

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

IOXUS, INC.,
Petitioner,

v.

CAP-XX, LTD.,
Patent Owner.

IPR2019-01179
Patent 7,382,600 B2

Before KRISTINA M. KALAN, JENNIFER MEYER CHAGNON, *and*
AVELYN M. ROSS, *Administrative Patent Judges*.

ROSS, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a)

I. INTRODUCTION

Ioxus, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1, 2, and 6–13 of U.S. Patent No. 7,382,600 B2 (Ex. 1001, “the ’600 patent”). CAP-XX, Ltd. (“Patent Owner”) filed a Preliminary Response to the Petition (Paper 6, “Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless the Director determines . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least [one] of the claims challenged in the petition.”

For the reasons set forth below, upon considering the Petition, Preliminary Response, and evidence of record, we determine the information presented in the Petition fails to establish a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims. Accordingly, we deny the Petition, and do not institute an *inter partes* review.

A. *Related Proceedings*

Petitioner identifies as a related proceeding the district court litigation styled *CAP-XX, Ltd. v. Ioxus, Inc.*, 1:18-cv-00849-CFC-SRF (D. Del.). Pet. 5; *see also* Patent Owner’s Mandatory Notices, Paper 4, 2 (same).

Petitioner also identifies its copending petition seeking to institute *inter partes* review of U.S. Patent No. 6,920,034 B2 (“the ’034 patent”) as a related proceeding, and states that the claims of the ’034 patent “are similar to the claims challenged here in this petition.” Pet. 5; IPR2019-01178, Paper 1; *see also* Patent Owner’s Mandatory Notices, Paper 4, 2 (same).

“The ’034 patent is asserted against other defendants in pending litigation *CAP-XX, Ltd. v. Cornell-Dubilier Electronics, Inc.*, 1:18-cv-00353-CFC-SRF (D. Del.).” Pet. 5; see Patent Owner’s Mandatory Notices, Paper 4, 2.

B. The ’600 Patent

The ’600 patent, titled “Charge Storage Device,” issued on June 3, 2008.¹ Ex. 1001, codes (45), (54) The ’600 patent is directed to charge storage devices and, in particular to, “electrochemical charge storage devices such as supercapacitors.” *Id.* at 1:16–20.

According to the ’600 patent, electrochemical double layer capacitors (“EDLC”) “fall generally in one of two groups, the first group being concerned with high power applications and the second with low power applications” and where “[t]he first and second groups are broadly defined by the type of electrolyte used, those being aqueous and non-aqueous respectively.” *Id.* at 1:52–58. Capacitors utilizing aqueous electrolytes offer lower resistance “which makes it better suited to high power, and hence high current applications.” *Id.* at 1:59–62. The disadvantages associated with aqueous electrolytes is that the voltage applied across the cell is limited. *Id.* at 1:62–65. The non-aqueous EDLCs conversely offer greater voltage but have higher internal resistance and are unsuitable for high power applications. *Id.* at 1:66–2:4. The ’600 patent purports to overcome the disadvantages of prior art systems and allows for the “various parameters of the supercapacitor [to be] easily tailored to meet the specific requirements of

¹ The ’600 patent claims priority, through a series of other applications, to U.S. provisional application No. 60/110,930, which was filed on December 5, 1998. Ex. 1001, codes (60), (63). The specific priority date of the challenged claims currently is not at issue in this proceeding, and we need not make any determination in this regard.

any particular application . . . [t]hat is, the invention is particularly suited to scaling.” *Id.* at 26:37–42, 30:9–41. Figures 1 and 2, reproduced below illustrate certain claimed features of the charge storage device according to the invention.

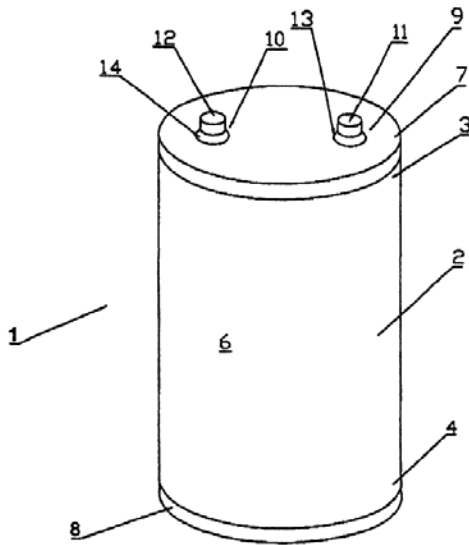


Figure 1

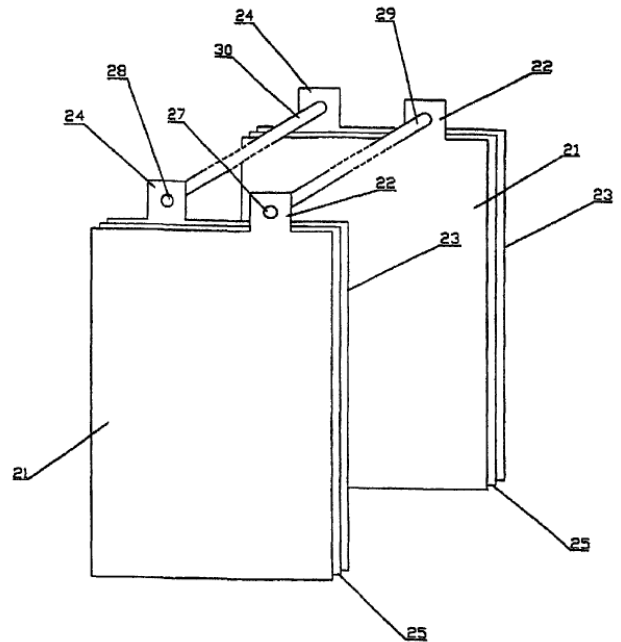


Figure 2

Figure 1 “is a perspective view of a charge storage device according to the invention in the form of a supercapacitor” and Figure 2 “is a schematic view of an electrode configuration according to a first embodiment of the invention. Ex. 1001, 14:64–67. The ’600 patent explains that supercapacitor 1 includes cylindrical housing 2 comprised of cylindrical sidewall 6, top 7, and base 8. *Id.* at 17:3–9. “All adjacent edges of the base, sidewall and top are sealingly engaged.” *Id.* at 17:9–10. Contained within the housing are first electrode 21 and second electrode 23, separated by porous separator sheet 25 and an electrolyte. *Id.* at 17:30–31; Fig. 2. “Tabs 22 are electrically connected to terminal 11 and tabs 24 are

electrically connected to terminal 12 to allow external electrical connection to the respective electrodes.” *Id.* at 17:31–34; Figs. 1 and 2.

The ’600 patent further describes gravimetric and volumetric Figures of Merit (FOM), which “provide a different characterisation of storage devices which is more in keeping with the frequency dependent nature of pulse power and other such applications to which the devices are being applied.” *Id.* at 16:36–39. The Miller publication,² which is incorporated by reference into the ’600 patent (*id.* at 16:24–31), notes that “[p]rior characterization standards have been limited in scope and are inadequate to properly characterize the pulse power performance of an [electrochemical capacitor].” Ex. 1008, 4.³ According to Miller, the FOM can be used to “compar[e] the pulse power performance of different technologies and products” and electrochemical capacitors “with the same FOM should be equally suited to meet the electrical performance requirements in a given pulsed power application.” *Id.* at 5. The ’600 patent and Miller describe the calculation of these FOMs in detail, but for purposes of this Decision, it is sufficient to note that the gravimetric and volumetric FOMs of a charge storage device are calculated based on various characteristics of the charge storage device. These characteristics include, for example, “the frequency f_0 at which the impedance of the storage device reaches a -45° phase angle,” “a characteristic response time T_0 for the storage device,” “value of the

² John R. Miller, Pulse Power Performance of Electrochemical Capacitors: Technical Status of Present Commercial Devices, proceedings from the 8th International Seminar of Double Layer Capacitors and Similar Energy Storage Devices, December 7–9, 1998 (Ex. 1008, “Miller”).

³ Citations to Miller are to the original pagination thereof.

imaginary part of the impedance Z " at f_0 ," "the rated voltage of the device" V , and the mass or volume of the device, respectively. See Ex. 1001, 16:5–36; Ex. 1008, 4–6.⁴

C. Illustrative Claim

Petitioner challenges claims 1, 2, and 6–13 of the '600 patent. Independent claim 1 is the only independent claim challenged and is reproduced below:

1. A charge storage device comprising:
 - a first electrode;
 - a second electrode being opposed to and spaced apart from the first electrode;
 - a porous separator disposed between the electrodes;
 - a sealed package for containing the electrodes, the separator and an electrolyte in which the electrodes are immersed; and
 - a first terminal and a second terminal being electrically connected to the first electrode and the second electrode respectively and both extending from the package to allow external electrical connection to the respective electrodes, wherein the gravimetric FOM of the device is greater than about 2.1 Watts/gram.

Ex. 1001, 31:1–15.

D. The Asserted Unpatentability Challenges

Petitioner contends claims 1, 2, and 6–13 of the '600 patent are unpatentable based on the following ground:

⁴ When citing to Exhibit 1008, we use the original page numbers of Miller and not those added by Petitioner.

Claims Challenged	Statutory Basis	References
1, 2, 6–13	§ 103	Yoshida ⁵ in view of Applicant Admitted Prior Art ⁶

Petitioner also relies on declaration testimony of Marc Juzkow.
(Ex. 1002, “the Juzkow Declaration”)

II. ANALYSIS

A. Legal Standards

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. See *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

⁵ Yoshida et al., US 5,150,283, issued September 22, 1992 (Ex. 1006, “Yoshida”).

⁶ Petitioner identifies Applicant Admitted Prior Art (“AAPA”) as data identified in Figure 17 as “prior art” and “any corresponding text and/or figures describing the details of that data from Figure 17.” Pet. 12–13. Petitioner further contends that “the Miller paper can be used here as part of the AAPA or at least evidence of the AAPA.” *Id.* at 27 (referring to Miller). Patent Owner disputes that the PowerStor device, described in Miller, is prior art. Prelim. Resp. 8–10. Because we determine Petitioner has not shown a reasonable likelihood of success on its asserted grounds based on the alleged AAPA, we need not make a determination as to the availability of this disclosure as a basis for *inter partes* review.

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness.⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

To show obviousness, it is not enough to merely show that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). “This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR*, 550 U.S. at 418–419.

On the other hand, an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). However, Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d

⁷ The parties have not asserted or otherwise directed our attention to any objective evidence of non-obviousness.

1364, 1380 (Fed. Cir. 2016). Instead, Petitioner must articulate a reason why a person of ordinary skill in the art would have combined or modified the prior art references. *In re NuVasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016); *see also Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1366 (Fed. Cir. 2017) (“In determining whether there would have been a motivation to combine prior art references to arrive at the claimed invention, it is insufficient to simply conclude the combination would have been obvious without identifying any reason why a person of skill in the art would have made the combination.”); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“[O]bviousness 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.”) (citing *InTouch Techs., Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1352 (Fed. Cir. 2014)).

We analyze the asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden to establish a reasonable likelihood of success at trial.

B. Level of Ordinary Skill in the Art

Petitioner contends that a person having ordinary skill in the art would have had “a bachelor’s degree or the equivalent in electrical engineering or chemistry (or equivalent degree or experience) and at least two years of additional experience in the area of supercapacitors, or equivalent work experience.” Pet. 11. Patent Owner does not contest Petitioner’s definition of a person of ordinary skill in the art. *See generally* Prelim. Resp. For purposes of this Decision, we adopt and apply Petitioner’s proposed description of the person of ordinary skill in the art.

C. Claim Construction

In an *inter partes* review filed after November 13, 2018, we construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (as amended Oct. 11, 2018); *see also* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)). Under *Phillips*, claim terms are afforded “their ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312. “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. “Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*

Petitioner “does not at this time contend that any terms from the [’600] patent require express construction to apply the prior art to the claims” and rather, that all claims should be accorded their plain and ordinary meaning. Pet. 11. Patent Owner, however, argues that the term “figure of merit” or “FOM” was not known in the art at the time of filing and instead only became known through Miller (Ex. 1008). Prelim. Resp. 6. Patent Owner contends that “gravimetric figure of merit” should be construed in accordance with the following:

The gravimetric figure of merit for a storage device is determined by identifying the frequency f_0 at which the impedance of that device reaches a -45° phase angle. The reciprocal of f_0 then

provides a characteristic response time T_0 for the storage device. The value of the imaginary part of the impedance Z'' at f_0 is used to calculate the energy E_0 as follows: $E_0 = \frac{1}{2}CV^2$, where $C = -1/(2\pi f_0 Z'')$ and V is the rated voltage of the device. The gravimetric figure of merit is then calculated as follows: gravimetric FOM = $E_0/(mT_0)$, where m is the mass of the storage device.

Id. at 7.

After reviewing the parties' arguments and evidence, we determine that we do not need to expressly construe any terms for purposes of this Decision. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”)).

D. Claims 1, 2, and 6–13 – Alleged Obviousness Over Yoshida and AAPA

Petitioner contends claims 1, 2, and 6–13 are unpatentable as obvious in view of Yoshida and AAPA. Pet. 12. Petitioner directs us to portions of Yoshida and AAPA that purportedly disclose all the limitations in the challenged claims. Petitioner also relies on the Juzkow Declaration to support its arguments.

1. Prior Art

a. Yoshida (Ex. 1006)

Yoshida describes electric double layer capacitors (“ELDC”) “that use activated carbon in their polarizable electrodes.” Ex. 1006, 1:8–12. Yoshida explains an EDLC “is a capacitor of large capacitance that uses activated carbon in its polarized electrodes and utilizes a phenomenon that electric charge is stored in an electric double layer formed between the activated

carbon and an electrolyte.” *Id.* at 1:13–17. According to Yoshida, its advantages of “withstand[ing] high voltage while holding low internal resistance” are achieved through the provision of

an electric double layer capacitor which comprises a pair of polarizable electrodes, composed of electrically-conductive substrates coated with layers of a mixture of activated carbon with a water-soluble material-based binding agent, optionally including an agent for improving the electric conductivity of the layer, arranged so that the one faces with the other by being interposed with a separator, and an electrolyte.

Id. at 2:13–24. An exemplary capacitor of Yoshida is depicted below in Figure 1.

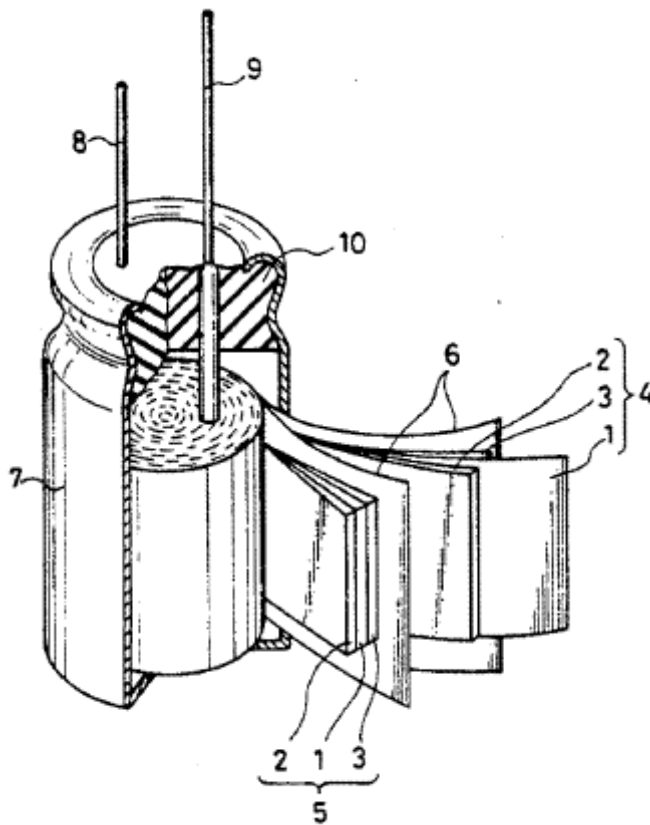


Figure 1 is a “perspective view, partly cut-out, of an example of a capacitor built in accordance with the present invention.” *Id.* at 3:46–48. Figure 1

depicts polarizable electrodes 4 and 5 and separated by separator 6. *Id.* at 4:15–22, 5:1–13. The coiled or wound electrode body 20 (shown in Figure 2) is impregnated with an electrolyte and housed in case 7 with lead wires 8 and 9 protruding from the casing. *Id.* In particular, Yoshida credits the ability of its device to balance high voltage with low internal resistance to the “activated carbon electrode structure including a composition of a low electric resistance which gives, a property of excellent electrically-contacting with the electrically-conductive substrates as well as property of good film-forming and self-supporting to the activated carbon layer.” *Id.* at 3:25–30.

b. Alleged AAPA

Petitioner identifies the AAPA as the data found in Figure 17 (reproduced below) of the '600 patent that is labeled as “prior art,” and more particularly, “Prior Art 1.” Pet. 12–13.

	Capacitance F	Resistance milliohms	Voltage V	Mass g	Volume cc	Size mm x mm x mm	Response Time sec	FOM mass kW/kg	FOM Vol W/cc	Time constant sec	Pgrav max kW/kg	Pvol max W/cc	Thickness um
Prior Art 1			2.6	4.4	3.01	11.2 x 30.5	6.30E-01	2.06	3.02				
Prior Art 2			2.3	34.0	30.56	33.6 x 17.1 x 63	6.30E+00	0.98	1.10				
Prior Art 3			15.0	4800.0	1440.00	17 x 17 x 5	8.70E-02	0.98	3.20				
1 HF-7	0.00038	110.43	2.5	7.3	3.52	110 x 100 x 0.32	1.15E-04	0.98	2.00	3.98E-05	1.93	4.02	12
2 HF-9	0.00074	86.98	2.5	7.5	3.83	110 x 100 x 0.32	2.50E-04	0.99	2.04	6.44E-05	2.39	4.95	24
3 HF-3	0.00450	14.50	2.5	5.8	4.18	110 x 100 x 0.38	3.40E-04	5.91	8.20	6.53E-05	18.57	25.78	12
4 HF-11	0.00112	76.03	2.5	7.9	3.85	110 x 100 x 0.32	3.70E-04	0.99	2.03	8.40E-05	2.64	5.41	38
5 HF-5	0.00478	22.88	2.5	8.8	3.52	110 x 100 x 0.32	5.28E-04	3.44	6.88	1.08E-04	10.10	19.57	12
6 HF-13	0.00548	27.25	2.5	7.0	3.52	110 x 100 x 0.32	5.71E-04	3.33	6.88	1.49E-04	8.14	16.29	12
7 HF-16	0.00051	358.50	2.5	7.7	3.83	110 x 100 x 0.32	8.00E-04	0.19	0.40	1.83E-04	0.57	1.20	12
8 HF-17	0.00130	180.80	2.5	7.8	3.85	110 x 100 x 0.32	1.25E-03	0.34	0.88	2.48E-04	1.05	2.13	38
9 HF-18	0.03520	34.10	2.5	7.2	3.41	110 x 100 x 0.32	6.67E-03	1.97	4.13	1.20E-03	6.40	13.44	12
10 HF-2	0.03200	70.00	2.5	5.7	3.98	110 x 100 x 0.38	1.40E-02	1.03	1.48	2.24E-03	3.93	5.64	12
11 cap-XX	0.33000	17.80	2.5	12.0	9.01	85 x 53 x 2	3.70E-02	1.27	1.69	6.81E-03	7.40	9.85	12
12 cap-XXHiPo	0.54800	18.10	5.0	12.2	9.80	40 x 35 x 7	7.63E-02	5.83	7.28	9.92E-03	28.30	35.24	8
13 cap-XX,10	10.40000	4.50	2.5	17.0	12.50	50 x 50 x 5	1.50E-01	3.60	4.90	4.68E-02	20.42	27.78	12
14 cap-XX,30	29.70000	5.00	2.5	25.0	25.00	50 x 50 x 10	4.80E-01	2.71	2.71	1.49E-01	12.50	12.50	38
15 cap-XX,250	272.50000	1.00	2.5	295.0	355.30	190 x 110 x 18	1.00E+00	2.20	1.83	2.73E-01	5.30	4.40	38
16 DC-3	17.34000	11.30	2.5	7.0	15.13	91 x 95 x 1.75	1.92E+00	3.28	1.51	1.98E-01	19.73	9.14 80/100	
17 Wed	14.68000	14.00	2.5	8.2	15.13	91 x 95 x 1.75	1.92E+00	2.45	1.33	2.06E-01	13.61	7.38 30/70	

FIGURE 17

Figure 17 “is a table illustrating parameters of supercapacitors of the present invention as well as *some prior art supercapacitors*.” Ex. 1001, 15:32–24 (emphasis added). According to Petitioner, the data reported in “Prior Art 1” was derived from the PowerStor device discussed in Miller and incorporated by reference into the ’600 patent. Pet. 13 (citing Ex. 1001, 16:24–31), 26 (same).

2. Claim 1

Claim 1 requires a charge storage device comprising, *inter alia*, a first electrode and a second electrode positioned opposite to and spaced apart from the first electrode, a porous separator, a sealed package containing an

electrolyte, and first and second terminals connected to the first and second electrodes. Ex. 1001, 31:1–15.

In support of its obviousness argument, Petitioner relies on an exemplary capacitor of Yoshida, depicted in Figure 1, to suggest the structural elements of claim 1. Pet. 16. According to Petitioner, Yoshida describes a well-known EDLC configuration, that is, a charge storage device having first and second electrodes, as claimed, which correspond to polarizable electrodes 4 and 5 of Yoshida. *Id.* at 15–16 (explaining that “all EDLCs satisfy claims 1[a] through 1[c]” (relying on Ex. 1002 ¶¶ 57–63; Ex. 1009⁸, 8:15–29, Fig. 2; Ex. 1006, 2:14–24, 4:15–22, 5:1–13)). Petitioner asserts electrodes 4 and 5 are spaced apart from each other and are separated by separator 6. *Id.* at 16–17. Relying on the testimony of Dr. Juzkow, Petitioner explains that a person ordinarily skilled in the art would understand the Yoshida separator to be porous because “[a]ll EDLC separators were (and still are) porous” to allow for ions to flow between the electrodes and, thus, “required for an operable EDLC.” *Id.* at 17 (citing Ex. 1002 ¶ 63; Ex. 1016, 1:30–38).

Petitioner further contends that Yoshida teaches that the electrodes are immersed in an electrolyte and housed a sealed package. Pet. 17–18. Petitioner identifies aluminum case 7 of Yoshida as the sealed package which houses the wound body and is impregnated with an electrolyte. *Id.* (citing Ex. 1006, 3:46–49, 4:15–22, Fig. 1; Ex. 1002 ¶¶ 65–66; Ex. 1005, 2:62–3:32). Petitioner also directs our attention to Yoshida Figure 2 which

⁸ Morimoto et al., US 4,725,927, issued February 16, 1988 (“Morimoto”). Petitioner relies on Morimoto as evidence of well-known EDLC structures, which are also depicted in Yoshida. Pet. 15–16.

describes an electrode body that is “hermetically sealed” in packaging 21, 22, and 23. *Id.* at 19 (citing Ex. 1006, 5:1–13; Ex. 1002 ¶ 67). Petitioner further explains that “because Yoshida discloses that ‘the impregnated body [i]s housed in [the] aluminum case 7,’ it is clear that the case 7 contains the electrolyte.” *Id.* at 20 (citing Ex. 1006, 4:15–22). And, Petitioner argues that aluminum lead wires 8 and 9 correspond to the first and second terminals of claim 1. *Id.* (citing Ex. 1006, 4:19–22).

Lastly, Petitioner contends that “wherein the gravimetric FOM . . . is greater than about 2.1 Watts/gram,” is suggested by the AAPA, in which a prior art EDLC is taught to have an FOM of 2.06 kW/kg. *Id.* at 22. Petitioner, through the testimony of Dr. Juzkow, explains that, as used in the claims, “about” includes a variance of +/- 4%. *Id.* at 22 (citing Ex. 1002 ¶ 78). Therefore, according to Petitioner, the gravimetric FOM of 2.06 of the AAPA would read on “the ‘greater than about 2.1 Watts/gram’ language [which] includes a low-end range value of 2.02 W/g.” *Id.* at 28 (citing Ex. 1002 ¶ 86). Petitioner asserts that Patent Owner has not overcome the prima facie case of obviousness by showing unexpected results or criticality in the claimed range. *Id.* at 23–26.

Petitioner reasons that one skilled in the art—knowing that the PowerStor device and Yoshida “use[] the same cylinder-type supercapacitor”—would have combined the AAPA with Yoshida “so that Yoshida’s supercapacitor has a gravimetric FOM of 2.06.” Pet. 27–28 (citing Ex. 1002 ¶¶ 84–86). Petitioner further reasons that “a POSITA would have understood how to modify Yoshida’s device to obtain the 2.06 FOM_g value . . . because FOM_g is directly correlated with a device’s weight (mass)” and “modify[ing] the weight of any non-critical device components

to raise or lower the device’s overall weight,” would have been within the skill set of the ordinarily skilled artisan. *Id.* at 28–29 (citing Ex. 1002 ¶¶ 87–90).

Patent Owner presents four arguments: (1) that the PowerStor device is not a printed publication, (2) that the PowerStor device is not prior art, (3) that Petitioner fails to show that the combination of Yoshida with the PowerStor device would result in a gravimetric FOM limitation as claimed, and (4) Petitioner fails to identify a reason to combine Yoshida and the PowerStor device. Prelim. Resp. 8–16.

After considering the arguments and evidence presented by the parties, we are persuaded that Petitioner has failed to adequately demonstrate that the person of ordinary skill in the art would have had reason to combine Yoshida and AAPA to obtain the claimed gravimetric FOM. To show obviousness, it is not enough to merely show that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs.*, 655 F.3d at 1360. “This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR*, 550 U.S. at 418–419. For this reason, it is necessary to identify “why” a person of ordinary skill would have selected certain elements or structures from one reference and then combined those with teachings from another reference to arrive at the claimed invention. *See Metalcraft of Mayville*, 848 F.3d at 1366–1367.

Here, Patent Owner contends that Petitioner’s reason for combining Yoshida and the PowerStor device—that is, their common characteristics—does not provide an adequate motivation to combine. Prelim. Resp. 15.

Patent Owner further argues Petitioner's assertion that a person skilled in the art would have known to modify the physical dimensions of Yoshida to achieve the FOM limitations of claim 1 are without support. *Id.* In particular, Patent Owner argues that Petitioner's argument is supported only by the testimony of Dr. Juzkow, who "merely restates the argument made by Petitioner without pointing to any portion of Yoshida that would demonstrate that any device disclosed therein would satisfy the claimed FOM limitation if only its components were resized one way or another." *Id.* at 15–16 (citing Ex. 1002 ¶¶ 83–85).

On this record, we agree that Petitioner has not offered sufficient argument or supporting evidence that a person skilled in the art would have had reason to combine the teachings of Yoshida and AAPA. Petitioner first argues that the PowerStor device uses the same cylinder-type supercapacitor as that is described in Yoshida and "[i]t would have therefore been obvious to a POSITA to combine the 'Prior Art 1' AAPA with Yoshida so that Yoshida's supercapacitor has a gravimetric FOM of 2.06." Pet. 27–28; *see also* Ex. 1002 ("Because Yoshida has the same EDLC shape and wound-cell configuration as the PowerStor supercapacitor . . . it would have been obvious to a POSITA to combine data for that supercapacitor . . . with the general cylindrical EDLC disclosures in Yoshida to obtain the 2.06 FOM_g value."). Petitioner's reasoning, while relevant to showing that the references *could* have been combined, i.e., that they may be analogous, nevertheless falls short of establishing *what would have prompted* the ordinarily skilled artisan to make the proffered combination to yield a supercapacitor having gravimetric FOM of 2.1. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010); *see also In re Kahn*, 441 F.3d 977,

987–88 (Fed. Cir. 2006) (noting that the inquiry as to whether a person of ordinary skill in the art would have sought to combine the references “picks up where the analogous art test leaves off”).

Petitioner’s further argument that “the skilled artisan would have known to test Yoshida’s supercapacitor and then, based on the measured FOM_g for that device . . . would start modifying certain aspects of the device to reach the target FOM_g” fares no better. Pet. 28. As our reviewing court has explained, “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.” *Belden Inc.*, 805 F.3d at 1703 (citations omitted). That the person of ordinary skill in the art *would have known how* to achieve a gravimetric FOM of 2.1 does not explain *why* modifying Yoshida to achieve a gravimetric FOM of 2.1 is desirable in the first instance. That the prior art may show a supercapacitor having a gravimetric FOM as claimed, without more, fails to provide the requisite reason for a skilled artisan to modify Yoshida’s device to include the claimed gravimetric FOM. *KSR*, 550 U.S. at 418–419. Accordingly, without more, Petitioner’s assertions are “insufficient to show persuasively that a relevant artisan would have recognized some deficiency in one reference or had some other reason to motivate looking to the other and combining them.” *Microsoft Corp. v. Enfish, LLC*, 662 F. App’x 981, 990 (Fed. Cir. 2016) (unpublished); *see also id.* (“[T]he Board correctly concluded that Microsoft did not articulate a sufficient motivation to combine,” where “Microsoft gave no reason for the motivation of a person of ordinary skill to combine [two references] except that the references were directed to the same art or same techniques.”).

Because Petitioner fails to show why a person of ordinary skill in the art would have been motivated to combine the teachings of Yoshida and AAPA as proposed, Petitioner has not shown a reasonable likelihood that it would prevail with respect to claim 1.

3. Dependent Claims 2 and 6–13

Claims 2 and 6–13 each depend from claim 1, and, therefore, include all of the limitations of claim 1. *See generally* Ex. 1001. In view of our determination that Petitioner fails to establish that a person of ordinary skill in the art would have had reason to combine the teachings of Yoshida and AAPA to achieve the limitations of claim 1, we reach the same determination for claims 2 and 6–13.

III. CONCLUSION

For the foregoing reasons, Petitioner has not demonstrated a reasonable likelihood that at least one challenged claim of the '600 patent is unpatentable over the prior art of record. Accordingly, we decline to institute *inter partes* review.

IV. ORDER

It is hereby,

ORDERED that the Petition is denied, and no trial is instituted.

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