclosure of a “pathway.” Moreover, Dr. Beaman does not provide a sufficient factual basis for characterizing Stephan’s first housing half and second housing half as a “chamber,” at the exclusion of understanding those structures to form a channel. Ex. 2004 ¶ 50. For example, Dr. Beaman’s testimony does not address the geometry of the interior of Stephan’s lower housing half 20, in particular, Stephan’s disclosure that lower housing half 20 includes plural shutoff segments 40 that block fluid flow alternating with funnel segments 44 that permit fluid flow. *See* Ex. 2004 ¶ 50; Ex. 1102, Figs. 2, 3, 6, ¶¶ 31–36. Because Dr. Beaman does not adequately address Stephan’s disclosed housing structure, we give little weight to Dr. Beaman’s opinion characterizing Stephan’s first housing half and second housing half as a “chamber” that cannot also be a channel. *See* 37 C.F.R. § 42.65(a).

Patent Owner also argues that Dr. Trumper undermined the credibility of his testimony “by making it apparent he did not conduct a proper claim construction analysis of the ‘heat transfer fluid pathway’ limitation.” PO Resp. 27. Patent Owner contends, “Dr. Trumper[] attempt[ed] to define ‘heat transfer fluid pathway’ by referring to the *alleged prior art*—rather than the claim language, the specification, and the prosecution history of the ’509 Patent. . . .” *Id.* According to Patent Owner, when asked for his understanding of “heat transfer fluid pathway,” Dr. Trumper recited paragraphs of his declaration asserting that the fluid pathways of Stephan and Umeda constitute a “heat transfer fluid pathway.” *See id.* at 26–27 (quoting Ex. 2006, 22:24–24:16). Patent Owner contends that because it is apparent that Dr. Trumper did not conduct a proper claim construction

analysis focused on the intrinsic record to the '509 Patent, "his conclusory assertions that 'heat transfer fluid pathway' means whatever it needs to mean to ensnare Stephan . . . should be given no weight." *Id.* at 28–29.

We do not agree with Patent Owner.⁷ The Federal Circuit has cautioned that "we must disregard the testimony of an expert that is . . . 'based on an incorrect understanding of the claim[s].'" *Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1378 (Fed. Cir. 2011) (quoting *Cordis Corp. v. Boston Sci. Corp.*, 658 F.3d 1347, 1357 (Fed. Cir. 2011)). Patent Owner, however, does not allege that Dr. Trumper's opinion was based on an incorrect understanding of the claim term "pathway." Dr. Trumper considered the '509 Patent Specification in rendering his opinions. For example, Dr. Trumper addresses the '509 Patent Specification disclosure of a "fluid pathway," testifying that "[t]he fluid path way acts as a conduit for heat transfer fluid, which the '509 patent defines as including 'both liquids and gases, as well as combinations thereof.'" Ex. 1114 ¶ 44. Dr. Trumper also cites the '509 patent's explanation that "[b]y non-linear it is meant that the chamber or flow path cannot be formed by a simple core pin in an injection mold tool." Ex. 1114 ¶ 78 (quoting Ex. 1001, 18:15–17).

⁷ We also do not agree with Patent Owner's suggestion that Dr. Trumper's testimony, in its entirety, should be disregarded based on Patent Owner's allegations that Dr. Trumper's claim construction strategy demonstrates that he has taken on the role of an advocate focused on reaching the conclusion that supports his clients' arguments, without conducting complete and legally proper claim construction and patentability analyses, and, therefore, calls into question the reliability of all of Dr. Trumper's opinions in this IPR. *See* PO Resp. 29. Patent Owner did not file a Motion to Exclude Dr. Trumper's testimony, and does not otherwise articulate a sufficient basis for disregarding the entirety of his testimony.

That Dr. Trumper did not provide an explicit claim construction analysis for “pathway” in his Declaration and upon cross-examination questioning, is insufficient to show that his understanding of the claim limitation was incorrect.

For the foregoing reasons and based on the evidence before us, we find that Stephan discloses a non-linear heat transfer fluid pathway in the monolithic body. *See* Ex. 1102; Figs. 2, 3, 6.

Petitioner also contends that Stephan discloses “at least one fluid inlet and at least one fluid outlet to said pathway to allow for passage of heat transfer fluid through the pathway,” as recited in claims 1 and 14, based on Stephan’s housing including line connections 24. *See* Pet. 32–33 (reproducing Ex. 1102, Fig. 2 with annotations; citing Ex. 1102 ¶¶ 11, 23, 29; Ex. 1114 ¶¶ 81–82), 46. Patent Owner does not dispute Petitioner’s contentions addressing “at least one fluid inlet and at least one fluid outlet to said pathway to allow for passage of heat transfer fluid through the pathway.” *See* PO Resp. 21–31.

We find that, based on Petitioner’s cited supporting evidence, Stephan discloses at least one fluid inlet and at least one fluid outlet to said pathway to allow for passage of heat transfer fluid through the pathway. *See* Ex. 1102, Fig. 2.

“monolithic body completely covers the exterior of the device except for the at least one fluid inlet and the at least one fluid outlet” (claim 1)

Petitioner asserts that Stephan discloses “the monolithic body completely covers the exterior of the device except for the at least one fluid inlet and the at least one fluid outlet,” as recited in claim 1, based on Stephan’s housing surrounding the entire circumference of the pump, with

the only openings being connections 24 that form the inlet and outlet. *See id.* at 46–47 (reproducing Ex. 1102, Figs. 1–2 with annotations; citing Ex. 1102 ¶¶ 22, 23, 35, 36, Figs. 3, 6, 7; Ex. 1114 ¶¶ 118–119). Patent Owner does not dispute Petitioner’s contentions addressing this limitation. *See* PO Resp. 21–31.

Based on Petitioner’s cited supporting evidence, we find that Stephan discloses the monolithic body completely covers the exterior of the device except for the at least one fluid inlet and the at least one fluid outlet. *See* Ex. 1102; Figs. 1–2.

Summary

For all of the foregoing reasons, and after having analyzed the entirety of the record and assigning appropriate weight to the cited supporting evidence, we determine Petitioner has established by a preponderance of the evidence that Stephan discloses each and every limitation of claim 1 and claim 14, and, therefore, are unpatentable under 35 U.S.C. § 102(b) as anticipated by Stephan .

c. Analysis of Claims 2 and 15

Petitioner contends that Stephan discloses a “pump” as recited in dependent claims 2 and 15. *See* Pet. 34–35 (citing Ex. 1102 ¶¶ 11, 22, 26–28, 39, 41, Abstract; Ex. 1114 ¶ 86); *id.* at 39–40 (reproducing Ex. 1102, Fig. 2 with annotations; citing Ex. 1102 ¶¶ 11, 22, 26–28, 39, 41, Abstract; Ex. 1114 ¶¶ 100–102); *id.* at 47–48, 50. Patent Owner does not dispute Petitioner’s assertions addressing this limitation. *See* PO Resp. 21–31.

We find that, based on Petitioner’s cited supporting evidence, Stephan discloses a pump. *See* Ex. 1102 ¶ 11, Fig. 2. For these reasons in addition to the reasons discussed above addressing claims 1 and 14, and after having

analyzed the entirety of the record, we determine Petitioner has established by a preponderance of the evidence that Stephan discloses each and every limitation of dependent claim 2 and dependent claim 15, and, therefore, are unpatentable under 35 U.S.C. § 102(b) as anticipated by Stephan.

2. Unpatentability under 35 U.S.C. § 103(a) of Claims 1, 2, 14, and 15 over Stephan, Raible, and Neal

a. Overview of Raible (Ex. 1103)

Raible discloses a blood pump including a housing that journals a rotor. *See* Ex. 1103, Abstract, 9:17–26. The housing is made of a sterilizable injection molded polymer material, such as polycarbonate. *Id.* at 9:26–38.

b. Overview of Neal (Ex. 1105)

Neal discloses a high-speed spindle motor constructed from a stator assembly and a monolithic body of injection-molded thermoplastic substantially encapsulating the stator. *See* Ex. 1105, Abstract, 5:17–49. The stator includes a magnetically inducible core with wire windings on poles, which serve as conductors. *See id.* at 4:3–10, 5:5–8. The benefits of a thermoplastic encapsulated stator include fewer parts, easier assembly, reduced manufacturing cost, reduced stack-up tolerances, and greater efficiency and performance. *See id.* at 4:66–5:4, 8:8–24, 9:37–39, 21:14–35; *see also id.* at 1:62–2:2 (discussing drawbacks of conventional motors).

c. Analysis of Claims 1 and 14

Petitioner’s assertions addressing the teachings of Stephan are substantially similar to Petitioner’s assertions discussed in the previous section in regard to anticipation. *Compare* Pet. 23–40, *with id.* at 40–50. Petitioner’s arguments addressing anticipation by Stephan apply equally to

unpatentability over the combined teachings of Stephan, Raible, and Neal. *See* PO Resp. 21–29. For the same reasons as those discussed above in Section II.A.4., and II.D.1.b, we do not agree with Patent Owner’s arguments. Based on the evidence before us, and for the same reasons as those explained above in Section II.D.1.b., we find that Stephan teaches or suggests all of the limitations of claims 1 and 14.

In contrast to Petitioner’s assertions addressing anticipation by Stephan, Petitioner asserts that under Petitioner’s initial proposed construction that a monolithic body excludes multiple pieces joined together, Stephan does not specifically teach such a monolithic body. *See* Pet. 27. As explained above in Section II.A.2., we determined that the broadest reasonable interpretation of “monolithic body” is “a body formed as a single piece.” As explained above in Section II.D.1.b., Stephan’s disclosure of welding two injection molded thermoplastic housing parts to form a single housing teaches a “monolithic body” under that construction. *See id.* at 42–43 (citing Ex. 1102 ¶¶ 8, 23, 39, 41; Ex. 1114 ¶ 109).

Notwithstanding our finding that Stephan alone teaches or suggests a monolithic body, Petitioner contends that Raible teaches a pump with a housing injection molded as a polycarbonate thermoplastic single piece over a rotor member. *See* Pet. 27 (citing Ex. 1103, 9:17–38; Ex. 1113, 609–640; Ex. 1001, 7:25–44; Ex. 1114 ¶ 69). Petitioner asserts that Neal teaches the benefits of using a monolithic body in contrast to a multiple-part body. *See id.* at 28 (citing Ex. 1105, 1:62–2:2, 4:67–5:4, 8:8–24). Specifically, Petitioner cites Neal’s teaching that using multiple parts results in stack-up tolerances and increased manufacturing costs, but a single unitized body provides alignment of the spindle motor components and couples the

components to one another, and reduces stack-up tolerances and manufacturing. *See id.* at 28–29 (citing Ex. 1105, 8:15–23; Ex. 1114 ¶¶ 68; Ex. 1108; Ex. 1112).

Petitioner contends that it would have been obvious to one with ordinary skill in the art to modify Stephan’s two-piece housing in view of Raible’s and Neal’s teachings by injection molding Stephan’s housing as a single part to form a monolithic body. Pet. 29. More specifically, Petitioner asserts that a person of ordinary skill in the art would have modified Stephan in view of Raible and Neal because Neal provides a specific motivation for injection molding Stephan’s housing 6 over rotor 8 as a single part to form a monolithic body—to reduce the number of parts in the motor housing, avoid stack-up tolerances, better align components, and reduce manufacturing costs. *See id.* at 29 (citing Ex. 1114 ¶¶ 71–76). Patent Owner does not dispute the combined teachings of Stephan, Raible, and Neal, and Petitioner’s obviousness assertions. *See* PO Resp. 15–29.

We agree with Petitioner, and find that the combination Stephan, Raible, and Neal teaches or suggests a monolithic body. *See* Ex. 1102 ¶¶ 23, 38, 39, 41, Fig. 2; Ex. 1103, 9:17–35; Ex. 1105, 8:15–23. We also determine that Petitioner has provided sufficient articulated reasoning with rational underpinning to establish that a person of ordinary skill in the art would have modified the teachings of Stephan in view of Raible and Neal to form Stephan’s two-piece housing as a single part to form a monolithic body, to achieve the benefits taught by Neal, e.g., to reduce the number of part and avoid stack-up tolerances. *See KSR*, 550 U.S. at 418 (quoting *Kahn*, 441 F.3d at 988). Based on the evidence before us, we determine that

the combined teachings of Stephan, Raible, and Neal would have rendered obvious a monolithic body.

For all of the foregoing reasons, and after having analyzed the entirety of the record, we determine Petitioner has established by a preponderance of the evidence that claim 1 and claim 14 are unpatentable under 35 U.S.C. § 103(a) over Stephan, Raible, and Neal.

d. Analysis of Claims 2 and 15

Petitioner contends that Stephan discloses a “pump” as recited in dependent claims 2 and 15. *See* Pet. 34–35 (citing Ex. 1102 ¶¶ 11, 22, 26–28, 39, 41, Abstract; Ex. 1114 ¶ 86); *id.* at 39–40 (reproducing Ex. 1102, Fig. 2 with annotations; citing Ex. 1102 ¶¶ 11, 22, 26–28, 39, 41, Abstract; Ex. 1114 ¶¶ 100–102). Patent Owner does not dispute Petitioner’s assertions addressing this limitation. *See* PO Resp. 21–31.

We find that, based on Petitioner’s cited supporting evidence, Stephan discloses a pump. *See* Ex. 1102 ¶ 11, Fig. 2. For these reasons in addition to the reasons discussed above addressing claims 1 and 14, and after having analyzed the entirety of the record, we determine Petitioner has established by a preponderance of the evidence that dependent claim 2 and dependent claim 15 are unpatentable under 35 U.S.C. § 103(a) over Stephan, Raible, and Neal.

E. Patent Owner’s Motion to Strike Petitioner’s Reply

Patent Owner filed a Motion to Strike Petitioner’s Reply for allegedly presenting new arguments and evidence that Petitioner could have presented earlier. *See* Mot. Str. Petitioner filed an Opposition. *See* Opp. Mot. Str. Patent Owner argues the Trial Practice Guide Update (August 2018) sets forth “a workable and clear-cut legal standard: Petitioner may not submit

new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability.” Mot. Str. 2 (citing Office Trial Practice Guide Update (August 2018) (“TPG Update”) 14). Patent Owner elaborates, arguing “[t]his standard may allow new reply evidence or argument when the [Response] first raises issues for which Patent Owner bears the burden of proof or that are otherwise unforeseeable, such as swear-behind, secondary consideration[s], teaching away, or unexpected claim construction arguments.” *Id.* at 2–3. According to Patent Owner, “foreseeable patentability arguments should not open the door for Petitioner[] to submit new evidence or arguments that Petitioner[] easily could have included in the Petition.” *Id.* at 3 (citing 35 U.S.C. §§ 312(a)(3), 316(e)).

Patent Owner argues the Petition does not include any claim construction arguments for “pathway.” *See* Mot. Str. 4. Patent Owner asserts the Reply includes eight pages of new evidence and argument to address the meaning of “pathway,” including a new argument that the claims must be construed to cover a “pump embodiment” disclosed in the ’509 Patent. *See id.* (citing Reply 7–14). According to Patent Owner, this argument and evidence is impermissible because the Petition could have proposed a construction for “pathway” and cited all relevant portions of the ’509 Patent. *See id.* (citing TPG Update 14). Patent Owner contends the Petition is statutorily required to include any claim construction proposal and the evidence upon which it relies. *See id.* at 5 (quoting 35 U.S.C. § 312(a)(4), 37 C.F.R. § 42.104(b)(3)). According to Patent Owner, “Petitioner’s arguments are not responsive to a new issue first raised in the [Response]. . . . Neither the Board’s construction of ‘pathway’ as a structural

‘channel,’ nor [Patent Owner’s] observation that a channel constrains fluid flow to a specific route, are unusual or unforeseeable.” *Id.*

Patent Owner also argues, “the Petition does *not* argue that the structural elements 6, 22, 44, 40, 42, and 28 *are* the fluid pathway; it instead argues that the fluid pathway *extends through* those elements, as the annotated black line [of Petitioner’s annotated Figure 2 of Stephan] does.” Mot. Str. 3–4 (reproducing Petitioner’s annotated Figure 2 of Stephan from Pet. 30, 44; citing Pet. 29–30, 43). According to Patent Owner, the Reply shifts to a different unpatentability theory based on the inner surfaces of first housing half 18 and second housing half 20 forming the fluid pathway. *See id.* at 4 (reproducing Petitioner’s annotated Figure 2 of Stephan from Reply 16; citing Reply 16).

Petitioner opposes Patent Owner’s Motion, arguing that Patent Owner “appears to advance a literal reading of the ‘could have presented earlier’ language in the [TPG Update].” Opp. Mot. Str. 1 (citing TPG Update 14). Patent Owner argues that Patent Owner’s arguments misconstrue the applicable Federal Circuit case law, and cannot be the correct standard because it would cover all responsive arguments. *See id.* (citing *Idemitsu Kosan Co. v. SFC Co.*, 870 F.3d 1376, 1381 (Fed. Cir. 2017); *Genzyme Therapeutic Prod. Ltd. P’ship v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1366 (Fed. Cir. 2016); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1078 n.4, 1080 (Fed. Cir. 2015)); *see also id.* at 1–2 (quoting *Belden v. Berk-Tek*, 805 F.3d at 1079). Petitioner emphasizes that the TPG Update states that striking the entirety or a portion of a party’s brief is an exceptional remedy that the Board expects will be granted rarely. *See id.* at 2 (quoting TPG Update 18). Petitioner further argues the Federal Circuit recently noted that

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the petitioner should have an opportunity to respond to issues raised after the petition was filed. *See id.* (citing *Ericsson Inc. v. Intellectual Ventures I LLC*, 901 F.3d 1374, 1380 (Fed. Cir. Aug. 27, 2018)).

As to Patent Owner's specific allegations of impermissible new arguments and evidence, Petitioner asserts that it is sufficient that its Petition states that the broadest reasonable interpretation should be applied without proposing a construction for "pathway." *See* Opp. Mot. Str. 4 (quoting Pet. 14; citing 77 Fed. Reg. at 48764; *Silicon Lab., Inc. v. Cresta Tech. Corp.*, IPR2015-00615, slip op. at 16 (PTAB Aug. 11, 2016) (Paper 64)). Petitioner clarifies that it does not dispute the Board's construction, but rather disputes Patent Owner's new interpretation of the Board's construction for pathway, raised for the first time in the Patent Owner Response because, among other reasons, it is inconsistent with the "pump embodiment" disclosed in the '509 Patent, and, therefore, inconsistent with the broadest reasonable interpretation. *See id.* at 5 (quoting PO Resp. 22–24; citing Reply 12).

Petitioner further contends that Petitioner's argument in the Reply addressing Stephan is supported directly by the Petition and rebuts Patent Owner's mischaracterizations in its Patent Owner Response that the non-linear fluid pathway is limited to a black line shown in annotated Figure 2 of Stephan on page 30 of the Petition. *See* Opp. Mot. Str. 2 (citing Pet. 16, 19, 29–33, 43–45; PO Resp. 4, 17). According to Petitioner, the Petition describes the internal structure of the housing and describes the pathway as being formed by the structure of the housing 6. *See id.* at 3 (quoting Pet. 19, 29, 43; Mot. Str. 4). Petitioner also points out that annotated Figure 2 of Stephan from the Petition includes annotations of the inlet and outlet, in light

blue and red respectively, spanning the width of the openings of Stephan's housing 6. *See id.* (citing Pet. 20, 25, 30, 33, 34, 36, 40, 44, 47). According to Petitioner, the Petition explains the fluid pathway in Stephan is "non-linear" by describing that the fluid pathway of Stephan is created in part by injection molding a lower section with alternating funnel segments 44 and shutoff segments 40, which cannot be accomplished using a simple core pin. *See id.* at 4 (citing Pet. 31, 45). Petitioner contends that Patent Owner understood and had notice that Petitioner asserted the structure of housing 6 formed the fluid pathway because Patent Owner uses six pages of its Response to argue the "chamber" of Stephan is allegedly not a fluid pathway. *See id.* (citing PO Resp. 22–27).

"[T]he Board is capable of identifying new issues or belatedly presented evidence when weighing the evidence at the close of trial, and disregarding any new issues or belatedly presented evidence that exceeds the proper scope of reply." TPG Update 17. We have reviewed Petitioner's Reply and determine that Petitioner's Reply is directly responsive to Patent Owner's arguments raised in its Response. Patent Owner proposed additional limitations for the construction of "pathway," and argued that Stephan did not disclose or teach the additional proposed limitations. *See* PO Resp. 12–14, 21–29. Petitioner merely responded to Patent Owner's arguments, as it was entitled to do. *See Idemitsu*, 870 F.3d at 1381. Patent Owner also was afforded the opportunity to address Petitioner's Reply arguments in its Sur-Reply. Moreover, "striking the entirety or a portion of a party's brief is an exceptional remedy that the Board expects will be granted rarely." TPG Update 18. In view of the foregoing, Patent Owner's Motion to Strike Petitioner's Reply is *denied*.

III. CONCLUSION

For the foregoing reasons, we determine Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, 14, and 15 of the '509 Patent are unpatentable.

IV. ORDER

Accordingly, it is

ORDERED that claims 1, 2, 14, and 15 are unpatentable under 35 U.S.C. § 102(b) as anticipated by Stephan;

ORDERED that claims 1, 2, 14, and 15 are unpatentable under 35 U.S.C. § 103(a) over Stephan, Raible, and Neal;

FURTHER ORDERED that Patent Owner's Motion to Strike Petitioner's Reply is *denied*; and

FURTHER ORDERED that, because this is a Final Written 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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CERTIFICATE OF SERVICE

I hereby certify that the original of this **PATENT OWNER'S NOTICE OF APPEAL TO THE U.S. COURT OF APPEALS FOR THE FEDERAL CIRCUIT** was filed via U.S.P.S. Priority Mail Express on April 24, 2019 with the Director of the United States Patent and Trademark Office at the address below:

Office of the General Counsel
Director of the U.S. Patent & Trademark Office
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A copy of this Notice of Cross Appeal is being filed and served on April 24, 2019 as follows:

To the USPTO Patent Trial and Appeal Board:

Patent Trial and Appeal Board
Madison Building East
600 Dulany Street
Alexandria, VA 22313

(via PTAB E2E, as authorized by the Board)

To the U.S. Court of Appeals for the Federal Circuit:

Clerk of Court
U.S. Court of Appeals for the Federal Circuit
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(via CM/ECF – with filing fee)

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Toyota Motor v. Intellectual Ventures II

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