

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

CHARGE FUSION TECHNOLOGIES, LLC,
Patent Owner.

IPR2025-00153
Patent 11,631,987 B2

Before MITCHELL G. WEATHERLY, CARL M. DeFRANCO, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

WEATHERLY, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Tesla, Inc. (“Petitioner”) filed a petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 1–30 (the “challenged claims”) of U.S. Patent No. 11,631,987 B2 (Ex. 1001, “the ’987 patent”). 35 U.S.C. § 311. Charge Fusion Technologies, LLC (“Patent Owner”) filed a Preliminary

Response. Paper 6 (“Prelim. Resp.”). Institution of an *inter partes* review is authorized by statute when “the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Based on our review of the record,¹ we conclude that Petitioner is reasonably likely to prevail with respect to at least one of the challenged claims.

Petitioner cites the prior art below for its challenges to claims:

Exhibit	Reference	Effective Date
1004	U.S. Pub. App. 2009/0313034 A1 (“Ferro”)	Jun. 16, 2008
1005	European App. No. 1,920,968 A1 (“Oyobe”)	Aug. 30, 2006
1006	U.S. Pat. No. 7,124,691 B2 (“Donnelly”)	Oct. 24, 2006

¹ The panel strongly prefers that all text within an evidentiary exhibit that is filed in a PDF format should be capable of being searched. Many of Petitioner’s exhibits do not comport with this preference because many of its prior art references were filed without optical character recognition having been performed.

The panel also prefers that, in their papers, the parties cite evidence by exhibit number in every instance; a short form name may also be used, but not as a substitute for the exhibit number. Currently, Petitioner’s citations to evidence do not comport with this preference because they do not include the exhibit number.

The panel also prefers that, for every evidentiary exhibit submitted in P-TACTS, the party should assign a short, descriptive name in the “Document name” field. Petitioner’s exhibits comport with this preference, but Patent Owner’s exhibits, Exhibits 2001–2004, do not. *See* Ex. 2001 (bearing insufficiently descriptive name of “EX2001” in P-TACTS).

Lastly, all briefing should include page numbering, and direct testimony in a declaration should include paragraph numbering. Future submissions not meeting all the expectations set forth above may be refused.

Exhibit	Reference	Effective Date
1007	Steven E. Letendre, et al., <i>A New Model for Power</i> , PUBLIC UTILITIES FORTNIGHTLY, Feb. 15, 2002, at 16 (“Letendre”)	Feb. 15, 2002
1010	U.S. Pat. No. 6,662,083 B1 (“Knockeart”)	Sep. 16, 2003
1078	U.S. Pat. No. 5,654,621 (“Seelig”)	Aug. 5, 1997

Petitioner challenges the patentability of claims as follows:

Claims challenged	35 U.S.C. § ²	References
1–4, 6–11, 13–18, 20–27, 29, 30	103	Ferro, Oyobe, Donnelly, Letendre, Seelig
5, 12, 19, 28	103	Ferro, Oyobe, Donnelly, Letendre, Seelig, Knockeart

B. Related Proceedings

Petitioner identified as a related proceeding the co-pending district court proceeding of *Charge Fusion Technologies, LLC v. Tesla, Inc.*, Case No. 1:22-cv-00488 (W.D. Tex.). Pet. 85; Paper 3, 2. Patent Owner identifies the following *inter partes* review proceedings, which address claims in various patents within the priority chain of the ’987 patent:

- *Unified Patents, LLC v. Charge Fusion Technologies, LLC*, Case No. IPR2022-00519 (PTAB);
- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, Case No. IPR2022-01217 (PTAB);

² The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. §§ 102 and 103 that became effective March 16, 2013. The application for the ’987 patent was filed on May 3, 2021. The ’987 patent claims priority to at least one application filed before March 16, 2013. Ex. 1001, code (63). Therefore, we apply the pre-AIA versions of 35 U.S.C. §§ 102 and 103.

- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, Case No. IPR2023-00062 (PTAB);
- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, Case No. IPR2023-00063 (PTAB);
- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, Case No. IPR2025-00032 (PTAB); and
- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, Case No. IPR2025-00152 (PTAB).

Paper 3, 2. Patent Owner also identifies as related the following pending appeals before the United States Court of Appeal for the Federal Circuit:

- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, Case No. 24-2015 (Fed. Cir.) and
- *Tesla, Inc. v. Charge Fusion Technologies, LLC* Case Number: 24-1584 (Fed. Cir.).

Id.

Patent Owner has not identified any pending patent applications as related matters. *See generally* Paper 3. However, Patent Owner may be obligated to do so. Rule 42.8(b)(2) states:

(b) Each of the following notices must be filed:

(2) Related matters. Identify any other judicial or administrative matter that would affect, or be affected by, a decision in the proceeding.

37 C.F.R. § 42.8(b)(2). Under Rule 42.8(b)(2), Patent Owner should consider whether to identify any of its own pending patent applications that share a substantially similar disclosure to the specification of the '987 patent. Related matters may include the patent applications assigned to Patent Owner listed below. The listed applications purport to share an identical specification with the '987 patent by being characterized as a

continuing application of a series of intervening applications, all of which claim priority to U.S. Application No. 12/502,041 filed July 13, 2009.

- Application number 17/826,229 filed May 27, 2022;
- Application number 18/825,910 filed September 5, 2024, issued Apr. 29, 2025 as U.S. Patent No. 12,289,010 B2;
- Application number 29/973,718 filed November 18, 2024;
- Application number 19/021,065 filed January 14, 2025;
- Application number 19/021,067 filed January 14, 2025;
- Application number 19/021,069 filed January 14, 2025;
- Application number 19/021,073 filed January 14, 2025; and
- Application number 19/021,077 filed January 14, 2025.

C. The '987 Patent

The '987 patent describes “[s]ystems and methods for charging electric vehicles that define a charging schedule for an electric vehicle based on one or more charging preferences of an operator.” Ex. 1001, code (57). The charging system determines a charging schedule based on charging preferences including a desired charge level. *Id.* at 10:20–28, 10:59–67. A user enters the charging preferences via an “interface.” *Id.* at 14:53–64. The pertinent portion of Figure 7 of the '987 patent reproduced below illustrates an exemplary interface.

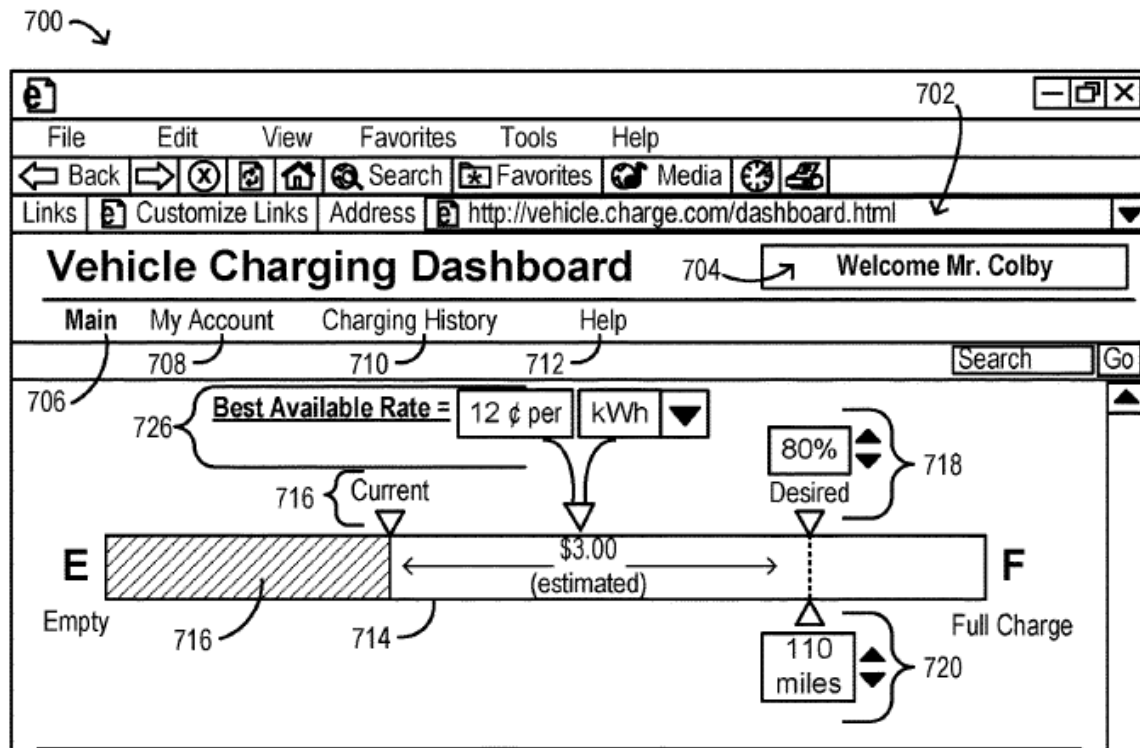


Figure 7 illustrates a “charging dashboard” that allows a user to discern the current state of charge 716 on charge indicator 714 and select a desired level of charge by sliding a marker to a “desired charge percent level 718” or as a “desired charge range level 720.” *Id.* at 14:43–63, Fig. 7.

Claims 1, 8, 15, and 22 are independent. Claim 1, which is illustrative, recites:

1[Pre]. An electrical charging system, comprising:

[a] a vehicle sensor;

[b] a communication device;

[c] a processor in communication with the vehicle sensor and the communication device; and

[d] a memory in communication with the processor, the memory storing instructions that when executed by the processor cause the processor to:

- [e] receive, from the vehicle sensor, information indicative of a presence of a vehicle in a parking space;
- [f] receive, from the communication device, information indicative of one or more charging preferences corresponding to a desired charging of the vehicle, wherein the one or more charging preferences are defined by an operator of the vehicle;
- [g] determine, based at least on the one or more charging preferences and at least one current value of a dynamic attribute of an electric charge provider, a charging schedule for the vehicle; and
- [h] transmit a control signal to a parking space charge device that starts a charging, in accordance with the charging schedule, of the vehicle;
- [i] wherein at least one of the one or more charging preferences is defined by user input received via a graphical user interface adapted to display a unitary vehicle charge indicator element comprising: (i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle; and (iii) a third portion comprising a slider by which an amount of charge may be specified.

Id. at 29:31–63 (with bracketed labels added by Petitioner to ease discussion).

II. ANALYSIS

A. Claim Interpretation

We interpret claims in the same manner used “in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). When applying that standard, we interpret the claim

language as it would have been understood by one of ordinary skill in the art in light of the specification. *Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc.*, 853 F.3d 1272, 1279–80 (Fed. Cir. 2017). Thus, we give claim terms their ordinary and customary meaning as understood by an ordinarily skilled artisan. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Petitioner proposes an interpretation of the “dynamic attribute of an electric charge provider” that is recited in every independent claim. Pet. 4–5. Petitioner also proposes an interpretation for “determine . . . a charging schedule” as recited in all independent claims. *Id.* at 5. Petitioner also expressly addresses the meaning of various aspects of the graphical user interface (“GUI”) recited in all independent claims including the “unitary vehicle charge indicator” and the “first portion” and “second portion” of that indicator. Pet. 6–9.

1. Dynamic Attribute of an Electric Charge Provider

Petitioner proposes that we interpret a “dynamic attribute of an electric charge provider” (recited in limitations 1g, 10c, and 19g) as referring to a “changing or otherwise fluctuating cost (or price) of electricity for purchase from an electric charge provider.” Pet. 4–5. Patent Owner argues that Petitioner improperly narrows the meaning of the “dynamic attribute.” Prelim. Resp. 14–15. Although we consider Petitioner’s proposed interpretation to identify an exemplary “dynamic attribute of an electric

charge provider,” we see no need to limit the meaning of the phrase as proposed by Petitioner at this stage of the proceeding.

2. Determine . . . a Charging Schedule

Limitation 1g recites “determine, based at least on one or more charging preferences and at least one current value of a dynamic attribute of an electric charge provider, a charging schedule for the vehicle.”

Limitations 8c, 15g, and 22f recite materially identical language. Petitioner argues that this phrase should not be interpreted as a means-plus-function limitation. Pet. 5. Patent Owner agrees. Prelim. Resp. 15–16. Accordingly, we currently discern no dispute regarding the meaning of this phrase.

3. Unitary Vehicle Charge Indicator

Petitioner contends that the “unitary vehicle charge indicator” includes “at least” a bar graph as shown in Figure 7. Pet. 6–7. Patent Owner argues that Petitioner’s “proposed construction should be rejected” because it “improperly imports limitations from the specification.” Prelim. Resp. 16–17. We discern no dispute over the meaning of “unitary vehicle charge indicator” because Petitioner does not argue that the term is “limited” to the embodiment shown in Figure 7, only that the term “at least includes” that embodiment. Patent Owner does not contend otherwise.

4. First and Second Portions of the Charge Indicator

Petitioner argues that the “first” and “second” portions of limitation 1i as not being entitled to patentable weight because they are directed to non-functional printed matter. Pet. 7–9 (citing *CR Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020); *AstraZeneca LP v. Apotex, Inc.*, 633 F.3d 1042, 1064 (Fed. Cir. 2010); *In re Chatfield*, 545 F.2d 152, 157 (CCPA 1976)). Patent Owner argues otherwise. Prelim. Resp. 17–19.

We need not resolve this dispute at this stage because Petitioner persuasively argues that the combined teachings of Ferro, Oyobe, Donnelly, and Letendre suggest the first and second portions of the charge indicator recited in limitation 1i. Pet. 53–58. Patent Owner does not contest Petitioner’s showing for the first and second portions of the charge indicator, *see* Prelim. Resp. 37–45 (addressing only an alleged shortcoming in Petitioner’s showing for the “third portion comprising a slider by which an amount of charge may be specified”).

B. Legal Standards

The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), reaffirmed the framework for determining obviousness as set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). The *KSR* Court summarized the four factual inquiries set forth in *Graham* that we apply in determining whether a claim is reasonably likely to be unpatentable as obvious under 35 U.S.C. § 103(a) as follows: (1) determining the scope and content of the prior art, (2) ascertaining the differences between the prior art and the claims at issue, (3) resolving the level of ordinary skill in the pertinent art, and (4) considering objective evidence indicating obviousness or nonobviousness. *KSR*, 550 U.S. at 406. With these standards in mind, we address each challenge below.

C. Claims 1–4, 6–11, 13–18, 20–27, 29, and 30:

Obviousness in View of Ferro, Oyobe, Donnelly, Letendre, and Seelig

Petitioner argues that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render claims 1–4, 6–11, 13–18, 20–27, 29, and 30 unpatentable as obvious. Pet. 15–79. Petitioner relies upon Ferro as describing most of the limitations recited in the independent claims and cites various features described in the other five references as describing certain

specific aspects recited throughout the claim. *See id.* All five references relied upon by Petitioner relate to vehicles having batteries that supply significant levels of power to propel the vehicle.

For the reasons set forth below, we find that Petitioner has demonstrated a reasonable likelihood of proving that at least independent claims 1, 8, 15, and 22 are unpatentable as obvious.

1. Summary of the Asserted Prior Art

Ferro relates to a “dynamic energy transaction plan to manage an electric vehicle charging transaction.” Ex. 1004, code (57), ¶¶ 2, 55, Figs. 5–8. Ferro’s transaction plan “manages every aspect of charging electric vehicle” and is configured via an “input/output device located on-board the electric vehicle to create the preferences.” *Id.* ¶¶ 93, 139.

Oyobe relates to “electric-powered” vehicles and describes various ways of informing the user of the state of charge of the battery used as a “motive power source.” Ex. 1005 ¶¶ 1, 7–9. An embodiment of Oyobe’s vehicle includes hardware that “detects whether or not the hybrid vehicle 100B is parked at the location where charging equipment is installed.” *Id.* ¶¶ 141–143, Fig. 16.

Donnelly and Letendre relate to battery-powered vehicles incorporating various graphical user interfaces. Ex. 1006, 21:47–58, 26:6–8, 1:36–38, 6:64–7:1, 8:22–27; Ex. 1007, 18–20, Fig. 1.

Seelig relates to systems for wirelessly charging an electric vehicle. Ex. 1078, code (57). Seelig describes transmitting a control signal to a charging device to start a charging session. *Id.* at 2:19–45, 6:21–38, Fig. 1.

2. Independent Claim 1

Petitioner argues that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render claim 1 unpatentable as obvious. Pet. 15–63. For its analysis, Petitioner subdivides claim 1 into a preamble (labeled 1pre) and nine other limitations (labeled 1a–1i). Patent Owner does not contest Petitioner’s showing that the combined teachings of the prior art describe or suggest the subject matter of limitations 1pre, 1a–1d, and 1f–1h. See Prelim. Resp. 25–51. Based on our review of Petitioner’s argument and the evidence mustered in support, we find that Petitioner establishes at least a reasonable likelihood that the prior art describes or suggests the subject matter recited in these limitations.

However, Patent Owner argues that Petitioner’s challenge to claim 1 fails for two types of reasons, including:

1. the alleged combination of prior art fails to teach limitations 1e and 1i, Prelim. Resp. 25–48; and
2. an ordinarily skilled artisan would not have been motivated to combine the teachings of the references or expect success in combining those references, *id.* at 48–51.

For the reasons explained below, we find that Petitioner demonstrates a reasonable likelihood of proving that claim 1 is unpatentable as obvious.

a. Limitation 1e

Limitation 1e refers to an instruction stored in memory that, when executed, will cause the processor to “receive, from the vehicle sensor, information indicative of a presence of an electric vehicle in a parking space.” Ex. 1001, 29:39–40.

Petitioner contends that Ferro describes an electric vehicle arriving at a charging station and indicating “an intention to charge.” Pet. 18 (citing Ex. 1004 ¶ 109). The vehicle connects to the charging station and both receives and transmits data via a network. *Id.* (citing Ex. 1004 ¶ 37). Petitioner argues that Ferro suggests detecting a vehicle at a charging station because, in Ferro, a user specifies, that “any time the electric vehicle is parked at a charging station that is at a specified location, the electric vehicle is . . . to be fully charged.” *Id.* (citing Ex. 1004 ¶ 121; Ex. 1003 ¶ 124).

Petitioner cites Oyobe’s teaching of the vehicle sensor introduced in limitation 1a in the form of Oyobe’s “vehicle position detecting apparatus 108” that “detects whether or not hybrid vehicle 100B is parked at the location where charging equipment is installed.” *Id.* at 18–19. One of the ways in which Oyobe’s apparatus 108 detects the presence of a vehicle at the charging location is via “communication with a radio apparatus” at the charging location. *Id.* (citing Ex. 1005 ¶¶ 142, 143, Fig. 16). Petitioner argues that such radio communication is akin to the wireless interrogation vehicle sensor example. *Id.* at 19; *see also* Ex. 1001, 9:56–10:6 (using “wireless interrogation” to “detect an arrival, proximity, and/or presence of the vehicle”), 16:39–44 (describing the vehicle sensor detecting a proximity of the vehicle via “wireless electronic transmission sensing”). Oyobe’s control apparatus 60B (vehicle processor of limitation 1d) receives a “detection signal from vehicle position detecting apparatus 108” that “the vehicle is parked at a location where charging equipment is installed.” *Id.* at 29 (citing Ex. 1005 ¶¶ 143, 144; Ex. 1003 ¶ 157).

Petitioner argues that an ordinarily skilled artisan would have been motivated to incorporate Oyobe’s wireless vehicle detecting apparatus into

Ferro because doing so “advantageously allows a user to instruct charging without exiting the vehicle and physically interacting with a charging station.” Pet. 20 (citing Ex. 1003 ¶¶ 129–130). Petitioner also contends that this combination would be made “according to known methods to yield predictable results of enabling ‘an intention to charge’ without the operator leaving the vehicle. *Id.* (citing Ex. 1004 ¶¶ 36, 109; Ex. 1003 ¶ 129). Petitioner relies on Mr. Andrews’s testimony as proving that an ordinarily skilled artisan would have understood Oyobe to suggest using its sensor to determine the presence of its vehicle “in a parking space” proximate to the charging apparatus because charging equipment is commonly installed next to a parking space. *Id.* at 29–30 (citing Ex. 1003 ¶¶ 156–159).

Patent Owner argues that Petitioner’s proposed motivation “to detect a vehicle parked at the charging station” is “misguided” because Oyobe is directed to alerting a user when the state of charge in the vehicle battery is low without regard for whether the vehicle is near a charging station. Prelim. Resp. 26 (citing Ex. 1005 ¶ 46). Patent Owner goes further in arguing that Oyobe’s position “detecting apparatus 108 is not relevant to detecting whether a vehicle is parked at a position where it can initiate a charge” and therefore output from Oyobe’s sensor 108 “***is unusable in Ferro’s system.***” *Id.* at 31.

We disagree with Patent Owner. It is true that Oyobe focuses on alerting a vehicle user to a low state of charge by raising a physical indicator on the exterior of the vehicle (i.e., the “informing apparatus 102”) when the battery is low. Ex. 1005 ¶ 40. Oyobe explains:

even in such a case where the vehicle user exit from the vehicle without checking the SOC of main battery B on the console panel, informing apparatus 102 disposed at a location where it

can easily be seen outside the vehicle by the vehicle user allows the vehicle user to easily recognize the necessity of charging main battery B.

Id. However, Oyobe’s focus on raising a physical indicator on the vehicle as a reminder does not detract from Oyobe’s unambiguous disclosure that its vehicle also includes position detecting apparatus 108 that uses wireless communication to “sense that the vehicle is parked at the location where charging equipment is installed.” *Id.* ¶ 142. Oyobe’s ability to sense whether a vehicle is parked next to a charger allows Oyobe’s system to remind the user to charge the battery by raising low battery indicator 102 while the vehicle is located next to a charger but not “where charging cannot be performed.” *Id.* ¶¶ 143–145. Accordingly, regardless of the reason that Oyobe provides for including its vehicle position detecting apparatus, Oyobe undeniably describes a vehicle sensor that can provide “information indicative of a presence of an electric vehicle in a parking space” near a charging station. And, we find that Petitioner has sufficiently explained why an ordinarily skilled artisan would have been motivated to use Oyobe’s sensor in Ferro’s electric vehicle to “advantageously allow[] a user to instruct charging without exiting the vehicle and physically interacting with a charging station.” Pet. 20–21 (citing Ex. 1003 ¶¶ 129–132).

Third, Patent Owner argues that Petitioner violates Rule 42.6(a)(3) by improperly incorporating arguments from Mr. Andrews’s Declaration into the Petition to establish that Oyobe teaches sensing the presence of a vehicle in a “parking space” as recited in limitation 1e. Prelim. Resp. 35–36 (citing Pet. 18–21, 29–30 (citing Ex. 1003 ¶¶ 124, 127, 129–132, 156–159)). Patent Owner contends that Mr. Andrews’s citation of eight references that are not expressly cited in the Petition, Exhibits 1011, 1018, 1050, 1051, 1052, 1053,

1057, and 1059, implicitly demonstrates that the Petition incorporates arguments by reference. *Id.* Not only do we find Petitioner’s reliance on Mr. Andrews’s testimony to be persuasive, but we also find that Mr. Andrews’s citations to Exhibits 1011, 1018, 1050, 1051, 1052, 1053, 1057, and 1059 provide strong support for his testimony that an ordinarily skilled artisan would understand that Oyobe teaches that its vehicle is in a parking space when Oyobe’s apparatus 108 detects that “the vehicle is parked” near charging equipment. Far from improperly incorporating arguments by reference, we find Mr. Andrews’s citation to objective evidence to support his opinions on how an ordinarily skilled artisan would read Oyobe’s disclosure to be preferred and highly persuasive.

For all the reasons expressed above, we find that Petitioner has demonstrated a reasonable likelihood of proving that the combined teachings of Ferro and Oyobe suggest the subject matter of limitation 1e.

b. Limitation 1i

Limitation 1i refers to the following text from claim 1:

wherein at least one of the one or more charging preferences is defined by user input received via a graphical user interface adapted to display a unitary vehicle charge indicator element comprising: (i) a first portion indicative of an amount of charge residing in a battery of the electric vehicle; (ii) a second portion indicative of an uncharged capacity of the battery of the electric vehicle; and (iii) a third portion comprising a slider by which an amount of charge may be specified.

Ex. 1001, 29:53–63. This limitation primarily defines a GUI for setting charging preferences using a “slider” to specify “an amount of charge.” The slider is part of a “unitary vehicle charge indicator” that has two portions to provide information about the battery, a “first portion indicative of an

amount of charge” and a “second portion indicative of an uncharged capacity.”

Petitioner relies upon Ferro as describing the basic aspects of the claimed GUI with Donnelly and Letendre describing certain details. Pet. 48–63. Patent Owner counters that Petitioner cobbles together three references in ways that (1) demonstrate an improper hindsight bias and (2) an ordinarily skilled artisan would not reasonably expect to succeed. Prelim. Resp. 37–47. Patent Owner also contends that the proposed combination of prior art fails to teach or suggest a GUI that allows a user to specify “an amount of charge.” *Id.*

For the reasons that follow, we find that Petitioner demonstrates a reasonable likelihood that the combined teachings of Ferro as modified by Oyobe with Donnelly and Letendre suggest the subject matter of limitation 1i. We also find that Petitioner establishes that an ordinarily skilled artisan would have been motivated to combine teachings of Ferro as modified by Oyobe, Donnelly, and Letendre and would have reasonably expected success in doing so. We address the individual aspects of limitation 1h in the order set forth in the Petition.

i. Charging Preferences Defined by User Input

Limitation 1i requires that user input defines “one or more charging preferences.” Petitioner contends that Ferro describes a user providing charging preferences via input/output devices such as “keyboards, displays, pointing devices, etc.” Pet. 49 (citing Ex. 1004 ¶¶ 43, 162; Ex. 1003 ¶ 199). Patent Owner does not contest Petitioner’s showing, and we find it to be persuasive on this aspect of limitation 1i.

ii. GUI for Receiving User Input

Limitation 1i requires that user input is “received via a graphical user interface.” Petitioner contends that Donnelly describes a hybrid vehicle having a touch screen display that presents a GUI to allow the user to provide commands to control aspects of the vehicle. Pet. 49 (citing Ex. 1006, 1:36–38, 21:47–58, 26:6–8; Ex. 1003 ¶¶ 200–201). Ferro describes an “input/output unit 212” and “display 214” that communicate with processor 204 via “communications fabric 202.” *Id.* at 50–51 (citing Ex. 1004 ¶¶ 40, 43, 161, 162, Fig. 2). Ferro also describes a user inputting charging preferences via input/output unit 212. *Id.* at 51 (citing Ex. 1004 ¶¶ 84, 93). However, Ferro’s display 214 is not described as a touchscreen, so Ferro does not describe using a touchscreen GUI to specify charging preferences. *Id.* at 51–52.

Nevertheless, Petitioner contends that an ordinarily skilled artisan would have been motivated to incorporate Donnelly’s touchscreen GUI into Ferro’s system in which a user inputs charging preferences because touchscreens were “well-known GUIs” that made “an application easy, practical, and efficient to use” and “allow the user to concentrate on the task at hand.” *Id.* at 51 (citing Ex. 1003 ¶ 204 (citing Ex. 1038)). Moreover, GUIs presented on touchscreens in vehicles were ubiquitous at the time of the ’987 patent and were commonly used to view and control various functions in an automobile. *Id.* at 52 (citing Ex. 1003 ¶ 206 (citing Ex. 1041, 2:52–55, 3:55–58, Figs. 15A, 15B; Ex. 1061, 2:12–17; Ex. 1062, 3)). An ordinarily skilled artisan would have been found it advantageous to use a touchscreen to control charging parameters and incorporation of Donnelly’s known GUI as an improvement of Ferro’s non-touchscreen

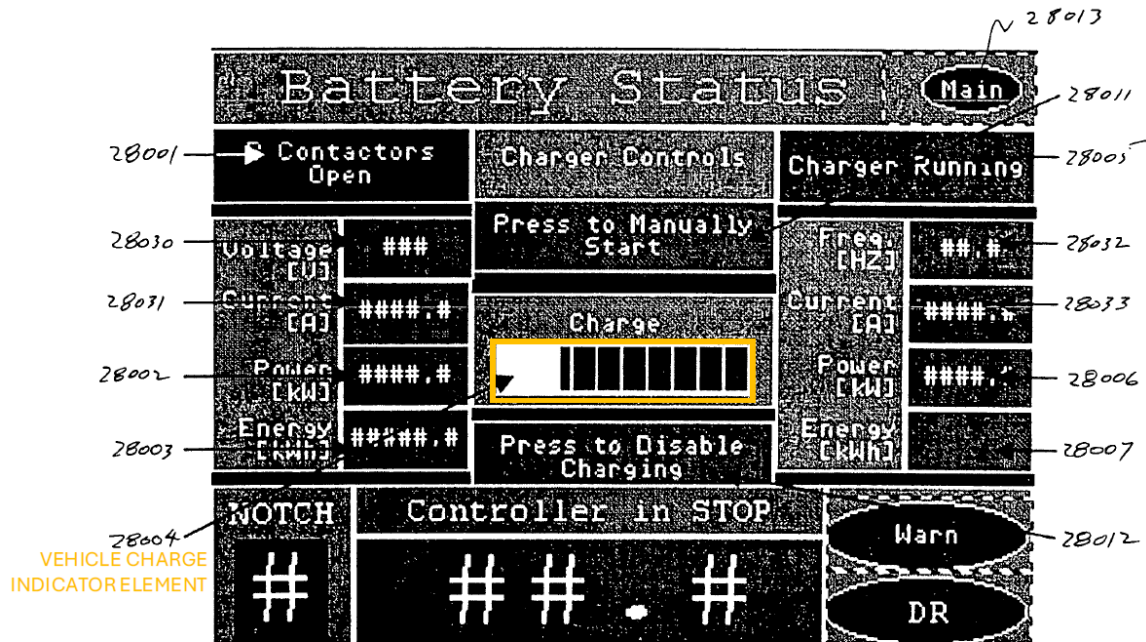
display 214 would have streamlined the entry of charging parameters and been accomplished with a reasonable expectation of success. *Id.* at 52–53 (citing Ex. 1003 ¶¶ 206–209).

Patent Owner does not contest Petitioner’s showing on the issues discussed above, and we find that showing to be persuasive on these aspects of limitation 1i.

iii. First and Second Portions of the Unitary Vehicle Charge Indicator

Limitation 1i further requires a “vehicle charge indicator element comprising a first portion indicative of an amount of charge residing in a battery of the electric vehicle and a second portion indicative of an uncharged capacity of the battery of the electric vehicle.”

Petitioner contends that Ferro describes its user can specify an “amount of charge 514 preference” including a minimum and/or maximum level of charge. Pet. 53 (citing Ex. 1003 ¶ 112–113). Petitioner relies on Donnelly as describing a GUI that displays the charged and uncharged capacity of a vehicle battery. *Id.* at 53–56 (citing Ex. 1006, 21:47–58, 23:16–20, 23:31–33, Fig. 28). Donnelly illustrates its GUI with the charge indicator in Petitioner’s annotated version of Fig. 28 reproduced below.



Donnelly’s touchscreen GUI is depicted in Fig. 28, which is entitled “Battery Status,” and Petitioner highlights in orange an area labeled “Battery State of Charge 28004” that is configured as a bar graph indicating “the state of charge” of the vehicle battery. *Id.* at 54–55 (citing Ex. 1006, 23:16–19, 23:31–33; Ex. 1003 ¶¶ 212–215). Petitioner contends that an ordinarily skilled artisan would understand Donnelly’s bar graph 28004 to illustrate both the “amount of charge residing in the battery” as black bars filling a portion of the bar graph and the uncharged capacity of the battery as the white space in the bar graph. *Id.* at 55–56 (citing Ex. 1003 ¶¶ 216–222).

Petitioner argues that an ordinarily skilled artisan would have found it obvious to combine Donnelly’s GUI with its bar graph depicting the charged and uncharged capacity of a vehicle battery into Ferro according to well-known methods that would have yielded predictable results. Pet. 56 (citing Ex. 1003 ¶ 226). Petitioner also contends that an ordinarily skilled artisan would have reasonably expected to successfully combine Donnelly’s GUI as

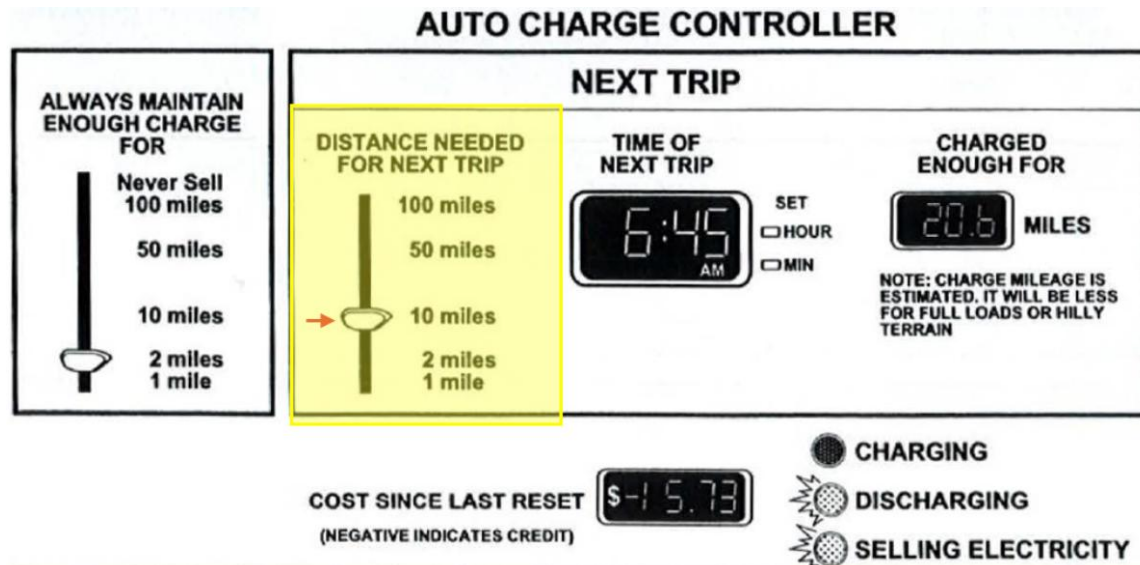
it relates to the state of charge into Ferro's vehicle, which already processed information about the state of charge of its battery and included a display showing charging parameters. *Id.* at 57 (citing Ex. 1004 ¶¶ 40, 93, 112, 162, Ex. 1003 ¶ 227).

Patent Owner does not contest Petitioner's showing on the issues discussed above, and we find that showing to be persuasive on these aspects of limitation 1i.

iv. Slider for Specifying and Amount of Charge

Limitation 1i further requires that the unitary vehicle charge indicator comprises: "a third portion comprising a slider by which an amount of charge may be specified." Ferro already describes that its user can input a preference for an amount of charge and/or maximum amount of charge. *Id.* at 58 (citing Ex. 1003 ¶ 229; Ex. 1004 ¶ 123).

Petitioner relies upon Letendre as describing the slider aspect of the vehicle charge indicator and argues that an ordinarily skilled artisan would have found it obvious to incorporate Letendre's slider interface into Ferro's display as modified by Donnelly's GUI. Pet. 59–60. More specifically, Petitioner relies upon the annotated version of the pertinent portion of Letendre's Figure 1, which we reproduce below.

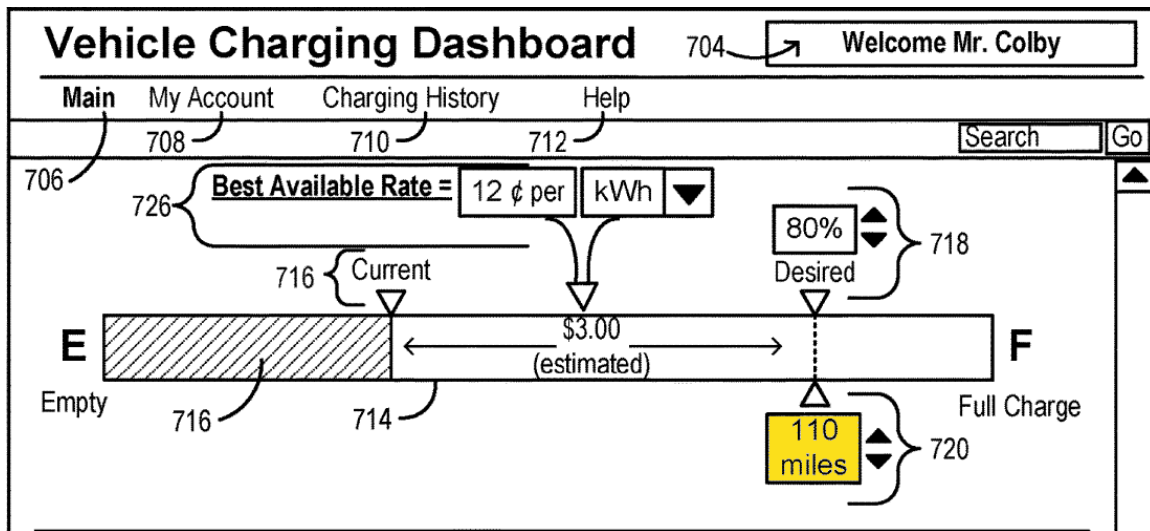


The portion of Letendre’s Figure 1 depicts a control panel labeled “auto charge controller” that includes a slider that Petitioner highlights in yellow that allows a user to set a desired amount of charge expressed in miles of range. Ex. 1007, 18, Fig. 1. In the figure, the desired amount of charge is set to “10 miles.” *Id.* at 20, Fig. 1. Letendre refers to its control for setting desired amount of charge as “a control that the driver sets according to driving needs” and identifies the source of its Figure 1 as “Kempton and Letendre, 1997” which Petitioner filed as Exhibit 1073. Ex. 1007, 18, 19; Ex. 1003 ¶ 231 (citing Ex. 1073, 162³). The control illustrated in Letendre’s Figure 1 may be “physical, on the dash, or on a Webpage.” Ex. 1007, 19–20. Petitioner contends that an ordinarily skilled artisan would have understood or found it obvious that Letendre’s selectable control on a webpage is an element of a GUI. Pet. 59–60 (citing Ex. 1003 ¶ 233).

³ The citation to page 162 refers to the internal page numbering in the Exhibit rather than the page numbering applied by Petitioner.

Patent Owner argues that Letendre's disclosure of setting an amount of charge in miles of range is insufficient because Letendre describes setting a parameter "measured in units [miles] that cannot inform a user as to the *amount of charge*." Prelim. Resp. 43 (citing Ex. 2001 ¶ 73). Patent Owner contends that Letendre's user does not specify an amount of charge because "Letendre operates to take a user specified mileage condition and then *estimate* a corresponding charge amount that will likely meet the condition." *Id.* at 42. Patent Owner contends that Letendre's users cannot specify an amount of charge because, for example, they "would be unable to specify a 70% charge amount." *Id.* at 42–43. Essentially, Patent Owner implicitly interprets "an amount of charge" as recited in limitation 1i as requiring that a user to be able to specify an amount of charge in percentage terms.

We disagree. The Specification describes that a user may specify an amount of charge by specifying a desired travel distance as follows: "the user may indicate a desired charging level (and/or a desired charging level may be automatically calculated) based on a desired **distance of travel**." Ex. 1001, 19:49–53. Therefore, "amount of charge" may also refer to a desired mileage. Our annotated version of Figure 7 of the '987 patent, the pertinent portion of which we reproduce below, illustrates the ability of the system described in the '987 patent to set "amount of charge" in percentage or mileage terms.



The portion of Figure 7 from the '987 patent illustrates a GUI 700 called the “Vehicle Charging Dashboard” that includes a slider for selecting desired charge range level 720. We have highlighted in yellow the portion of the figure illustrating an ability to slide a marker on “vehicle charge indicator 714” to a value specified in miles (e.g., 110 miles). The Specification explains:

The user may also or alternatively view and/or change the desired charge range level 720. An estimate of how far the vehicle can travel on a given charge amount (which may be a general average and/or may be computed based on a specific itinerary and/or past driving habits) can be determined, for example, and utilized to express the desired charge level in terms of distance capable of being traveled. In such a manner, for example, a user may determine a desired distance to travel (e.g., how far it is from home to work or vice versa) and may set the desired charge range level 720 to match the desired distance.

Ex. 1001, 14:65–15:8. This passage demonstrates that the GUI described in the '987 patent allows a user to specify an amount of charge in miles of range as well as in percentage terms.

At this stage of the proceeding, we disagree with Patent Owner’s interpretation of “amount of charge” as requiring that the user set this

“amount” in percentage terms. The Specification clearly describes a vehicle charge indicator with a slider that can be selected based upon a desired percentage charge level or a desired range. We discern no persuasive reason to limit the claims in a manner that covers one alternative but excludes the other.

Patent Owner does not otherwise contest Petitioner’s showing that Letendre describes setting an “amount of charge” using a slider moved to a desired range. We currently find Petitioner’s showing on this issue to be sufficiently persuasive.

v. Motivation to Combine Ferro with Donnelly and Letendre

Petitioner argues that an ordinarily skilled artisan “would have been motivated and found it obvious to modify Ferro-Oyobe-Donnelly to include Letendre’s graphical slider on the charge level bar graph of the GUI as a *third portion*, where the operator moves the slider to specify a desired charge.” Pet. 60 (citing Ex. 1003 ¶ 235). Petitioner contends that Ferro-Donnelly already reflects a system with a GUI on a touchscreen for depicting state of charge and modifying that GUI to add a slider for specifying the state of charge is expressly motivated by Letendre’s indication that “it is essential that the driver be able to limit any draw down so travel is not affected.” *Id.* (citing Ex. 1007, 19). Letendre also describes its GUI with the slider as “a control that the driver sets according to driving needs.” *Id.* at 59 (citing Ex. 1007, 19). Ferro’s express description of an input/output device for managing charging preferences and Letendre’s express description of a GUI for setting charging parameters suggest using Letendre’s GUI with Ferro’s system. *Id.* at 60–61 (citing Ex. 1003 ¶ 236). Petitioner also argues that its proposed combination constitutes “applying a

known technique ([Letendre's] slider . . .) to a known device ([Donnelly's] vehicle GUI showing a charge bar graphic) ready for improvement to yield predictable results of easily allowing a user to choose a desired level of charge.” *Id.* at 61 (citing Ex. 1003 ¶ 237). Petitioner also contends that “[s]liders on GUIs were known to make inputting information easier, and thus [an ordinarily skilled artisan] would have been motivated to include a slider on the bar graph.” *Id.* (citing Ex. 1003 ¶ 237). An ordinarily skilled artisan would have reasonably expected to successfully combine Letendre’s slider in the GUI suggested by Ferro-Donnelly because that GUI already enabled setting charging preferences including “amount of charge” (i.e., minimum and maximum). *Id.* at 61–62 (citing Ex. 1004 ¶ 123; Ex. 1003 ¶¶ 238–239).

Patent Owner argues that Petitioner’s motivation to combine Letendre with Ferro-Donnelly fails because Letendre’s slider for specifying range is incompatible with Donnelly’s bar graph illustrating ratio of charge and Ferro. Prelim. Resp. 45–48. Patent Owner relies upon testimony from Dr. Goldberg in which he speculates about the motives behind Letendre’s use of mileage as the charge parameter being set by its user. *See id.* (citing Ex. 2001 ¶¶ 76–78). Dr. Goldberg testifies that “[i]f the [Letendre] user knew the desired charge, a slider would be provided to specify such a charge but even Letendre doesn’t want that parameter to be set because charge mileage ‘WILL BE LESS FOR FULL LOADS OR HILLY TERRAIN.’” Ex. 2001 ¶ 76 (citing Ex. 1007, 9,⁴ Fig. 1). Patent Owner ignores its own Specification, which allows a user to specify an amount of charge using

⁴ This citation refers to the exhibit page number affixed by Petitioner.

either percentage or miles as if they are interchangeable for a user interested in setting that charging parameter. *See* Ex. 1001, Fig. 7 (showing 80% charge and “110 miles” as equivalent levels of charge). Accordingly, we reject Patent Owner’s argument that Letendre’s method of specifying an amount of charge is incompatible with the methods described by Donnelly and Ferro. Rather, we find that Petitioner has sufficiently demonstrated that an ordinarily skilled artisan would have been motivated to combine teachings from Ferro, Donnelly, and Letendre to incorporate a slider into a GUI that allows a user to specify an amount of charge.

c. Conclusion for Claim 1

For all the reasons expressed above, we find that Petitioner has demonstrated a reasonable likelihood of proving that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render claim 1 unpatentable as obvious.

3. Independent Claims 8, 15, and 22

Petitioner cross references its showing for claim 1 when identifying how the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render independent claims 8, 15, and 22 obvious. Pet. 69–70 (claim 8), 70–75 (claim 15), 76–78. Patent Owner simultaneously argues limitations in claims 1, 8, 15, and 22 without identifying any material differences in the limitations recited in these four independent claims. Prelim. Resp. 29–43. For the reasons discussed above on claim 1, and based on Petitioner’s arguments and cited evidence relating to limitations in claims 15 and 22 that are not recited in claims 1 and 8, we also find that Petitioner has demonstrated a reasonable likelihood of proving that the combined

teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render claims 8, 15, and 22 unpatentable as obvious.

D. Petitioner’s Alleged Violation of Rule 42.6(a)(3) Prohibiting
Incorporation by Reference

Patent Owner argues that Petitioner violates Rule 42.6(a)(3) by impermissibly incorporating arguments from Mr. Andrews’s Declaration into the Petition to avoid the word count limit. Prelim. Resp. 56–59. Patent Owner contends that the Andrews declaration is “over twice as long as the Petition at 214 pages” with a substantive portion containing “an incredible **29,831 words**.” *Id.* at 57. Patent Owner contends that “the only way to potentially understand the Petitioner’s proposed unpatentability challenges is to wade through the **29,831 words** of the Andrews Declaration.” *Id.* Patent Owner also complains that Andrews supports his testimony relating to Petitioner’s first challenge by citing “**thirty-seven** (37) additional references in addition to Ferro, Oyobe, Donnelly, Letendre, and Seelig.” *Id.*

We discern no violation of Rule 42.6(a)(3). To the contrary, that Mr. Andrews’s supports his extensive explanations of his opinions with citations to dozens of pieces of objective evidence, is a feature, not a bug of his testimony. Mr. Andrews, and Petitioner by extension, leave virtually none of the substance of his testimony unsupported by objective evidence, a practice that we applaud.

III. CONCLUSION

For the reasons expressed above, we determine that Petitioner has demonstrated a reasonable likelihood of showing that claims 1, 8, 15, and 22 of the ’987 patent are unpatentable as obvious. In accordance with the Court’s decision in *SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60

(2018) and 37 C.F.R. § 42.108(a), we institute an *inter partes* review of all challenged claims of the '987 patent on all grounds alleged by Petitioner.

IV. ORDER

For the reasons given, it is:

ORDERED that *inter partes* review of claims 1–30 of U.S. Patent No. 11,631,987 B2 is *instituted* with respect to all grounds of unpatentability set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(a), *inter partes* review of U.S. Patent No. 11,631,987 B2 is instituted commencing on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is given of the institution of a trial.

IPR2025-00153
Patent 11,631,987 B2

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