

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GREEN REVOLUTION COOLING, INC.
Petitioner,

v.

MIDAS GREEN TECHNOLOGIES, LLC,
Patent Owner.

CASE: IPR2025-00196
U.S. PATENT NO. 10,405,457

PATENT OWNER PRELIMINARY RESPONSE

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	STATEMENT OF THE PRECISE RELIEF REQUESTED.....	2
III.	BACKGROUND	2
	A. Summary of the '457 Patent.....	2
	B. Level of Ordinary Skill	6
	C. Claim Construction	7
	D. Summary of the Prior Art.....	8
	1. Best-2008	8
	2. Osada.....	11
	3. Best-2012	15
IV.	THE PETITION FAILS TO ESTABLISH A REASONABLE LIKELIHOOD OF SUCCESS ON A SINGLE CLAIM.....	16
	A. Legal Standard	18
	B. The Petition Fails to Establish that the Asserted Combination of Best- 2008 and Osada Teaches the Claimed Plenum	20
	1. The Petition Fails to Establish that Best-2008 Teaches a Plenum or “a Structure for Dispensing Liquid”	20
	2. The Petition Fails to Establish that Best-2008 Teaches a Plenum Adapted to Dispense Dielectric Fluid Substantially Uniformly Upwardly Through Each Appliance Slot.....	27
	C. The Petition Fails to Establish that Best-2008 and Osada Teach a Weir “Adjacent All Appliance Slots” and “Adapted to Facilitate Substantially Uniform Recovery of Dielectric Fluid Flowing Through Each Appliance Slot”.....	30

1. The Petition Fails to Establish that Best-2008 Teaches a Weir.....	31
2. The Petition Relies on Conclusory Statements to Assert that Osada Teaches a Weir “Adjacent All Appliance Slots”	34
3. The Petition Fails to Explain how the Asserted Combination of Best- 2008 and Osada Teaches a Weir “Adapted to Facilitate Substantially Uniform Recovery of Dielectric Fluid Flowing Through Each Appliance Slot”	36
D. The Petition Fails to Establish that Best-2012 Remedies the Deficiencies of Best-2008 and Osada	40
E. The Petition’s Alleged Motivations to Combine the Asserted References Are Unsupported by the Evidentiary Record.....	44
1. The Petition Baselessly Asserts that Best-2008 “Desires” Enhanced Filtration.....	46
2. The Petition Baselessly Asserts that Osada Teaches a Weir that Enhances the Flow of Dielectric Fluid.....	48
F. The Petition Fails to Satisfy Its Burden Under 35 U.S.C. § 314(a)(3).....	51
1. Summary of Best-2008’s and Osada’s Various Embodiments.....	52
2. The Petition Relies On at Least Three Different Embodiments of Best- 2008 for Element [1.1]	53
3. The Petition Relies On at Least Four Different Embodiments of Osada for Element [1.2]	55
4. The Petition Relies On at Least Two Different Embodiments of Best- 2008 for Element [1.4]	56
V. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION UNDER 35 U.S.C. § 314(a)	57
A. <i>Fintiv</i> Factor One	58
B. <i>Fintiv</i> Factor Two.....	59
C. <i>Fintiv</i> Factor Three.....	61

D. <i>Fintiv</i> Factor Four	63
E. <i>Fintiv</i> Factor Five	65
F. <i>Fintiv</i> Factor Six	65
VI. CONCLUSION	65

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.</i> , 694 F.3d 1312 (Fed. Cir. 2012)	45
<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020)	<i>passim</i>
<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper 15 (PTAB May 13, 2020)	60
<i>Auto Telematics Ltd. v. United States Auto. Ass'n</i> , No. 22-cv-474, ECF 138 (W.D. Tex. Nov. 7, 2024)	58
<i>Belden Inc. v. Berk-Tek LLC</i> , 805 F.3d 1064 (Fed. Cir. 2015)	53, 55
<i>Corephotonics, Ltd. v. Apple Inc.</i> , 84 F.4th 990 (Fed. Cir. 2023)	52
<i>In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Pat. Litig.</i> , 676 F.3d 1063 (Fed. Cir. 2012)	45
<i>Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.</i> , 800 F.3d 1375 (Fed. Cir. 2015)	18
<i>Fanduel, Inc. v. Interactive Games LLC</i> , 966 F.3d 1334 (Fed. Cir. 2020)	35
<i>Google Inc. v. EveryMD.com LLC</i> , IPR2014-00347, Paper 9 (PTAB May 22, 2014)	19
<i>In re Gorman</i> , 933 F.2d 982 (Fed. Cir. 1991)	50
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1966)	19

<i>Harmonic Inc. v. Avid Tech., Inc.</i> , 815 F.3d 1356 (Fed. Cir. 2016)	18
<i>InTouch Techs., Inc. v. VGO Commun., Inc.</i> , 751 F.3d 1327 (Fed. Cir. 2014)	45
<i>Kirsch Research and Development, LLC v. IKO Indus. Ltd.</i> , No. 20-cv-317, 2021 WL 4555608, ECF 81 (W.D. Tex. Oct. 5, 2021)	59
<i>Kirsch Research And Development, LLC v. Tarco Specialty Products, Inc.</i> , No. 20-cv-318, 2021 WL 4555802, ECF 62 (W.D. Tex. Oct. 4, 2021)	59
<i>KSR Int’l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007).....	19
<i>Lone Star SCM Systems Ltd. v. Zebra Techs. Corp.</i> , No. 6:21-cv-842, 2023 WL 4923962 (W.D. Tex. July 31, 2023)	59
<i>In re Magnum Oil Tools Int’l, Ltd.</i> , 829 F.3d 1364 (Fed. Cir. 2016)	19
<i>NOF Corp. v. Nektar Therapeutics</i> , IPR2019-01395, Paper 27 (PTAB Apr. 21, 2020)	50
<i>In re Nuvasive, Inc.</i> , 842 F.3d 1376 (Fed. Cir. 2016)	29, 35, 56
<i>Peter Pedersen v. Oracle Corp.</i> , No. 22-cv-410, ECF 42 (W.D. Tex. Aug. 24, 2023)	58
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005) (<i>en banc</i>)	23
<i>Sonrai Memory Ltd. v. Western Digital Techs., Inc.</i> , No. 21-cv-1168, ECF 104 (W.D. Tex. Aug. 4, 2022)	59
<i>Sotera Wireless, Inc. v. Masimo Corp.</i> , IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020)	57

<i>Tianma Micro-electronics Co., Ltd. v. Japan Display Inc.</i> , IPR2021-01057, Paper 15 (PTAB Jan. 6, 2022)	63
<i>Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.</i> , 97 F.4th 882 (Fed. Cir. 2024)	26, 52
<i>Wilson Elec., LLC. v. Cellphone-Mate, Inc.</i> , IPR2018-01778, Paper 10 (PTAB Apr. 23, 2019)	20
<i>Xerox Corp. v. Bytemark, Inc.</i> , IPR2022-00624, Paper 9 (PTAB Aug. 24, 2022).....	29, 35, 56
<i>Xylon Licensing LLC v. Lone Star National Bancshares-Texas, Inc.</i> , No. 21-cv-0302, ECF 28 (W.D. Tex. June 8, 2022).....	59

Statutes

35 U.S.C. § 312(a)(3).....	<i>passim</i>
35 U.S.C. § 314(a)	2, 51, 57, 65
35 U.S.C. § 314(b)	60
35 U.S.C. § 316(a)(11).....	60

LIST OF EXHIBITS

Exhibit No.	Description
Ex-2001	Docket Navigator research showing time to trial statistics for Judge Alan D. Albright from Jan. 1, 2021 to March 15, 2025
Ex-2002	Lex Machina research showing time to trial statistics for Judge Alan D. Albright for patent cases from Jan. 1, 2020 to March 17, 2025
Ex-2003	Court's Preliminary Constructions, <i>Midas Green Techs., LLC v. Green Revolution Cooling, Inc.</i> , No. 6:24-cv-00166 (W.D. Tex. Feb. 20, 2025)
Ex-2004	Claim Construction Hearing Transcript, <i>Midas Green Techs., LLC v. Green Revolution Cooling, Inc.</i> , No. 6:24-cv-00166 (W.D. Tex. Feb. 21, 2025)
Ex-2005	Docket Report for <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (W.D. Tex.), as of March 10, 2025.
Ex-2006	Green Revolution Cooling, Inc.'s Disclosure of Prior Art and Preliminary Invalidity Contentions, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (W.D. Tex. Oct. 7, 2024)
Ex-2007	Plaintiff Midas Green Technologies, LLC's First Set of Request for Production, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (Feb. 4, 2025)
Ex-2008	Plaintiff Midas Green Technologies, LLC's First Set of Interrogatories, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (Feb. 4, 2025)
Ex-2009	Plaintiff Midas Green Technologies, LLC's Second Set of Interrogatories, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (Feb. 18, 2025)

Exhibit No.	Description
Ex-2010	Plaintiff Midas Green Technologies, LLC's Third Set of Interrogatories, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (Feb. 24, 2025)
Ex-2011	Plaintiff Midas Green Technologies, LLC's Fourth Set of Interrogatories, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (Feb. 27, 2025)
Ex-2012	Defendant Green Revolution Cooling, Inc.'s First Set of Requests for Production of Documents, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (March 10, 2025)
Ex-2013	Defendant Green Revolution Cooling, Inc.'s First Set of Interrogatories, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (March 12, 2025)
Ex-2014	Plaintiff Midas Green Technologies, LLC's Notice of Deposition for Jason Mayo, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (March 11, 2025)
Ex-2015	Plaintiff Midas Green Technologies, LLC's Notice of Deposition for Paul Dierkes, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (March 11, 2025)
Ex-2016	Plaintiff Midas Green Technologies, LLC's Notice of Third-Party Subpoena – Mark Tlapak, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (March 11, 2025)
Ex-2017	Subpoena to Testify at a Deposition to Alex McManis, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (March 14, 2025)

Exhibit No.	Description
Ex-2018	Subpoena to Testify at a Deposition to Luis Fautsch, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (March 14, 2025)
Ex-2019	Plaintiff Midas Green Technologies, LLC's Notice of Third-Party Subpoena – Mark Garnett, <i>Midas Green Techs. LLC v. Green Revolution Cooling, Inc.</i> , Case No. 6:24cv166 (March 11, 2025)
Ex-2020	Docket Navigator research showing dispositions of Motions to Stay Pending IPR before Judge Alan D. Albright from 2019 to 2025
Ex-2021	Joint Claim Construction Statement, <i>Midas Green Techs., LLC v. Green Revolution Cooling, Inc.</i> , No. 6:24-cv-00166 (W.D. Tex. Feb. 20, 2025)

Patent Owner, Midas Green Technologies, LLC (“Patent Owner”) submits this Patent Owner Preliminary Response pursuant to 37 C.F.R. § 42.107(a) to the *Inter Partes* Review petition (“Petition” or “Pet.”) filed by Green Revolution Cooling, Inc. (“Petitioner”) for claims 1-16 (the “Challenged Claims”) of U.S. Patent 10,405,457 (the “’457 Patent”).

I. INTRODUCTION

The Board should exercise its discretionary power to deny institution because the Petition fails to demonstrate a reasonable likelihood that any of the challenged claims are unpatentable. Rather than reasoned analysis supported by evidence, the Petition’s arguments rely on erroneous interpretations of the prior art, fail to establish that the cited references teach or suggest the claimed inventions, and present conclusory statements to support an alleged motivation to combine the relied upon references. Indeed, the Petition’s proposed combinations are based on hindsight reconstruction rather than a proper motivation to combine.

Additionally, the Petition fails to meet the statutory requirements of 35 U.S.C. § 312(a)(3), which mandates that a petition must identify “with particularity ... the evidence that supports the grounds for the challenge to each claim.” Instead of articulating a single, coherent invalidity theory, the Petition improperly relies on multiple, discrete embodiments from different references without any explanation as to why an ordinarily skilled artisan would have

substituted one embodiment for another. The Petition indiscriminately cherry-picks features from at least five different embodiments of the primary reference, Best-2008, failing to provide any justification for how or why a person of ordinary skill in the art would have made these substitutions. The Federal Circuit has made clear that such a piecemeal approach does not satisfy the particularity requirement under § 312(a)(3).

Furthermore, the Board should exercise its discretion under 35 U.S.C. § 314(a) to deny institution in light of the advanced stage of the parallel district court litigation involving the same patent and invalidity challenges. The balancing of factors set forth in *Apple Inc. v. Fintiv, Inc.* strongly favors discretionary denial of the Petition.

II. STATEMENT OF THE PRECISE RELIEF REQUESTED

Patent Owner requests that the Board deny institution of the Petition with respect to all of the Challenged Claims and all asserted grounds. A full statement of the reasons for the relief requested is set forth in Sections IV and V of this Preliminary Response.

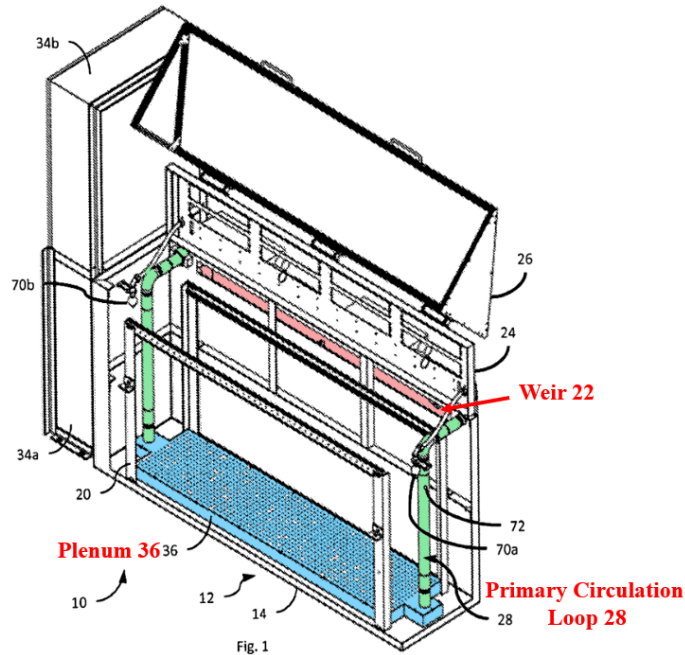
III. BACKGROUND

A. Summary of the '457 Patent

The '457 Patent discloses an appliance immersion cooling system designed to enhance the cooling of electrical appliances through immersion in a dielectric fluid.

Ex-1001, 3:36-3:4. The system is particularly notable for its use of a plenum structure 36 (positioned adjacent the bottom of the tank) to dispense the cooled dielectric fluid substantially uniformly upwardly through each appliance slot, and a weir 22 to recover the heated dielectric fluid into the dielectric fluid recovery reservoir 42. Ex-1001, 3:36-3:4. In an example embodiment, the immersion cooling system may be used for rack mounted servers to extract heat from heat producing components. Ex-1001, 3:43-46.

Figure 1 of the '457 Patent, reproduced below, shows a front view of the cooling system and has been annotated to better highlight the plenum 36 (blue), which is a structural assembly positioned at the bottom of the tank and specifically configured to dispense fluid substantially uniformly upward throughout appliance slots.

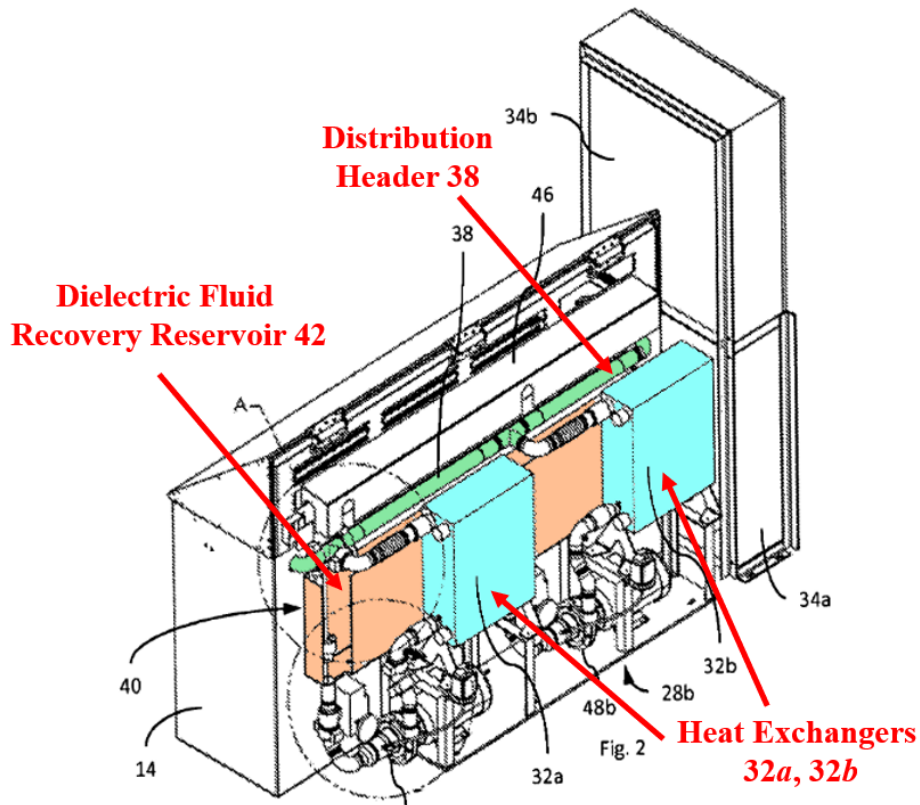


Ex-1001, Figure 1 (Annotated)

According to the '457 Patent, cooled dielectric fluid is pumped into both ends of the plenum 36 via a shared distribution header 38. Ex-1001, col. 4:15-17. The dielectric fluid proceeds (via green pipes) to fill a plenum chamber 36b of the plenum 36 and ultimately flows through an orifice plate 36a that includes orifices “with the dimensions and flow rates of each set being adapted to provide substantially equal flow of the dielectric fluid upwardly into each appliance slot 18a.” Ex-1001, col. 4:13-14.

Annotated Figure 1 of the '457 Patent above also highlights the weir 22 (pink), which is integrated into the long wall of the tank 10 and adapted for substantially uniform recovery of fluid from each appliance slot. Figure 2 of the '457 Patent, reproduced below, shows the rear view of the cooling system and has been annotated

to illustrate a dielectric fluid recovery reservoir 42 that receives the heated dielectric fluid from the weir 22, the heat exchangers 32a and 32b that extract the heat from the dielectric fluid, and the supply pipe 28 and distribution header 38 that route the cooled fluid back to the plenum 36.



Ex-1001, Figure 2 (Annotated)

In other systems, the dielectric fluid is constricted to entering and exiting the cooling tank at single entry and exit points (*i.e.*, essentially two small holes in the tank to which coolant pipes are connected). Ex-1001, col. 2:23-37. Such systems can result in stagnant, heated dielectric fluid becoming trapped between electrical appliances and within certain areas of a tank. The '457 Patent eliminates these

restriction points because they contributed to “unnecessarily high fluid flow velocities at the respective points of connection to the tank; poor scalability; and inadequate attention to fail-soft operation.” Ex-1001, col. 2:23-37. The ’457 Patent utilizes the combination of the lower plenum 36 and the top weir 22 which allows the dielectric fluid to be dispensed uniformly across the appliances and recovered uniformly. Specifically, the plenum and the weir ensure that dielectric fluid is distributed more evenly upwardly through the appliances, which reduces or eliminates areas within the tank that harbor stagnant hot fluid. The plenum and the weir accomplish this by providing multiple entry points, and an elongated exit region for the dielectric fluid. The fluid enters the plenum chamber 36*b* of the plenum 36 from two sides, and then is evenly dispensed upwardly across each appliance slot via a specifically configured orifice plate 36*a*. Ex-1001, col. 4:11-26. Moreover, because the weir traverses a length of the tank, the heated liquid can exit the tank after making only a single pass across an appliance slot. Ex-1001, col. 4:27-39. Thus, the system design improves fluid circulation and heat removal efficiency, and alleviates fluid constriction points.

The cooling system of the ’457 Patent, therefore, provides even cooling across all appliance slots and scales with various appliance configurations.

B. Level of Ordinary Skill

Exclusively for purposes of this preliminary response, Patent Owner applies

the Petition’s proposed skill level for a person of ordinary skill in the art (“POSITA”), which is a person having a “Bachelor of Science degree in mechanical or chemical engineering and at least two years of experience relating to the design and/or implementation of fluid circulation systems involving application of fluid dynamics and heat transfer principles,” where “[a]dditional education may serve as a substitute for a lack of experience and vice versa.” Pet. at 18-19.

C. Claim Construction

The Petition notes that in a prior IPR involving the ’457 Patent, Patent Owner and a different petitioner (Immersion Systems) agreed to a construction of “weir” that included “an overflow structure or barrier that determines the level of a liquid” and a construction of “plenum” that included “a structure for dispensing liquid.” Pet. at 19 (citing Ex-1010, 26). The Petition ultimately “takes no position on these constructions” because, according to the Petition, “the prior art cited herein teaches a weir and a plenum under any reasonable construction.” *Id.*

In the current parallel litigation, the district court recently construed these two terms. The district court construed “plenum” identically, i.e., “a structure for dispensing liquid,” but construed “weir” to be “an overflow structure or barrier that a liquid flows over.” Ex-2003 at 1 (emphasis added); *see also* Ex-2004, 3-4, 23. Notably, in the parallel litigation, Petitioner did not dispute the construction of “plenum” that was adopted by the district court. *See* Ex-2021, 1.

Under any of these constructions, the Petition fails to show that the combinations under Grounds 1 or 2 disclose or teach either the plenum or weir as claimed.

D. Summary of the Prior Art

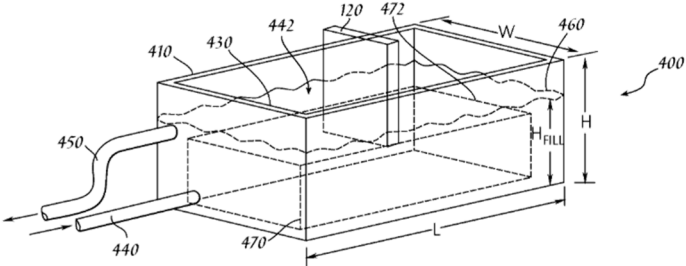
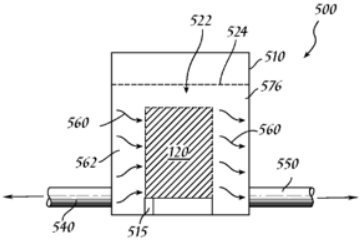
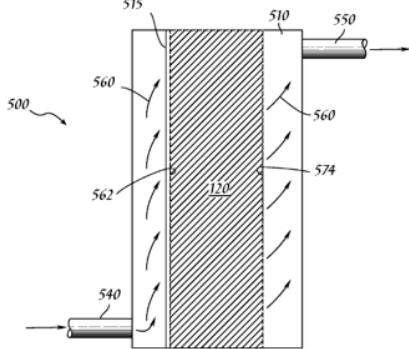
1. *Best-2008*

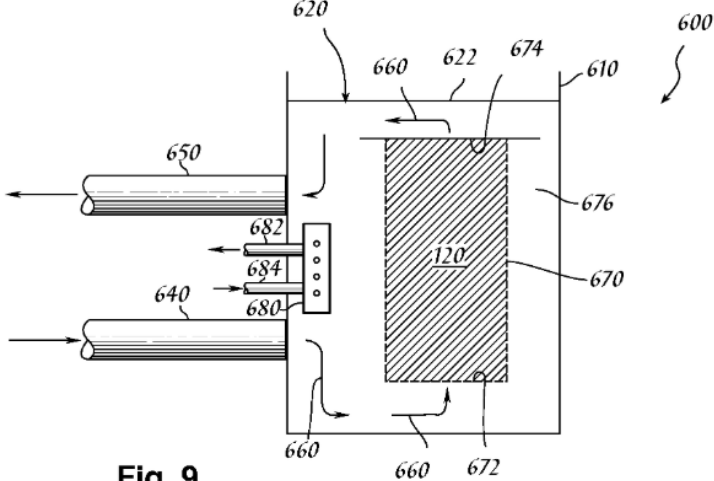
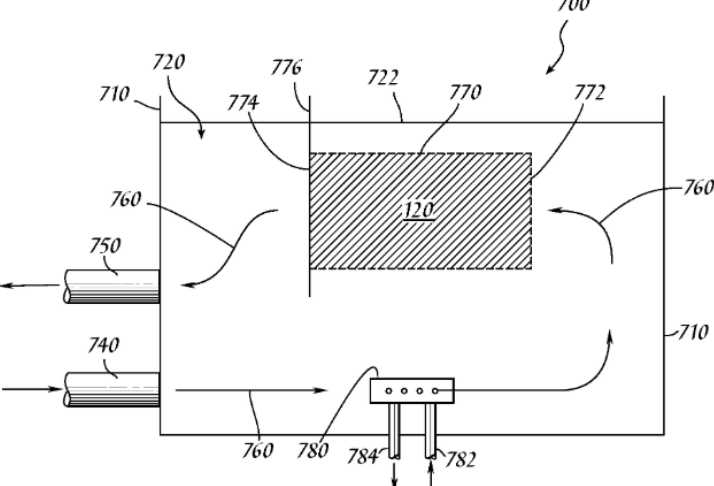
Best describes at least seven alternative embodiments for cooling independently operable servers in liquid coolant, as evidenced in the table below. Although many of the alternative embodiments may comprise the same core components, the different configurations embody different flow patterns that prevent the embodiments from being used interchangeably as prior art.

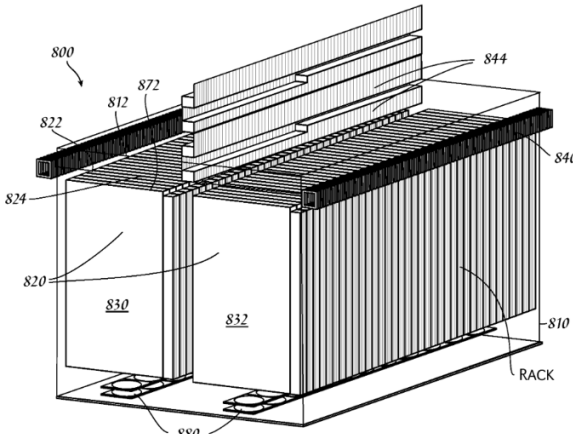
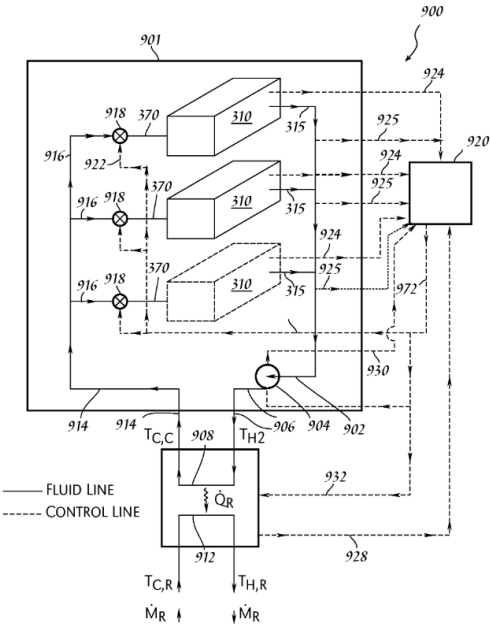
Best-2008 describes three different examples where the servers are configured to minimize mixing of liquid coolant. Ex-1004, ¶¶[0088], [0090], [0103]. For example, Best-2008 describes one example where each server is disposed in a bin “to minimize mixing of the incoming liquid coolant with outgoing liquid coolant... to reduce the flow of coolant around the installed server.” Ex-1004, ¶[0090]. In a mutually exclusive embodiment, Best-2008 describes “flow augmentation devices” that “increase the mixing of the dielectric liquid coolant within the tank.” Ex-1004, ¶[0107].

The table below summarizes at least seven discrete embodiments of Best-2008, that show various flow patterns, appliance and server mounting orientations

and configurations, coolant input and output locations, and secondary heat exchanger locations.

Embodiment of Best-2008	Description of embodiment
#1 (Figs. 3-6)	A first embodiment (Best-2008-1) shows a cooling system.  Fig. 3
#2 (¶[0090])	A second embodiment (Best-2008-2) describes a plurality of bins “to minimize mixing of the incoming liquid coolant... to reduce the flow of coolant around the installed server.” (Ex-1004, ¶[0090])
#3 (Figs. 7-8)	A third embodiment (Best-2008-3) describes a system having coolant input and output pipes disposed on opposite walls.  Fig. 7 (end elevation view)  Fig. 8 (top view)
#4 (Fig. 9)	A fourth embodiment (Best-2008-4) describes a system which features an input and output disposed along the same wall and a second heat exchanger 680 located inside the tank. (Ex-1004, ¶[0092]).

Embodiment of Best-2008	Description of embodiment
	 Fig. 9 (end elevation view)
#5 (Fig. 10)	A fifth embodiment (Best-2008-5) describes a system which features a second heat exchanger 780, where the servers are mounted in a horizontal orientation. (Ex-1004, ¶[0094])  Fig. 10 (end elevation view)
#6 (Figs. 11, 13, and 14)	A sixth embodiment (Best-2008-6) shows dual rows of servers and so-called fluid velocity augmentation devices 880 (<i>i.e.</i>, fans) “to increase the mixing of the dielectric liquid coolant within the tank.” (Ex-1004, ¶[0107])

Embodiment of Best-2008	Description of embodiment
	 Fig. 11 (perspective view)
#7 (Fig. 15)	A seventh embodiment (Best-2008-7) includes multiple immersion cooling tanks in a system.  Fig. 15

2. Osada

Osada does not pertain to immersion cooling, instead disclosing a tank that

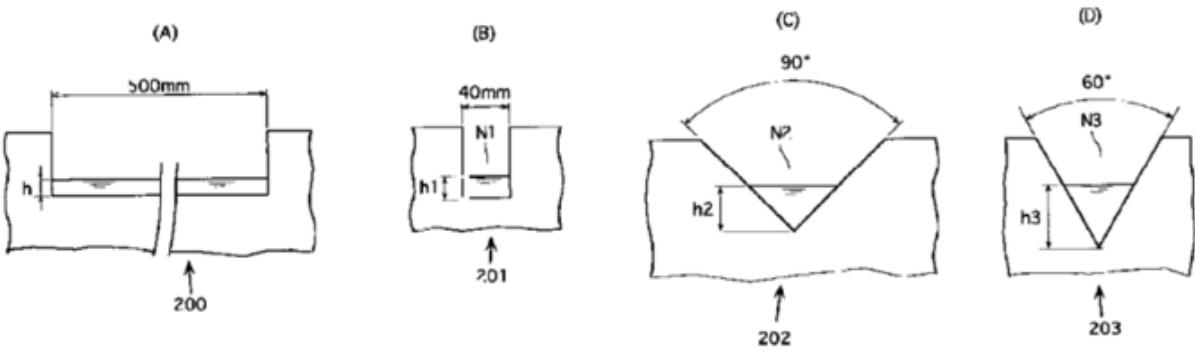
holds and filters a liquid for processing articles placed within the tank. Ex-1005, ¶[0001]. Osada mentions several articles and processes for which the tank can be used, including plating of unspecified “articles” using a plating liquid, developing photographs using a development liquid, and dyeing fabrics. Ex-1005, ¶¶[0001], [0002]. Osada is notably silent on immersion cooling processes. The processes expressly disclosed by Osada generate impurities in the processing liquid, and Osada teaches processing tanks that appropriately filter/separate these impurities from the processing liquid. Ex-1005, ¶¶[0001], [0002] [0007]. Filtration is important to Osada, because such processes cause an accumulation of impurities in the liquid used for plating, dyeing, or photograph developing, which can impede the flow of the liquid and/or damage circulation pumps. Ex-1005, ¶¶[0003], [0025]. If there is insufficient filtration, the impurities will affect the plating, dyeing, or developing processes contemplated by Osada. For example, impurities can adhere to the surface of a plated product, which can cause a large number of product defects. Ex-1005, ¶[0142]. Without adequate filtration, the “daily accumulation of impurities” requires frequent costly cleaning. Ex-1005, ¶¶[0088]-[0089].

According to Osada, a conventional weir (wrapping around the entirety of the top edge surfaces of the disclosed rectangular tank) may be used to filter impurities by causing the plating liquid to flow into an overflow box and remove the impurities trapped in the upper layer of plating liquid. Ex-1005, ¶[0010]. Due to the shape of

a conventional weir, the flow rate into the overflow box may exceed the pump rate out of the overflow box and cause the liquid level of the tank and the overflow box to equalize. Ex-1005, ¶[0136]. This creates insufficient filtration as the tank liquid level is no longer able to overflow into the overflow box. Ex-1005, ¶¶[0136], [0142]. As a result, impurities in the plating liquid adhere to the surface of the product and can cause a large number of product defects. *Id.* Additionally, the liquid level of the tank can drop over time causing the flow rate into the overflow box to rapidly decrease. Ex-1005, ¶¶[0009], [0143]. This liquid level fluctuation may cause the overflow box to dry up and suck air into the recirculation line, which damages the pump. *Id.*

Osada's improved system, therefore, controls the flow of impurity-containing processing liquid from its processing tank into its reservoir by introducing narrow V-shaped or U-shaped notches into weirs, which *suppresses* the flow rate and minimizes the impact of liquid level fluctuations. Ex-1005, ¶¶[0015], [0143] (“[T]he fluctuations in the overflow amount can be suppressed to a very small extent when compared to the conventional rectangular weir.”). Figures 12A-D of Osada, reproduced below, have been annotated to show how Osada's improved weir configurations improve filtration offered by the conventional weir of Figure 12A by quantifiably reducing the flow of liquid from the processing tank to the external reservoir. Ex-1005, Figures 12A-D. Specifically, Osada further compares the flow

rates, “m” in liters/min, of these different weir configurations as a function of the liquid height above the bottom of the weir, “h” in mm. Ex-1005, ¶¶[0136], [0137], Figures 12A-D.



Figs. 12A-D of Osada

Rectangular weir 200 with a width of 500 m			Weir part 201 with rectangular notch N1 having a width of 40 mm			Weir part 202 with notch N2 having a lower apex angle of 90°			Weir part 203 with notch N3 having a lower apex angle of 60°		
h	M		h1	m	P	h2	m	P	h3	m	P
10	55.2	10	18.4	11.0	5	28.0	11.0	5	38.1	13.8	4
15	101.4	15	27.6	20.3	5	39.0	25.2	4	48.6	25.2	4
20	156.1	20	36.8	31.2	5	46.5	39.2	4	57.9	39.2	4
25	218.2	25	46.0	43.6	5	53.0	54.3	4	66.0	54.3	4

Table at Ex-1005 (Osada), p. 17, annotated

The annotated table above from Osada shows that a single conventional weir 200 generates a flow rate of 55.2 liters/min, “m,” of liquid volume based on a liquid level in the tank that is 10mm above the lip, “h,” of the conventional weir 200. The annotated table also shows that, in contrast, all three improved notched weir part

configurations produce a flow rate that is substantially less than the flow rate of the conventional weir. For example, weir part 202 is configured with 5 notches in a weir, “P,” at a liquid level height of 28 mm and produces a flow rate of 11.0 liters/min, while a configuration of the single conventional weir 200 at a similar liquid level height of 25 mm produces a flow rate of 218.2 liters/min, almost 20 times the flow rate of the weir part 202. Thus, Osada concludes that the use of weir parts, such as those shown in Figures 12B-D, provides an advantage over a conventional weir to suppress the flow rate of the liquid volume over the weir. Ex-1005, ¶¶[0143]-[0144].

3. *Best-2012*

Best-2012 describes an immersion cooling tank like Best-2008 (and unlike Osada). With reference to the annotated Fig. 7C below, Best-2012’s immersion cooling tank features a top-mounted pressure manifold 710 for a coolant inlet and a similarly-located suction manifold 720 for a coolant outlet. Ex-1006, ¶¶[0069]-[0073], Figures 7A-7C. The pressure manifold 710 and suction manifold 720 both consist of hollow rectangular pipes. Pressure manifold 710 has holes spaced periodically along its bottom side to dispense coolant downwardly, and suction manifold 720 has holes spaced periodically along its top side in order to draw liquid into the manifold and thereby out of the tank. Ex-1006, ¶[0069], Figures 7A-7C.

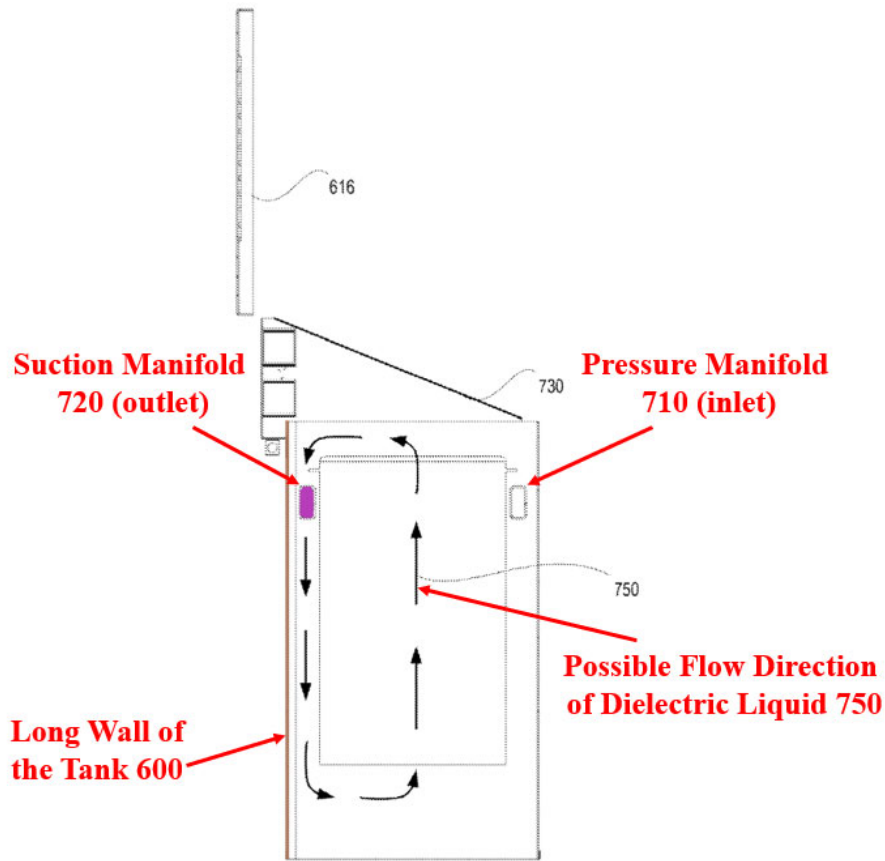


FIG. 7C

Fig. 7C of Best-2012 (side view), annotated

IV. THE PETITION FAILS TO ESTABLISH A REASONABLE LIKELIHOOD OF SUCCESS ON A SINGLE CLAIM

According to the Petition, Ground 1 renders claims 1-16 of the '457 Patent obvious over Best-2008 and Osada. Pet. at 28-68. Claims 1, 6, and 11 specifically recite, in relevant part:

- 1) a **tank** adapted to immerse a plurality of electrical appliances in a dielectric fluid;

- 2) a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, having an overflow lip adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot;
- and
- 3) a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot.

Ex-1001, clms. 1, 6, 11.

Generally, Ground 1 argues that Best-2008 teaches the claimed tank and plenum, and that the combination of Best-2008 and Osada teach the claimed weir and dielectric fluid recovery reservoir, concluding that a POSITA would have been motivated to modify Best-2008 to incorporate Osada's weir to arrive at the claimed inventions.

As evidenced below, Best-2008 fails to teach or suggest a plenum—let alone a plenum “adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot” as recited in the claims. Ex-1001, Clms. 1, 6, 11. Likewise, Osada fails to teach or suggest the claimed weir because Osada's weirs are not positioned adjacent all (or any) appliance slots. Therefore, Osada's weirs cannot facilitate substantially uniform recovery from each appliance slot, as claimed.

Additionally, Ground 1 relies on motivations to combine Best-2008 and Osada that are unsupported by the evidence of record, including the references themselves and Dr. Dahm's Declaration. The Petition, therefore, fails to establish a reasonable likelihood that Ground 1 will prevail on a single claim.

Implicitly acknowledging the weakness of its asserted motivations for Ground 1, the Petition's Ground 2 introduces Best-2012 to argue that "it would have been obvious for Osada's weir-and-notches arrangement to be implemented in Best-2008's tank 'adjacent all appliance slots.'" Pet. at 73. Best-2012, however, does not remedy the aforementioned deficiencies of Ground 1's asserted combination. Accordingly, the Petition fails to establish a reasonable likelihood that Ground 2 will prevail on a single claim, and the Board should exercise its discretion to deny institution.

A. Legal Standard

In an IPR, "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) (citing § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity ... the evidence that supports the grounds for the challenge to each claim"))). The burden of persuasion in an IPR "never shifts to the patentee." *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Moreover, a petitioner should not "place the

burden on [the Board] to sift through information presented by the Petitioners, determine where each element [of the challenged claims] is found in [the cited references], and identify any differences between the claimed subject matter and the teachings of [the cited references.]" *Google Inc. v. EveryMD.com LLC*, IPR2014-00347, Paper 9 at 25 (PTAB May 22, 2014).

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective indicia of non-obviousness (i.e., secondary considerations). *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). "To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Finally, a petition seeking to establish obviousness based on more than one

reference, as is the case here, “must articulate sufficient reasoning with rational underpinnings to combine the teachings.” *Wilson Elec., LLC. v. Cellphone-Mate, Inc.*, IPR2018-01778, Paper 10 at 15 (PTAB Apr. 23, 2019) (citing *KSR Int’l*, 550 U.S. at 418).

B. The Petition Fails to Establish that the Asserted Combination of Best-2008 and Osada Teaches the Claimed Plenum

For both Ground 1 and Ground 2, the Petition asserts that Best-2008’s Figure 6 discloses the claimed plenum. Pet. at 51-54. The claims of the ’457 Patent, however, recite not only a plenum, but a specific plenum that is “adapted to dispense dielectric fluid substantially uniformly upwardly through each appliance slot.” Ex-1001, 9:50-51 (claim 1), 10:33-34 (claim 6), 11:7-9 (claim 11). Best-2008 does not disclose a plenum at all, let alone a plenum that is adapted to dispense dielectric fluid substantially uniformly upwardly through each appliance slot.

1. The Petition Fails to Establish that Best-2008 Teaches a Plenum or “a Structure for Dispensing Liquid”

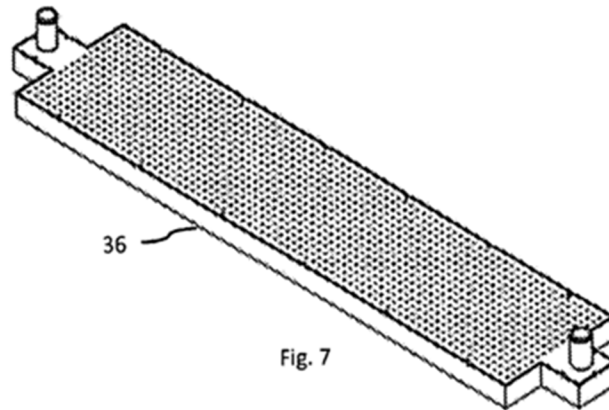
The Petition fails to establish that Best-2008 teaches or suggests a plenum, as recited by the Challenged Claims. As acknowledged by the Petition, a plenum is a “a *structure* for dispensing liquid.” Pet. at 19, 53; *see also* Ex-2003, 1; *see also* Ex-2021, 1; Ex-2004, 4 (Court: “The first claim term, I believe, is plenum, p-l-e-n-u-m. I’m happy to hear an argument --oh, there’s an agreed construction on that. Good. Next up I have disputed term”).

Instead of identifying a tangible component of Best-2008 as a structural equivalent of the claimed plenum, both of the Petition's grounds merely identify a non-structural portion of the volume defined by the tank of Best-2008 as the claimed plenum. Pet. at 52, 81. A mere portion of a non-structural volume defined by Best-2008's tank cannot reasonably be considered to constitute a plenum, which is a **structural element** with functional properties for dispensing liquid. The Petition relies on features of Best-2008 for the alleged plenum that are neither "structures" nor "for dispensing liquid," Pet. at 51-54, and, therefore, the Petition fails to establish that Best-2008 teaches the claimed plenum.

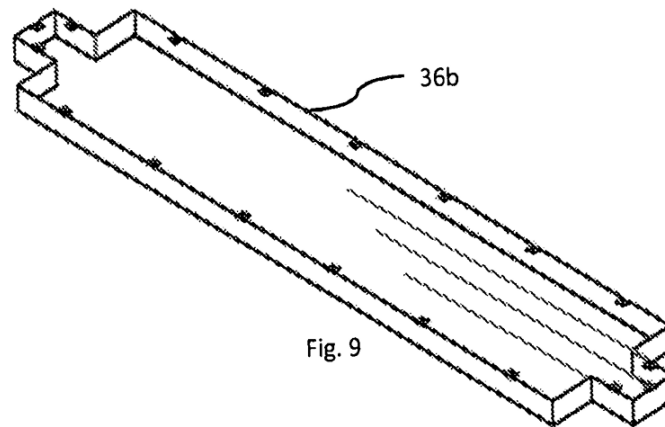
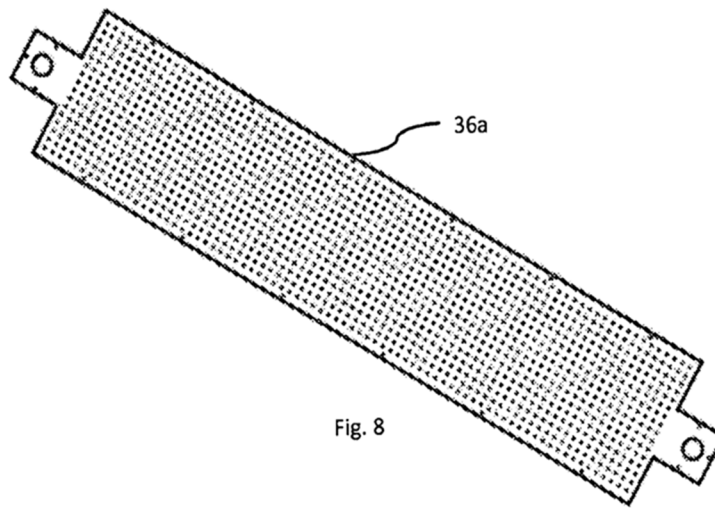
The Petition took "no position" on [] the construction of plenum, asserting instead that "the cited prior art cited herein teaches ... a plenum **under any reasonable construction.**" Pet. at 19 (emphasis added). The Petition, however, acknowledges that construction of "plenum" in the prior IPR involving the '457 Patent included "a **structure** for dispensing liquid" and applies this construction in support of its assertion that Best-2008 teaches the claimed plenum. *Id.* (emphasis added); *id.* at 53 (asserting that "Best-2008 discloses such structures."). Accordingly, the Petition does not raise a claim construction issue.

Patent Owner agrees that the proper construction of "plenum" is "a **structure** for dispensing liquid." Indeed, the district court in the parallel litigation adopted this construction and there was no dispute amongst the parties. Ex-2003; Ex-2021, 1;

Ex-2004, 4. The '457 Patent's intrinsic evidence supports that a plenum is “a **structure** for dispensing liquid” as the '457 Patent discloses discrete, physical structures configured to dispense liquid into its tank 14. Figure 7 of the '457 Patent, reproduced below, shows one example structure for the plenum 36.



According to the '457 Patent, cooled dielectric fluid is pumped into both ends of the plenum 36 via a shared distribution header 38. Ex-1001, col. 4:15-17. The dielectric fluid fills the plenum chamber 36*b* and ultimately flows through the plenum's orifice plate 36*a* that includes orifices “with the dimensions and flow rates of each set being adapted to provide substantially equal flow of the dielectric fluid upwardly into each appliance slot 18a.” Ex-1001, col. 4:13-14. Figures 8 and 9, reproduced below, show structural examples of the plenum's orifice plate 36*a* and chamber 36*b*.



Accordingly, consistent with the construction acknowledged and applied by Petitioner, the '457 Patent explicitly explains how a plenum, as recited by the Challenged Claims, includes a structural assembly configured for dispensing liquid into a tank. Ex-1001, col. 4:11-26. In view of the specification of the '457 Patent, a POSITA would also understand a plenum to be “a structure for dispensing liquid.” See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (*en banc*) (claims “must be read in view of the specification, of which they are a part”) (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)).

The Petition is simply wrong that “Best-2008 discloses *such structures*.” Pet. at 52 (emphasis added). The Petition exclusively identifies a bottom portion of a volume within Best-2008’s tank as the alleged plenum, as illustrated in the Petition’s annotated Figure 6 of Best-2008, reproduced below.

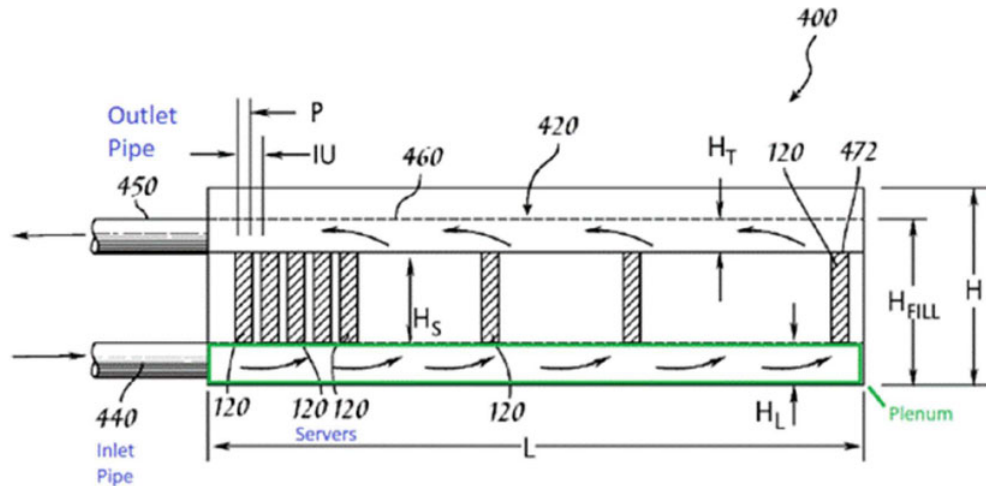


Fig. 6

A close inspection of the Petition’s annotated Figure 6, together with Figure 3 (below), reveals that the green box alleged to be a plenum is in fact *a non-structural volume* between the bottom of tank 410 and the bottom of server rack 470. See Pet. at 52. Stated another way, the top green line in annotated Figure 6 above, which is superimposed upon a dotted line, does not imply the top of a structural plenum. The top green line of the alleged plenum in annotated Figure 6 corresponds only to the bottom of the server rack 470 in Figure 3.

The tank 410 and server rack 470 of Best-2008 are perhaps better illustrated in Best-2008’s Figure 3, reproduced below.

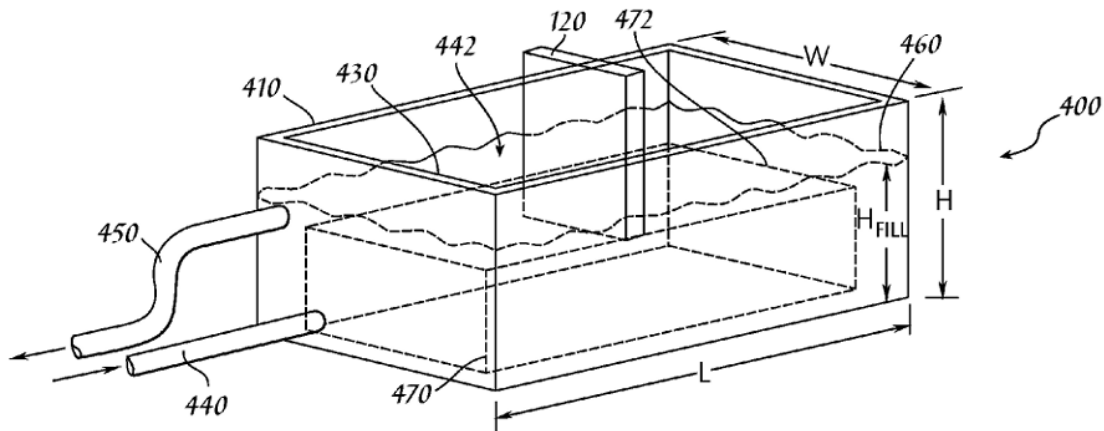


Fig. 3

The Petition fails to explain how—and does not provide evidence that—a *non-structural empty volume* between the tank 410 and server rack 470 can constitute a “*structure* for dispensing liquid.” The annotated Figure 6 demonstrates that the Petition fails to identify any “*structure* for dispensing liquid” as the alleged plenum.

Moreover, the Petition also fails to establish that Best-2008 teaches a plenum “*for dispensing liquid.*” Annotated Figure 6 above shows that inlet pipe 440 dispenses fluid into the tank 410—not the Petition’s alleged “plenum.” In fact, the Petition expressly concedes that “FIG. 6 of Best-2008 shows that the inlet pipe (440) dispenses [] cooled dielectric fluid,” Pet. at 52, and Dr. Dahm’s Declaration makes similar concessions. See Ex-1003, ¶196 (“[T]he inlet pipe (440) dispenses the dielectric fluid.”). However, the Petition does not even assert that the inlet pipe 440 is part of its alleged plenum. Pet. at 52. The Petition, therefore, fails to establish that Best-2008 teaches a plenum “*for dispensing liquid,*” as required by the applied

claim construction.

Finally, to the extent that the Petition references “mechanical structures” of Best-2008, such as mounting members and fans 880, the Petition exclusively relies on such structures to assert that Best-2008 “uniformly distribute[s] the liquid.” Pet. at 53. The Petition never argues or shows via evidence that such “mechanical structures” are components of the alleged plenum. For example, annotated Figure 6 does not include any such “mechanical structures” in the Petition’s alleged “plenum.” To the extent that the Petition argues that such “mechanical structures” were intended to be included as components of the alleged plenum, the Petition also fails to explain why it would have been obvious to import fans 880—which are exclusive to Best-2008’s sixth embodiment (Figures 11, 13, and 14)—into Best-2008’s separate, first embodiment (Figures 1-6), which—according to the Petition—depicts the alleged “plenum.” The Petition makes no attempt to establish a basis for combining elements from Best-2008’s discrete embodiments. *See Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 887 (Fed. Cir. 2024) (the mere fact that possible arrangements existed in the prior art does not provide a reason that a skilled artisan would have substituted “one embodiment for another”).

Regardless, the Petition fails to establish that the “mechanical structures” of Best-2008, including the mounting members and fans 880, are “structures *for dispensing liquid.*” To the extent that Best-2008 teaches the use of mounting

members and fans 880 “to increase [] mixing of the dielectric liquid coolant within the tank, and improv[e] the flow of the coolant through [a] plurality of servers,” such structures do not dispense liquid into Best-2008’s tank 410, as required by the applied construction for “plenum.” Ex-1004, ¶¶[0123], [0086], [0107]. Liquid is only mixed and/or its flow is enhanced *after it has been dispensed* into the tank 410 by the inlet pipe 440. Accordingly, the mounting members and fans 880 cannot be “structures *for dispensing liquid*” into the tank 410 and, therefore, neither is a “plenum,” as recited by the Challenged Claims.

2. The Petition Fails to Establish that Best-2008 Teaches a Plenum Adapted to Dispense Dielectric Fluid Substantially Uniformly Upwardly Through Each Appliance Slot

The Petition also fails to establish that Best-2008 teaches or suggests a particular plenum that is “adapted to dispense dielectric fluid substantially uniformly upwardly through each appliance slot,” as recited by the Challenged Claims. Once again, both grounds of the Petition exclusively rely on Best-2008 for the claimed plenum. Pet. at 52-54, 81. However, to the extent that Best-2008 teaches a plenum—*which it does not*—Best-2008 most certainly does not teach a plenum “adapted to dispense dielectric fluid substantially uniformly upwardly through each appliance slot.”

In reference again to the annotated Figure 6 of Best-2008 in the Petition, reproduced below, the Petition asserts that, “[a]s the arrows indicate, the fluid is

dispensed ‘substantially uniformly upwardly through each appliance slot.’” Pet. at 53. Neither the Petition nor Dr. Dahm’s Declaration cite any evidence supporting this assertion. Ex-1003, ¶¶196-97. Indeed, the evidence (and common sense) show otherwise.

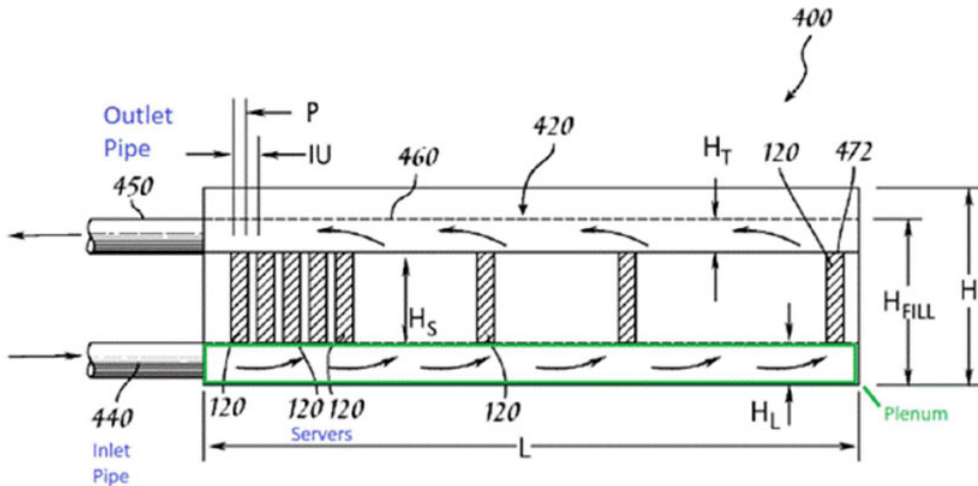


Fig. 6

Best-2008 itself offers no explanation as to what these arrows signify, and neither the Petition nor its expert provides support—let alone any evidence—that the arrows indicate fluid being dispensed substantially uniformly and upwardly through each appliance slot. Best-2008 certainly offers no suggestion that the arrows should be interpreted as an accurate representation of the fluid dynamics within the tank of Best-2008. Dr. Dahm’s Declaration offers the Petition no assistance, as Dr. Dahm’s Declaration merely parrots the claim language and makes the conclusory assertion that “[t]he arrows in FIG. 6 indicate that the fluid is dispensed ‘substantially uniformly upwardly through each appliance slot’ as claimed.” Ex-

1003, ¶197. Such conclusory expert opinions that merely parrot the petition are entitled to little weight. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (precedential) (a declaration that is “conclusory and unsupported,” and that “adds little to the conclusory assertion of this it is offered to support ... is entitled to little weight”); *In re Nuvasive, Inc.*, 842 F.3d 1376, 1383 (Fed. Cir. 2016) (“conclusory statements alone are insufficient and, instead, the finding must be supported by a reasoned explanation.”).

Contrary to the Petition’s assertions, it is just as reasonable (if not more reasonable) —and therefore not a preponderance of the evidence—to conclude that Best-2008’s Figure 6 teaches a ***non-uniform*** flow of fluid past each server 120. In fact, given that (i) the inlet pipe 440 dispenses dielectric fluid into the tank at a single point positioned only at one side of the tank, a POSITA would understand that servers 120 positioned nearer to the left side of the tank with the inlet pipe 440 will receive more fluid flow than servers 120 positioned on the right side further away from the inlet pipe 440. Neither the Petition nor Dr. Dahm’s Declaration address this far more logical interpretation of Figure 6.

Instead, both the Petition and Dr. Dahm’s Declaration rely on mechanical structures of Best-2008, such as mounting members and fans 880, to allege that these components “uniformly distribute the liquid.” Pet. at 76; Ex-1003, ¶198. As an initial matter, the reliance on such mechanical structures serves as a tacit admission

that the alleged plenum in Best-2008, illustrated in annotated Figure 6, *does not* provide substantially uniformly and upwardly distribution of fluid through each appliance slot. Furthermore, neither the mounting members nor fans 880 function to “uniformly distribute the liquid,” as argued by the Petition and Dr. Dahm’s Declaration. Both the Petition and Dr. Dahm’s Declaration note how Best-2008’s fans 880 “increase the mixing of the dielectric liquid coolant” and “improv[e] the flow of the coolant through the plurality of servers.” Ex-1004, ¶[0107]; *see also* Pet. at 53-54. However, the Petition and Dr. Dahm’s Declaration fail to explain how “mixing” or “improving” the flow of coolant can result in a “uniform[] distribut[ion] of the liquid,” as they baselessly assert. Pet. at 76; Ex-1003, ¶198. In fact, “mixing” or “improving” the flow of coolant does not change the fact that the coolant is dispensed into the tank at a single point of entry that is far closer to some servers than others. Accordingly, the Petition has failed to show that Best-2008’s mounting members and/or fans function to “uniformly distribute the liquid.”

C. The Petition Fails to Establish that Best-2008 and Osada Teach a Weir “Adjacent All Appliance Slots” and “Adapted to Facilitate Substantially Uniform Recovery of Dielectric Fluid Flowing Through Each Appliance Slot”

According to the Petition, the combination of Best-2008 and Osada renders obvious a weir “adjacent all appliance slots” and “adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot.” Pet.

at 73 (citing Ex-1003 at ¶¶264-265); *see also id.* at 45-49. However, the Petition further asserts that “Best-2012 confirms it was obvious for Osada’s weir-and-notches arrangement to be implemented in Best-2008’s tank ‘adjacent all appliance slots.’” Pet. at 73 (citing Ex-1003 at ¶¶264-265). As explained below, Best-2008 does not disclose a weir at all, instead disclosing a simple outlet pipe (or line) 450 for fluid recovery. Ex-1004, ¶¶[0087], [0089]. And Osada fails to disclose appliance slots, let alone a weir positioned adjacent all appliance slots and adapted to facilitate substantially uniform recovery of dielectric fluid from each appliance slot. Best-2012 does not remedy the defects of Best-2008 and Osada because Best-2012 also fails to teach a weir. Best-2012 actually teaches a suction manifold positioned beneath the surface of the fluid and configured to suck coolant from the tank, making Best-2008’s suction manifold structurally and functionally dissimilar to the claimed weir. Thus, the Petition fails to establish that the asserted combinations of Best-2008, Osada, and Best-2012 render the claimed weir obvious.

1. *The Petition Fails to Establish that Best-2008 Teaches a Weir*

The Petition asserts that “Best-2008 discloses a weir integrated into the long wall of its tank,” but acknowledges that Best-2008 “*does not expressly disclose* a recirculation loop that uses *a weir-overflow-reservoir arrangement.*” Pet. at 45-46. The Petition gets it right the second time—Best-2008 does not teach the claimed “weir” because Best-2008 does not teach either “an *overflow* structure or barrier that

determines the level of a liquid” or “an *overflow* structure or barrier that that a liquid flows over.”

The Petition acknowledges that, in the prior IPR involving the ’457 Patent, the parties agreed that a “weir” is “an overflow structure or barrier that determines the level of a liquid.” Pet. at 19. And the district court in the parallel litigation construed the term similarly: “an overflow structure or barrier that a liquid flows over.” Ex-2003, 1; *see also* Ex-2004, 23 (“[t]he court is going to maintain its [preliminary] construction”); *see also* Ex-2021, 1. Both of these are “reasonable constructions” of the term¹ (Pet. at 19). Nonetheless, the Petition provides no evidence that Best-2008’s outlet pipe 450 constitutes or forms any type of *overflow* structure.

Best-2008’s outlet pipe 450 does not constitute an overflow structure because it is not a barrier over which fluid can flow to determine the level of liquid in the tank. Although dielectric fluid may flow *into* Best-2008’s outlet pipe 450, dielectric fluid does not flow *over* the outlet pipe 450, as required by reasonable constructions for the term. Ex-1004, ¶[0084] (explaining that fluid flows *into* outlet pipe 450).

¹ The ’457 Patent’s intrinsic evidence supports these constructions. Ex-1001, col. 4:30-33 (referring to an “overflow lip of the weir” and teaching that dielectric fluid “flows over the weir”).

Thus, the Petition has failed to show through evidence that Best-2008's "outlet pipe or line 450" could constitute the claimed weir.

The Petition asserts, based on the prosecution history, that a mere opening in the wall can constitute a "weir" and that, therefore, Best-2008 teaches such a "weir" under that construction. Pet. at 21. The Petition's argument, however, overlooks the claim amendments that led to allowance. Patent Owner amended the claims to clarify that the dielectric fluid recovery reservoir receives the dielectric fluid *as it flows over* the weir. Ex-1002, 468, 538. In other words, consistent with the constructions in the prior IPR and in the parallel litigation, Patent Owner's amendments indicated that weir must be an *overflow* structure or barrier and that fluid must flow *over* it—unlike Best-2008's outlet pipe 450. In order to flow *over* a structure or barrier, the fluid must descend behind the structure or barrier, preferably into something underneath the structure or barrier to catch the dielectric fluid, such as a recovery reservoir. In response to Patent Owner's amendment, the Examiner conceded that "Best does not teach the weir and reservoir arrangement." Ex-1002, 538. In other words, the fractional excerpt from the prosecution history cited by the Petition paints an incomplete picture. The examiner ultimately acknowledged that, in Best-2008, fluid flows into—not over—the outlet pipe 450, because there was no reservoir positioned below the outlet pipe 450. Ex-1002, 538.

Dr. Dahm's Declaration offers nothing more than the Petition in support of

his argument that “a weir can be an opening in a wall” and that Best-2008 teaches such a weir. Ex-1003, ¶¶77, 174 (acknowledging that prior constructions required a weir to be “an *overflow* structure or barrier” but failing to explain how fluid could flow *over* Best-2008’s outlet pipe). Accordingly, the Petition fails to establish that Best-2008 teaches a weir.

2. *The Petition Relies on Conclusory Statements to Assert that Osada Teaches a Weir “Adjacent All Appliance Slots”*

The Petition acknowledges that the construction of element [1.2] requires the weir to be “adjacent all appliance slots” and argues that “Best-2008 in view of Osada teaches this limitation.” Pet. at 20-21, 45. The Petition further asserts that even if “adjacent all appliance slots” modifies the long wall and not the weir, this construction would not change the results and “the prior art renders both configurations obvious.” Pet at 21. However, the Petition fails to provide any explanation or evidence for why “such arrangements were known.” Pet. at 45; Ex-1003, ¶¶75, 175.

The Petition correctly concedes that Best-2008 does not disclose a weir adjacent all appliance slots. Pet. at 45 (“Best-2008 does not expressly disclose such an arrangement”). However, the Petition argues without evidence or explanation that “such arrangements were known and conventional as shown by Osada.” *Id.* This analysis is exceedingly problematic in that Osada fails to disclose *any* appliance

slots. Indeed, the Petition can only support its assertion with conclusory statements from Dr. Dahm’s Declaration. Pet. at 45 (citing Ex-1003, ¶¶75, 175 (“it would have been obvious to a POSITA in view of Osada”)). However, conclusory expert opinion is entitled to little weight. *See Xerox*, IPR2022-00624, Paper 9 at 15; *Nuvasive*, 842 F.3d at 1383. Osada cannot be reasonably interpreted as teaching a weir positioned adjacent appliance slots because Osada does not mention appliance slots or use appliance slots in its intended applications.²

Even if Osada taught a weir “adjacent all appliance slots,” which it does not, the Petition’s analysis is legally deficient in establishing that a POSITA would have been motivated to modify Best-2008 to incorporate a weir in precisely such a way. Merely being known does “not provide sufficient evidence for why a person of skill would be motivated” to make an alleged modification or combination. *Fanduel, Inc. v. Interactive Games LLC*, 966 F.3d 1334, 1344 (Fed. Cir. 2020) (“Board reasonably identified a gap between the concept ... being well-known and the beneficial application of that concept to” the claimed invention).

Accordingly, the Petition fails to substantiate the baseless assertion that a weir

² Once again, Osada discloses an article processing tank for plating articles, dying fabrics, or developing photographs. Osada is not configured for immersion cooling and, therefore, is completely silent on appliances and appliance slots.

adjacent all appliance slots would have been well known and, beyond conclusory statements from Dr. Dahm's Declaration, the Petition provides no reasonable motivation or rationale underpinning to modify or adapt Best-2008 to add a weir that is adjacent all appliance slots in view of Osada.

3. *The Petition Fails to Explain how the Asserted Combination of Best-2008 and Osada Teaches a Weir "Adapted to Facilitate Substantially Uniform Recovery of Dielectric Fluid Flowing Through Each Appliance Slot"*

The Petition relies on a convoluted argument that intertwines unfounded assertions regarding Osada with unrelated teachings from Best-2008 to argue that the asserted combination of Best-2008 and Osada teaches a weir adapted to facilitate substantially uniform recovery of dielectric fluid flowing through each appliance slot. Pet. at 47-49. The Petition's position should be rejected because it ultimately fails to explain how either Best-2008 or Osada, alone or in combination, teach such a weir.

The Petition's first unsupported argument is that "Osada's notches would extend the full length of the tank." Pet. at 47. According to the Petition, "even though [Osada's] FIG. 4 is a partial view, the notches are already spaced regularly and uniformly in the long wall of the tank." Pet. at 48. The Petition, however, cites no evidence to support its assertions—not even to Dr. Dahm's Declaration. Consequently, the Petition lacks any evidence indicating that "Osada's notches would extend the full length of the tank" and, therefore, the Board should dismiss

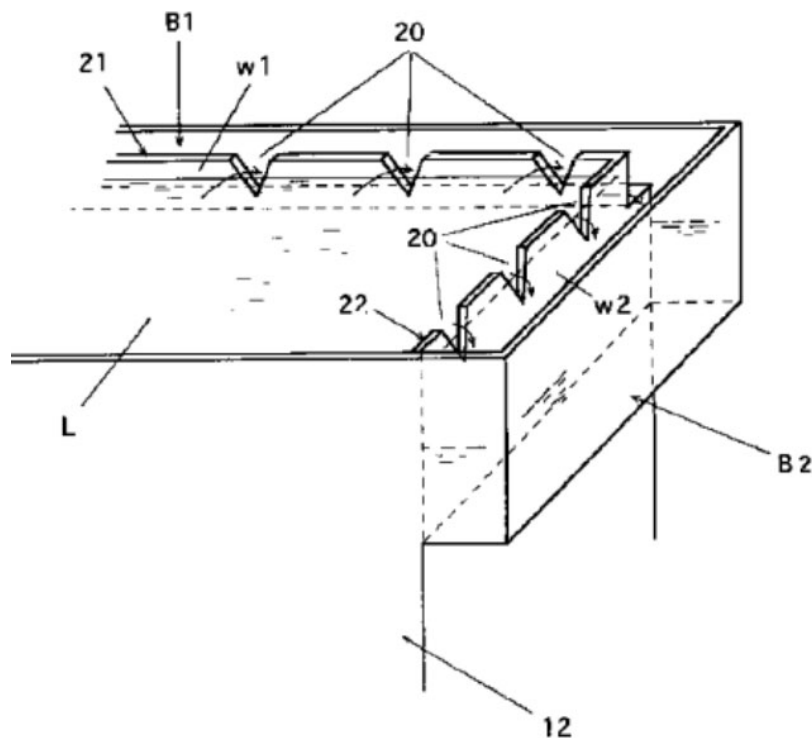
this argument. Pet. at 47.

Even if Osada's notches extend the full length of the tank, the Petition fails to demonstrate how Osada's weir would facilitate substantially uniform recovery of dielectric fluid flowing *through each appliance slot*, as recited by the Challenged Claims. Ex-1001, clms. 1, 6, 11. As explained above, *Osada does not even disclose appliance slots* and is not concerned with uniform fluid flow from its processing tank. Osada's system instead includes "an article processing device" for plating, photographic developments, or fabric dying and, specifically, a means for filtering resulting impurities from liquids used in such processes. Ex-1005, ¶¶[0001]-[0002]. Although Osada discloses "multiple notches over a broad range" and "at uniform spacing" (Ex-1005, ¶[0018]), such a notch arrangement enhances filtration, which is *not* a stated objective of Best-2008. Pet. at 48. Osada makes no mention of arranging the notches to facilitate a substantially uniform recovery of fluid across any length and does not motivate a POSITA to arrange Osada's notches for this purpose.

Because Osada does not utilize appliance slots in its processing tank, Osada cannot possibly teach a position of notches 20 that corresponds to a position of appliance slots. Furthermore, the notched portions of Osada's weir would actually result in a substantially *non-uniform recovery of dielectric fluid* across the full length of the tank. As illustrated in Osada's Figure 4, reproduced below, the portions

of the walls w1, w2 that include the notches 20 would recover substantially more dielectric fluid than the unnotched portions of the walls w1, w2. Additionally, if electrical appliances were positioned in a corner of Osada's tank adjacent both notched walls w1, w2 would experience greater fluid recovery because they would benefit from the notches in the first wall, w1, *and* the second wall, w2.

(FIGURE 4)



The third flaw in the Petition's argument is that it fails to support the assertion that, because Best-2008 teaches servers mounted "closely adjacent to one another...to restrict the flow of the dielectric liquid coolant between [] vertically-oriented servers," a POSITA "would have been motivated to include Osada's notches adjacent each appliance slot in the Best-2008 tank." Pet. at 49 (citing Ex-

1004, ¶[0086]). According to Best-2008, restricting the flow of fluid between servers enhances the flow of fluid through the servers. Ex-1004, ¶[0086]. The Petition, however, fails to provide evidence of how Osada's notches relate to either restriction or enhancement of flow, as taught by Best-2008. The Petition provides no evidence that a POSITA might recognize that an "enhanced" flow of fluid between the servers would necessitate an "enhanced" removal of fluid once the fluid has flowed past each server.

The final, and perhaps most fatal, flaw in the Petition's argument is that the Petition either misunderstands or intentionally ignores the fact that Osada's notches *reduce* flow, rather than enhance it. Osada explicitly teaches that it is important to *reduce* flow from the primary tank into the external reservoir to preserve pump life. Ex-1005, ¶[0007]. According to Osada, the notches prohibit "the amount of overflow [from] increas[ing] rapidly over the...weir," thereby preventing a "marked increase in the overall amount of overflow." *Id.* at ¶[0015]. In light of Osada's clear teachings to the contrary, a POSITA would not have been motivated to add notches to Best-2008 to enhance flow.

The Petition, therefore, fails to demonstrate through evidence that the asserted combination of Best-2008 and Osada teaches a weir "adapted to facilitate substantially uniform recovery of dielectric fluid flowing through each appliance slot."

D. The Petition Fails to Establish that Best-2012 Remedies the Deficiencies of Best-2008 and Osada

Ground 2 relies on Best-2008 and Osada for exactly the same teachings as Ground 1. Notably, Ground 2 offers no additional evidence regarding the plenum and, therefore, Ground 2 should at least be dismissed for the reasons stated in Section IV.B of this response.

Regarding the weir, the Petition introduces Best-2012 under Ground 2 exclusively to show that it would have been obvious for Osada's weir-and-notches arrangement to be implemented in Best-2008's tank *adjacent all appliance slots*. Pet. at 73. As evidenced below, this conclusory argument ignores the technical differences between Osada and Best-2012. Best-2012 fails to remedy the aforementioned defects of Best-2008 and Osada and the Petition does not argue otherwise. Thus, Ground 2 lacks a reasonable likelihood of success for all of the reasons Ground 1 lacks a reasonable likelihood of success. Therefore, the Board should exercise its discretion to deny institution.

Ground 2 introduces Best-2012 merely to show that it would have been obvious for Osada's weir-and-notches arrangement to be implemented in Best-2008's tank *adjacent all appliance slots*. Pet. at 73. According to the Petition, Best-2012 confirms it was obvious for Osada's weir-and-notches arrangement to be implemented in Best-2008's tank "adjacent all appliance slots." *Id.* The Petition is

incorrect.

The Petition fails to explain how Best-2012 teaches a weir or any “*overflow*” structure or barrier that a liquid *flows over*.” Best-2012, in fact, does not teach a weir but discloses a “suction manifold.” Ex-1006, ¶¶[0069]-[0073]. The Petition fails to explain what a “suction manifold” is and how it relates to a weir or an “*overflow*” structure or barrier that a liquid *flows over*.” Best-2012 cannot possibly suggest the placement of a weir *adjacent all appliance slots* of a tank because Best-2012 makes no mention of anything that can be reasonably interpreted as a weir.

The Petition acknowledges that Best-2012 expressly teaches a suction manifold that has “a plurality of nozzles or velocity augmentation devices of area A2 distributed along [its] length.” Pet. at 74 (citing Ex-1006, ¶[0069]). However, the Petition relies on Dr. Dahm’s Declaration to import teachings into Best-2012. Pet. at 76. In a footnote, the Petition relies on Dr. Dahm’s Declaration to replace the “nozzles,” which are expressly described by Best-2012, with “orifices (apertures or holes).” *Id.* Notably, neither the Petition nor Dr. Dahm’s Declaration address the fact that Best-2012 also describes its nozzles as “velocity augmentation devices” Best-2012.³ The Petition’s attempt to explain the suction manifold of Best-2012

³ The Board need not consider whether Best-2012 actually intended its “nozzles” or “velocity augmentation devices” to actually be orifices at this stage of the

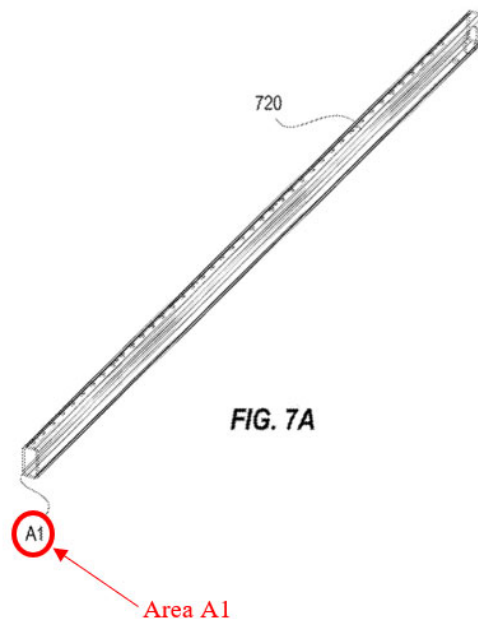
actually illustrates that the suction manifold of Best-2012 is a device that is, in fact, structurally and functionally different than the asserted “weir-and-notches arrangement” of Osada.

For example, the structural and functional differences of the suction manifold of Best-2012 and the “weir-and-notches arrangement” of Osada are further illustrated by ¶[0070] of Best-2012 (Ex-1006), which the Petition relies on to explain the suction manifold. *See also* Pet. at 77-78. According to ¶[0070] of Best-2012, it is important for pressure lost through its nozzles and/or velocity augmentation devices to be much greater than pressure lost through its manifolds. In other words, Best-2012 *actually* teaches that the placement of its nozzles and/or velocity augmentation devices along its manifold should be determined to maximize a pressure differential. Thus, Best-2012 does *not* teach the placement of nozzles and/or velocity augmentation devices based on a desired position relative to appliance slots.

Additionally, Best-2012 further explains that “[t]he area A2 of the velocity augmentation devices along the length of the pressure manifold 710 is *much* smaller

proceeding. This is because, for the reasons stated herein, the Petition fails to sufficiently explain how the Best-2012’s suction manifold renders a weir adjacent all appliance slots obvious.

than the area A1 of the pressure manifold 710.” *See* Ex-1006, ¶[0070]. Best-2012 illustrates area A1 in FIGS. 7A and 7B, as annotated and reproduced below. Area A2 is not depicted in any teaching from Best-2012 but this statement alone indicates that the velocity augmentation devices should not be positioned along the length of the pressure manifold 710.



Best-2012 Fig. 7A, annotated

In view of the above teachings from Best-2012, it is clear that the suction manifold of Best-2012 is an extremely different device than the “weir-and-notches arrangement” of Osada. The Petition argues that “Best-2012 teaches a POSITA that dielectric liquid should be extracted from the tank by using a mechanical structure (e.g., a manifold having nozzles/orifices, or other velocity augmentation devices)

located along the long wall of the tank.” Pet. at 77 (citing Ex-1003, ¶¶272-273). However, the Petition fails to address or acknowledge the difference in the “mechanical structures” taught by Best-2012 and Osada. As explained above, Best-2012 positions its nozzles and/or velocity augmentation devices to mitigate detrimental pressure differentials generated through its active suction manifold. Ex-1006, ¶[0070]. Osada is silent on such pressure differentials because it teaches a passive “weir-and-notches arrangement” that would not be susceptible to the pressure differentials generated by Best-2012’s suction manifold. Any teachings related to the suction manifold of Best-2012, therefore, are irrelevant and inapplicable to the “weir-and-notches arrangement” of Osada.

In view of the above, it is clear that the Petition’s assertion that Best-2012 evidences that it would have been obvious for Osada’s weir-and-notches arrangement to be implemented in Best-2008’s tank *adjacent all appliance slots*, Pet. at 73, ignores substantial differences between the manifold of Best-2012 and the weir of Osada and, therefore, should be dismissed.

E. The Petition’s Alleged Motivations to Combine the Asserted References Are Unsupported by the Evidentiary Record

The Petition’s motivation to combine references (for Ground 1 and Ground 2) amounts to impermissible hindsight. Even if Best-2008, Osada, and Best-2012 are found to teach or suggest each of the claimed elements—*which they do not* as

described herein—the Petition and Dr. Dahm’s Declaration fail to “provide the glue to combine these references.” *InTouch Techs., Inc. v. VGO Commun., Inc.*, 751 F.3d 1327, 1348 (Fed. Cir. 2014) (finding an expert’s testimony was nothing more than impermissible hindsight); *see also ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1327 (Fed.Cir.2012) (cautioning that conclusory statements that a POSITA would have known how to combine references are insufficient and fraught with hindsight bias); *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Pat. Litig.*, 676 F.3d 1063, 1079 (Fed. Cir. 2012) (emphasizing the importance of objective evidence before reaching an obviousness determination as a check against hindsight bias).

The Petition’s purported motivations to combine the references are based on alleged support that cannot be found in either the express disclosures of the references themselves nor Dr. Dahm’s Declaration. Ex-1003, ¶¶[264]-[268]. According to Petitioner, “it was obvious to a POSITA to use Osada’s conventional, rectangular weir with Best-2008’s open-air liquid immersion tank” and “[i]t was also obvious to use Osada’s weir-and-notch system with Best-2008.” Pet. at 35-36. The Petition and Dr. Dahm’s Declaration justify these allegations by pointing to “shared objectives” of each reference and arguing that the asserted combination would “advance the shared objectives.” Ex-1003, ¶¶[128], [176]; *see also* Pet. at 37 (“[t]hese objectives are furthered by Osada’s teachings.”). As evidenced below, the

Petition's narrative that the references expressly disclose "shared objectives" is false and the Petition, in fact, offers no reasonable motivation to combine the references. Thus, the Petition's theory of "shared objectives" is nothing more than a pretext to combine the references based on impermissible hindsight.

1. *The Petition Baselessly Asserts that Best-2008 "Desires" Enhanced Filtration*

According to the Petition, modifying Best-2008 to incorporate Osada's weirs would have been obvious to a POSITA because Best-2008 allegedly desires "an alternative and enhanced way to remove impurities." Pet. at 36; Ex-1003, ¶¶[132]-[134]. The Petition exclusively cites to Dr. Dahm's Declaration in support of this proposition, but neither the Petition nor Dr. Dahm's Declaration identify any teaching from Best-2008 that supports their proposition that Best-2008 desires "an alternative and enhanced way to remove impurities." Pet. at 36. In fact, Best-2008 does not "desire" enhanced filtration.

Best-2008 makes but a single reference to a filter and is completely silent on particulates or what the filter is intended to remove from the dielectric fluid. Ex-1004, ¶[0081]. From this single reference to a filter, both the Petition and Dr. Dahm's Declaration conclude that Best-2008 *desires* enhanced filtration, pontificating that "Best-2008's tanks are generally open to the atmosphere" and that "the open tanks expose the dielectric liquid to particulates and other materials,

requiring filtration.” Pet. at 25; Ex-1003, ¶[89]. In spite of the fact that the Petition and Dr. Dahm’s Declaration reference seven paragraphs from Best-2008 in support of this notion, none of the cited paragraphs expressly state a desire or need to improve the lone filter in a single embodiment of Best-2008. *See id.* To the extent that the Petition asserts that Best-2008 would be concerned about particulates entering its open-top tank (Pet. at 25), Best-2008 already solves this alleged problem by disclosing a “removable top.” Ex-1004, ¶[0103]. Tellingly, the Petition cites disclosure in Best-2008 to support the notion that Best-2008’s objectives include heat transfer, maintenance of liquid temperature, and vertical natural convection (Pet. at 36-37), yet fails to cite similar support for enhanced filtration, which indicates that the Petition and Dr. Dahm’s Declaration have impermissibly imported the alleged desire for enhanced filtration into Best-2008. Pet. at 36; *see also* Ex-1003, ¶¶[132]-[134].

Enhanced filtration, contrarily, is an important aspect of Osada’s weirs. Unlike Best-2008, Osada teaches “an article processing device” for plating, photographic developments, or fabric dyeing and, specifically, a means for enhancing filtration of liquids used in such processes. Ex-1005, ¶¶[0001], [0002]. According to Osada, “there will be an increase in the impurities carried over from the article to be processed.” Ex-1005, ¶[0003]. Osada further explains that impurities follow “a complicated flow” and “tend to be sorted based on the size of

the specific gravity.” Ex-1005, ¶[0004]. Thus, Osada proposes a weir that results in advantages such as “reduc[ing] the amount of impurities remaining in the liquid tank,” and “effectively perform[ing] [such] filtration processing” to combat the daily accumulation of impurities. Ex-1005, ¶¶[0011], [0088].

In other words, Osada teaches a tank that is implemented for a materially different purpose than Best-2008. Such a significant difference in application results in significantly different problems addressed by Osada and Best-2008. Best-2008 makes only a single reference to a filter in one of its numerous embodiments, without even saying what is being filtered out by the filter. Ex-1004, ¶[0081]. The Petition and Dr. Dahm’s Declaration simply resorted to fabricating an alleged “desire” in Best-2008 for enhance filtration that is not supported by the express disclosure of Best-2008 or any other credible evidence. Pet. at 36. Accordingly, the alleged motivation to modify the tank of Best-2008 to incorporate the weir of Osada is dubious, at best.

2. *The Petition Baselessly Asserts that Osada Teaches a Weir that Enhances the Flow of Dielectric Fluid*

The Petition also argues that one of the stated objectives of Best-2008 is to “**enhance** the flow of liquid coolant through the servers.” Pet. at 37 (citing Ex-1004, ¶¶[0107], [0117], [0131], and FIG. 17B) (emphasis added); *see also* Pet. at 49 (citing Ex-1004, ¶[0086]). The Petition further argues that this objective of Best-2008

would be “furthered by Osada’s teachings” (Pet. 37), and that Osada’s notches would “facilitate[] achievement of Best-2008’s objectives...such that flow of the dielectric liquid coolant through the servers is improved.” Pet. at 49. Osada, however, does not teach an enhanced flow of liquid from its processing tank into its overflow boxes, as asserted by Petitioner. In fact, Osada actually teaches exactly the opposite.

Osada provides a means “to perform stable liquid filtration without causing any marked changes in the liquid amount that may flow into the overflow box over the weir.” Ex-1005, Abstract. According to Osada, it is important to ***reduce flow*** from the primary tank into the external reservoir in order to prevent a pump coupled to the external reservoir from being overworked. *See id.* at ¶[0007]. Osada explains that “if the amount of liquid flowing from the processing liquid tank over the weir part into the overflow box becomes ***excessive***, the proportion of liquid that is suctioned by the pump from said box will decrease.” *Id.* Osada further clarifies that, when the pump is overworked, the level of liquid in the processing liquid tank and the overflow box will “reach the same height,” which ultimately reduces the flow of impurities (not liquid) from the processing liquid tank into the overflow box. *See id.* at ¶¶[0007], [0008]. In other words, to ***increase the flow of impurities*** from the processing liquid tank into the overflow box, Osada teaches the importance of ***reducing—not enhancing—the flow of liquid*** from the processing liquid tank into the overflow box. *See id.*

Osada reduces the flow of liquid from the processing liquid tank into the overflow box by using its notched weir instead of a conventional, rectangular weir. This prohibits “the amount of overflow [from] increas[ing] rapidly over the...weir,” thereby preventing a “marked increase in the overall amount of overflow.” Ex-1005, ¶[0015]. In other words, Osada expressly teaches away from an “enhanced” flow of liquid from its primary, processing tank into a reservoir. The notion that a POSITA would be motivated to modify Best-2008 in view of Osada because Best-2008’s alleged intention to “enhance the flow of liquid coolant through the servers” would be “furthered by Osada’s teachings” is thus unsupported by the evidence, illogical, and should be dismissed by the Board. Pet. at 37.

Thus, the Petition lacks objective evidence to support its asserted combination of Best-2008 and Osada. The only legitimate rationale underpinning the asserted combinations of Best-2008 and Osada is hindsight bias, which is impermissible. *See In re Gorman*, 933 F.2d 982, 987 (Fed. Cir. 1991) (“It is impermissible ... simply to engage in a hindsight reconstruction of the claimed invention, using applicant’s structure as a template and selecting elements from references to fill the gaps.”); *NOF Corp. v. Nektar Therapeutics*, IPR2019-01395, Paper 27 at 5 (PTAB Apr. 21, 2020) (“identifying a disclosure that something could be done is not sufficient to demonstrate a reason to do so in a particular instance or manner”).

F. The Petition Fails to Satisfy Its Burden Under 35 U.S.C. § 314(a)(3)

As mentioned above, Best-2008 discloses seven discrete embodiments. Osada discloses four. The Petition cherry picks aspects across these multiple embodiments in its grounds. For example, the Petition relies on five of Best-2008's seven embodiments and four of Osada's embodiments for claim 1 alone, as shown in the table below that summarizes the Petition's citations to these different embodiments of Best-2008 and Osada for claim 1.

	1.1	1.2	1.3	1.4	1.5
Best-2008-1 (Figs. 3-6)	X	X		X	X
Best-2008-2 (¶0090)	X				
Best-2008-3 (Figs. 7-8)					
Best-2008-4 (Fig. 9)		X			
Best-2008-5 (Fig. 10)					
Best-2008-6 (Figs. 11, 13, 14)	X	X		X	
Best-2008-7 (Fig. 15)				X	
Osada-1 (Conv Weir)		X	X		
Osada-2 (Notch)		X	X		
Osada-3 (Long and short wall)		X	X		
Osada-4 (Long wall)		X	X		

Pet. at 41-57.

The Petition, however, ignores whether a POSITA would have substituted one Best-2008 embodiment for another, or one Osada embodiment for another. The Petition, therefore, fails to meet the burden prescribed under 35 U.S.C. § 312(a)(3),

which requires a petition to identify the grounds and evidence, “with particularity, ... that supports the grounds for the challenge to each claim” 35 U.S.C. § 312(a)(3). *See Virtek*, 97 F.4th at 887 (“mere fact that these possible arrangements existed in the [same] prior art does not provide a reason that a skilled artisan would have substituted” one embodiment for another.).

By way of example, the following sections summarize the various embodiments of Best-2008 and how the Petition relies on multiple embodiments of each without any evidence that the embodiments are interchangeable. By being vague, as opposed to particularized as required by the statute, the Petition is tantamount to preliminary invalidity contentions in district court litigation, which is improper. As the Federal Circuit noted in *Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1002 (Fed. Cir. 2023), “[u]nlike district court litigation – where parties have greater freedom to revise and develop their arguments over time and in response to newly discovered material – the expedited nature of IPRs bring with it an obligation for petitioners to make their case in their petition to institute.” This is another reason that the Petition should be denied.

1. *Summary of Best-2008’s and Osada’s Various Embodiments*

As previously explained in Section III.D.1, Best-2008 discloses at least seven different embodiments, many of which describe mutually exclusive features. For example, the second embodiment of Best-2008 describe a configuration where each

server is disposed in a bin “to minimize mixing of the incoming liquid coolant with outgoing liquid coolant... to reduce the flow of coolant around the installed server.” Ex-1004, ¶[0090]. And in the sixth embodiment, Best-2008 describes “flow augmentation devices” that “increase the mixing of the dielectric liquid coolant within the tank.” Ex-1004, ¶[0107].

For Osada, the Petition relies on at least four different embodiments including a “conventional weir”, “weir-notch-arrangement”, the weir disposed along the long wall and short wall, and the weir disposed on only the long wall. Pet. at 46. Furthermore, the Petition failed to provide any analysis for why one embodiment may be used over another.

As shown below, the Petition relies on several—more than half—of these embodiments under Ground 1 for claim 1 alone.

2. *The Petition Relies On at Least Three Different Embodiments of Best-2008 for Element [1.1]*

For element 1.1, the Petition lists three alternative embodiments without providing any analysis or justification for how or why a POSITA would substitute or combine one element with another. However, it is not enough for the Petition to identify that the element could be combined without a reasoned explanation that a POSITA would have been motivated to combine the elements. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“obviousness concerns whether a

skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.”).

For example, the Petition identifies the first embodiment of Best-2008 (Best-2008-1) by reproducing Figures 4 and 6 and block quotes from the specification that allegedly disclose Element [1.1]. Ex-1004, ¶[0083]; Pet. at 41-43. However, this analysis never actually explains how Best-2008 reads on the features of Element [1.1]. *Id.* Instead, the Petition relies on conclusory statements such as “[f]or at least these reasons, Best-2008 discloses this limitation.” Pet. at 44. Alternatively, the Petition relies on the second discrete embodiment of Best-2008 (Best-2008-2) for “a plurality of bins,” which Best-2008 expressly describes as an “alternative rack design” and “not shown in the drawings.” Ex-1004, ¶[0090]; Pet. at 44-45. Finally, the Petition identifies the sixth alternative embodiment Best-2008 (Best-2008-6), based on Figure 11, which Best-2008 describes as a side-by-side arrangement of servers. Ex-1004, ¶[0097]; Pet. at 44. It is unclear if these embodiments are combined or standalone to teach the features of element [1.1].

In other words, the Petition merely lists alternative embodiments in an attempt to preserve as many arguments as possible but never establish that a POSITA would be motivated to combine or substitute elements for another. The Petition has not defined their theory of obviousness with particularity and has not articulated a motivation to substitute or combine various embodiments of Best-2008.

3. *The Petition Relies On at Least Four Different Embodiments of Osada for Element [1.2]*

For element [1.2], the Petition relies on both the “conventional weir” and “weir-notch-arrangement” regardless of Osada’s criticisms of the “conventional weir.” Pet. at 46. The Petition further argues that, while Osada shows both the “conventional weir” and “weir-notch-arrangement” disposed along the long wall and the short wall, the ’457 Patent allows for a configuration along both walls. Pet. at 46. The Petition contends that in any event, it would be obvious to configure the weir along only the long wall. Pet. at 48. The Petition provides no motivation or explanation as to why it would have been obvious other than “Osada also teaches that a single overflow box may be used.” *Id.*

Once again, the Petition merely lists alternative embodiments without any analysis, justification, or motivation for how or why a POSITA would substitute or combine one element for another. It is not enough for the Petition to identify that the element could be combined, they must provide a reasoned explanation that a POSITA would be motivated to combine the elements. *Belden*, 805 F.3d at 1073 (“obviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.”). Merely listing alternative combinations and embodiment does not articulate a reasoned explanation that a combination would

have been obvious. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022); *Nuvasive*, 842 F.3d at 1383 (conclusory statements alone are insufficient to articulate a motivation to combine, but rather, must be supported by a “reasoned explanation”).

4. The Petition Relies On at Least Two Different Embodiments of Best-2008 for Element [1.4]

The Petition argues that the first embodiment of Best-2008, based on Figure 6, allegedly teaches element [1.4], including the plenum. Ex-1004, ¶[0083], Figure 6; Pet. at 53. As previously discussed in Section IV.A.1, the Petition fails to identify any structural elements or explain how an open space at the bottom of the tank can dispense the liquid, as is required by element [1.4]. Nonetheless, the Petition concludes that Figure 6 alone shows all features of element [1.4]. Pet. at 53. Inexplicably, the Petition further describes the sixth embodiment (Best-2008-6), based on Figure 11, but does not provide any connection to the first embodiment. The Petition merely block quotes a paragraph of Best-2008 that describes multiple fans, but does not state that this element, alone or in combination with the first embodiment, teaches or discloses element [1.4]. Therefore, it is unclear if these embodiments are intended to stand alone or be used as a combination teach element [1.4].

Furthermore, the Petition fails to explain how the features from the second

embodiment (Best-2008-2) that is “configured to minimize mixing of the incoming liquid coolant with outgoing liquid coolant” can simultaneously operate with features from the sixth embodiment (Best-2008-6) that “increase the mixing of the dielectric liquid coolant within the tank.”

Thus, the Petition fails to articulate their theories with particularity and fails to meet the requirements of 35 U.S.C. § 312(a)(3). The Board should, therefore, exercise their discretion under 314(a) and deny institution.

V. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION UNDER 35 U.S.C. § 314(a)

The Board should discretionarily deny institution under 35 U.S.C. § 314(a) because institution would be an inefficient use of Board resources in light of the advanced state of the parallel district court litigation in which Petitioner has raised the same invalidity challenges. A balancing of the *Fintiv* factors, as shown below, militates in favor of institution denial here. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, at 5 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”). In that connection, Petitioner’s *Sotera*-type⁴ stipulation (Ex-1016) is not dispositive on this issue in light of the Office’s rescission of its June 2022 memorandum, “Interim

⁴ *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020).

Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation.” See “USPTO rescinds memorandum addressing discretionary denial procedures,” Feb. 25, 2025 (available at www.uspto.gov/about-us/news-updates/uspto-rescinds-memorandum-addressing-discretionary-denial-procedures).

A. Fintiv Factor One

The first *Fintiv* factor is whether the court in the parallel litigation granted a stay or evidence exists that one may be granted if a proceeding is instituted. *Fintiv* at 6. Here, the district court denied Petitioner’s motion to stay. Ex-2003, 4. It is also unlikely that the district court will enter a stay if the IPR were instituted as statistically, Judge Albright, the presiding judge in the parallel district court litigation, rarely stays litigation pending an IPR. Ex-2020 (Docket Navigator litigation research service showing that Judge Albright has only stayed seven of thirty, or 23%, of cases pending an IPR).⁵ Thus, this factor weighs in favor of the

⁵ Each of the seven cases Judge Albright did stay a pending IPR involved significant distinguishing facts. See *Auto Telematics Ltd. v. United States Auto. Ass’n*, No. 22-cv-474, ECF 138 (W.D. Tex. Nov. 7, 2024) (no prejudice, where requested stay limited to 14 days, and case in early stages); *Peter Pedersen v. Oracle Corp.*, No. 22-cv-410, ECF 42 (W.D. Tex. Aug. 24, 2023) (individual, i.e., nonpracticing entity,

Board exercising its discretion to deny institution.

B. Fintiv Factor Two

The second *Fintiv* factor is the proximity of the trial date in the parallel litigation to the Board’s projected statutory deadline for a final written decision.

waited over 16 years to file suit, and case in the early states); *Lone Star SCM Systems Ltd. v. Zebra Techs. Corp.*, No. 6:21-cv-842, 2023 WL 4923962 (W.D. Tex. July 31, 2023) (pre-Markman stage case, with IPR decision expected before trial); *Sonrai Memory Ltd. v. Western Digital Techs., Inc.*, No. 21-cv-1168, ECF 104 (W.D. Tex. Aug. 4, 2022) (suit filed by prolific non-practicing entity, where IPR decision expected before trial); *Xylon Licensing LLC v. Lone Star National Bancshares-Texas, Inc.*, No. 21-cv-0302, ECF 28 (W.D. Tex. June 8, 2022) (suit filed by prolific non-practicing entity, where case had not proceeded beyond the pleadings stage and IPR decision expected before claim construction hearing); *Kirsch Research and Development, LLC v. IKO Indus. Ltd.*, No. 20-cv-317, 2021 WL 4555608, ECF 81 (W.D. Tex. Oct. 5, 2021) (“Kirsch I”) (suit filed by prolific non-practicing entity, where IPR decision expected before trial, and PTAB instituted proceedings on four separate grounds, stemming from two separate petitions); *Kirsch Research And Development, LLC v. Tarco Specialty Products, Inc.*, No. 20-cv-318, 2021 WL 4555802, ECF 62 (W.D. Tex. Oct. 4, 2021) (same, citing Kirsch I).

Fintiv at 6. The trial in the parallel litigation is set to commence February 2, 2026. Ex-1014, 5. On the other hand, the projected statutory deadline for the Final Written Decision date is June 19, 2026.⁶ Thus, the trial in the parallel district court litigation is set to commence more than four months before the projected statutory deadline for the final written decision. Such an extensive time gap between the trial and the projected final written decision militates in favor of discretionary denial. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15, at 13 (PTAB May 13, 2020) (informative) (“Because the currently scheduled District Court trial is scheduled to begin two months before our deadline to reach a final decision, this factor weighs somewhat in favor of discretionary denial in this case.”)

Petitioner asserts that the scheduled trial is “likely to be postponed” (Pet. at 11) because, according to Ex-1015, the median date to trial from case filing in the Western District of Texas, where the parallel litigation is pending, is 853 days. Petitioner’s evidence (Ex-1015), however, is largely irrelevant because it (i) inexplicably covers a fifteen year period, dating back to 2009, rather than

⁶ The Board’s institution decision is due June 19, 2025, three months after this Patent Owner Preliminary Response. 35 U.S.C. § 314(b). The statutory deadline for the final written decision, if the IPR is instituted, is June 19, 2026, one year from the institution decision. 35 U.S.C. § 316(a)(11).

focusing on more recent statistics, and (ii) is not exclusive to Judge Albright, but instead covers all judges in the district. To the contrary, statistics for Judge Albright from January 1, 2021 to present show a median time to trial of 25 months (Ex-2001), which still would put the trial in April 2026 (*see* Ex-2005 (showing complaint filed in March 2024)), which is still two months prior to the statutory deadline for the final written decision. *See also* Ex-2002 (showing median of 783 days to trial for patent cases before Judge Albright from Jan. 1, 2020 to March 17, 2024).

C. Fintiv Factor Three

The third *Fintiv* factor is the investment in the parallel litigation by the court and parties. *Fintiv* at 6. Here, because the parallel district court litigation is in advanced stage, both the court and the parties have already invested heavily in the parallel litigation. For example, the parties have long since exchanged invalidity and infringement contentions. Ex-1014, 1-2 (infringement contentions served Aug. 9, 2024; invalidity contentions served Oct. 7, 2024); Ex-2006.

Perhaps more importantly, the claim construction process is now complete. This involved the parties filing multiple claim construction briefs (including supplemental briefing), the court issuing its preliminary claim constructions on February 20, 2025, and the court holding its claim construction hearing on February 21, 2025 (during which the court confirmed its claim construction rulings). Ex-2005, Dkt. Nos. 29, 35, 38, 48, 54, 56; Ex-2003.

The parties also briefed, and the court decided, Petitioner's motion to stay the litigation pending this IPR. Ex-2005, Dkt. Nos. 33, 40, 47. Further still, on February 21, 2025, the court heard arguments from counsel and decided its first discovery dispute. Ex-2004 at 33-44.

Further still, fact discovery is now well underway, having commenced on February 4, 2025 (one business day after claim construction hearing as originally set in the scheduling order). Ex-1014, 3. Patent Owner has now served its first set of requests for production (Ex-2007), as well as four separate sets of interrogatories. Ex-2008, Ex-2009, Ex-2010, Ex-2011. Similarly, Petitioner has now also served its own first sets of requests for production and interrogatories. Ex-2012, Ex-2013. By the time the Board decides institution, both sides will have responded to the other side's written discovery and begun their respective production of documents. Additionally, Patent Owner has now served at least two deposition notices (Ex-2014, Ex-2015) and caused to be issued at least four third-party subpoenas (Ex-2016, Ex-2017, Ex-2018, Ex-2019). It is likely that several depositions will have already taken place by the Board's deadline on institution.

Still further, by the Board's deadline for institution (June 19, 2025), the parties will likely have served final infringement and invalidity contentions. Ex-1014, 3 (due 8 weeks after claim construction hearing).

Thus, the court and the parties have already invested substantially in the

proceeding, and their investment will continue unabated through June 2025. *Fintiv* factor three, therefore, weighs in favor of discretionary denial of institution.

D. Fintiv Factor Four

The fourth *Fintiv* factor is the overlap between issues raised in the petition and in the parallel proceeding. *Fintiv* at 6. In the parallel litigation, Petitioner has raised the same invalidity grounds as presented in the Petition. Ex-2006, 7, 45-99. Petitioner, however, has filed a *Sotera*-type stipulation in this matter, stating that it “agrees not to pursue any grounds raised in the petition, or any grounds [Petitioner] could have reasonably raised in the petition, in [the parallel] district court litigation” Ex-1016. The stipulation does not compel institution, however, especially in light of the Office’s recent rescission of its June 2022 memorandum regarding *Sotera*-type stipulations.⁷ See also *Tianma Micro-electronics Co., Ltd. v. Japan Display Inc*, IPR2021-01057, Paper 15 at 8 (PTAB Jan. 6, 2022) (“*Sotera*-type stipulations are not always dispositive of institution”). Further, Petitioner’s stipulation is hollow because it still green-lights duplicative work by the Board and the district court if the IPR is instituted. This is because Petitioner relies on product

⁷ “USPTO rescinds memorandum addressing discretionary denials,” Feb. 28. 2025, www.uspto.gov/about-us/news-updates/uspto-rescinds-memorandum-addressing-discretionary-denial-procedures.

prior art in the parallel litigation that is substantially duplicative of Best-2012. Specifically, Petitioner’s Answer in the parallel litigation avers that Petitioner “authored and published articles, website materials, and filed patent applications disclosing the subject matter claimed by the ’457 Patent” Ex-1012, 11, § 85. The Answer lists, among other things, Best-2012, U.S. Patent Publication 2014/0211412 (Ex-1006), as one of the patent applications that it published. Ex-1012, 11-12, § 85. The Answer also lists and includes exhibits about Petitioner’s “CarnoJet” cooling system. Ex-1012, 12, § 85 (citing Exhibits A-D of the Answer). Consistent with this allegation, Petitioner also included its CarnoJet system as product prior art in Petitioner’s invalidity contentions for the ’457 Patent. Ex-2006, 12 and 105-130. Thus, by Petitioner’s own admission, Best-2012 and its CarnoJet system are materials from Petitioner that both describe Petitioner’s prior art cooling systems. Petitioner is relying on both in the parallel litigation for invalidity, yet its stipulation would not preclude Petitioner from relying on the CarnoJet product prior art in the litigation even if the IPR is instituted. Consequently, Petitioner’s stipulation preserves its ability to assert Best-2012 in this forum as a second bite at the apple following its first bite with the CarnoJet system in the parallel litigation. Therefore, *Fintiv* factor four favors discretionary denial.

E. Fintiv Factor Five

The fifth *Fintiv* factor is whether the petitioner and the defendant in the parallel litigation are the same party. *Fintiv* at 6. They are. Ex-1012. Therefore, this factor weighs in favor of discretionary denial.

F. Fintiv Factor Six

The final *Fintiv* factor considers other circumstances that impact the Board's exercise of discretion, including the merits of the petition. *Fintiv* at 6. As Patent Owner has shown above, the Petition is deficient and non-meritorious for numerous reasons. Therefore, factor six, in culmination with factors one through five, weighs in favor of denying institution.

For these reasons, the Board should exercise its discretion to deny institution of the Petition based on its § 314(a) discretion.

VI. CONCLUSION

For the reasons set forth above, the IPR should not be instituted.

Dated: March 19, 2025

Respectfully submitted,

By: /Brian P. Bozzo/
Mark G. Knedeisen (Reg. No. 42,747)
mark.knadeisen@klgates.com
Brian P. Bozzo (Reg. No. 77,190)
brian.bozzo@klgates.com
Anthony T. Rotolo (Reg. No. 82,691)
anthony.rotolo@klgates.com
K&L Gates LLP
210 Sixth Avenue
Pittsburgh, Pennsylvania 15222
Tel.: (412) 355-6500

Counsel for Patent Owner

CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Under the provisions of 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Patent Owner's Preliminary Response totals **12,997** words, which is less than the 14,000 words allowed under 37 C.F.R. § 42.24(b)(1).

Dated: March 19, 2025

/Brian P. Bozzo/
Brian P. Bozzo (Reg. No. 77,190)
K&L Gates Center, 210 Sixth Avenue
Pittsburgh, Pennsylvania 15222
Tel.: (412) 355-6500
brian.bozzo@klgates.com

Counsel for Patent Owner

CERTIFICATION OF SERVICE UNDER 37 C.F.R. § 42.6(e)(4)

I hereby certify that on March 19, 2025, I caused a true and correct copy of the foregoing to be served on the following counsel for Petitioner by electronic mail to the following email addresses:

Heath J. Briggs
Stephen M. Ullmer
GREENBERG TRAURIG, LLP
1144 15th St., Suite 3300
Denver, CO 80202
BriggsH@gtlaw.com
UllmerS@gtlaw.com
GRC-IPRs@gtlaw.com

Ashley Moore
GREENBERG TRAURIG, LLP
2200 Ross Avenue, Suite 5200
Dallas, TX 75201
Ashley.Moore@gtlaw.com

Julie P. Bookbinder
GREENBERG TRAURIG, LLP
One Vanderbilt Ave.
New York, NY 10017
bookbinderj@gtlaw.com

By: /Brian P. Bozzo/
Brian P. Bozzo (Reg. No. 77,190)
K&L Gates Center, 210 Sixth Avenue
Pittsburgh, Pennsylvania 15222
Tel.: (412) 355-6500
brian.bozzo@klgates.com

Counsel for Patent Owner