

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 BENJAMIN D. M. WOOD, CARL M. DeFRANCO, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

DeFRANCO, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

Charge Fusion Technologies, LLC is the owner of U.S. Patent No. 11,631,987 B2 (Ex. 1001, “the ’987 patent”). Tesla, Inc. filed a Petition requesting an *inter partes* review of claims 1–30 of the ’987 patent. Paper 1 (“Pet.”). We instituted an *inter partes* review of all claims as challenged in the Petition. Paper 12 (“Inst. Dec.”). In due course, Charge Fusion filed a

Patent Owner Response. Paper 18 (“PO Resp.”). Tesla filed a Reply in support of the Petition (Paper 19, “Reply”). And Charge Fusion followed with a Sur-Reply. Paper 21 (“Sur-Reply”). We held an oral hearing, a transcript of which is in the record. Paper 23 (“Hrg. Tr.”).

We have authority to hear this *inter partes* review under 35 U.S.C. § 6(c). We enter this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. In short, we determine that Tesla proves by a preponderance of the evidence that claims 1–30 of the ’987 patent are unpatentable as obvious. *See* 35 U.S.C. § 316(e).

I. BACKGROUND

A. *Real Parties-in-Interest*

Tesla and Charge Fusion identify themselves as the only real parties in interest. Pet. 85; Paper 3, at 2.

B. *Related Matters*

The parties identify the following co-pending district court action as related to this proceeding. *See* Pet. 86; Paper 6, at 2.

- *Charge Fusion Technologies, LLC v. Tesla, Inc.*, No. 1:22-cv-00488-DAE (W.D. Tex.).

Charge Fusion also identifies the following PTAB proceedings, which address claims in various patents within the priority chain of the ’987 patent challenged here. *See* Paper 3, at 2.

- *Unified Patents, LLC v. Charge Fusion Technologies, LLC*, IPR2022-00519 (PTAB);
- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, IPR2022-01217 (PTAB);
- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, IPR2023-00062 (PTAB);

- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, IPR2023-00063 (PTAB);
- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, IPR2025-00032 (PTAB); and
- *Tesla, Inc. v. Charge Fusion Technologies, LLC*, IPR2025-00152 (PTAB).

Finally, Charge Fusion identifies the following pending appeals before the United States Court of Appeal for the Federal Circuit. Paper 3, at 2.

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

C. Overview of 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 of the vehicle.” Ex. 1001, Abstract. The charging system determines a charging schedule based on the operator’s charging preferences, including a desired charge level. *Id.* at 10:20–28, 10:59–67. The operator 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.

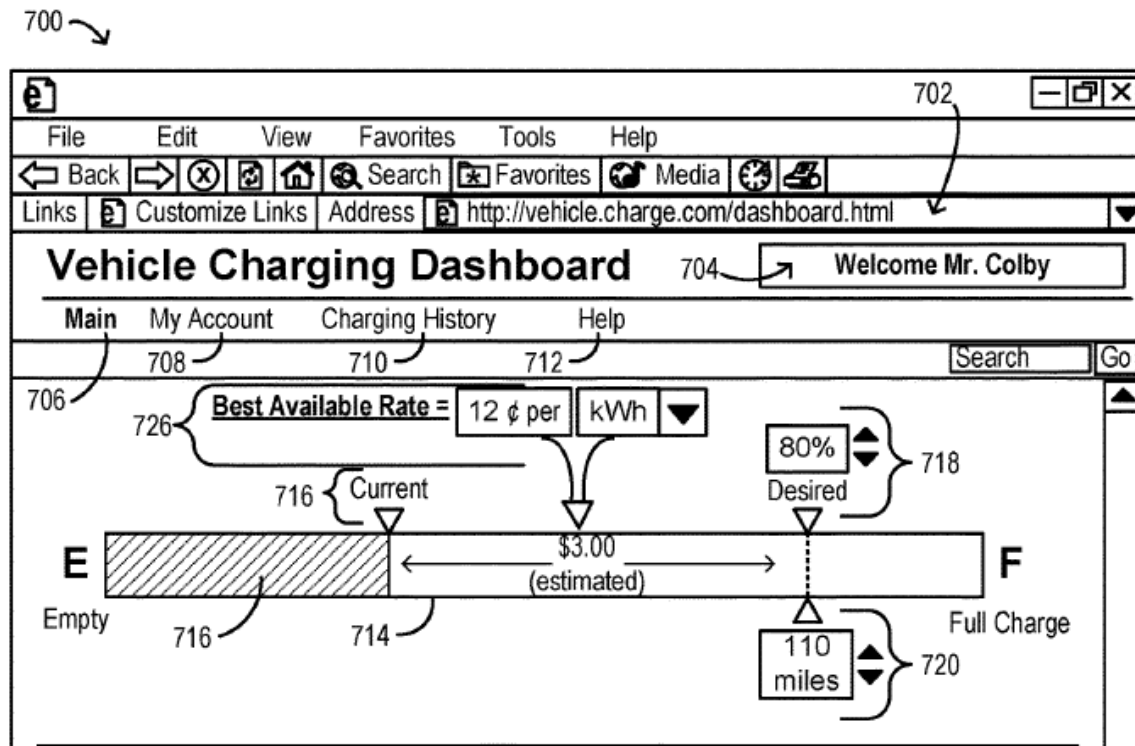


Figure 7 illustrates a “charging dashboard” that allows an operator of the vehicle to discern the current state of charge 716 on charge indicator 714 and select a desired level of charge by sliding a marker to a “desired charge percent level 718” or as a “desired charge range level 720.” *Id.* at 14:43–63,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

D. Illustrative Claims

Claims 1, 8, 15, and 22 are the independent claims among the challenged claims. Claim 1 is illustrative and recites (with bracketed nomenclature added for clarity):

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 electric vehicle;
 - [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.

Ex. 1001, 29:31–63.

E. Asserted Challenges

Tesla challenges the patentability of the claims as follows:

Claims Challenged	35 U.S.C. §	Basis
1–4, 6–11, 13–18, 20–27, 29, and 30	103	Ferro, ¹ Oyobe, ² Donnelly, ³ Letendre, ⁴ Seelig ⁵
5, 12, 19, 28	103	Ferro, Oyobe, Donnelly, Letendre, Seelig, Knockeart ⁶

In further support of these challenges, Tesla relies on the declaration testimony of Mr. Scott Andrews. *See* Ex. 1003. Charge Fusion, in turn, relies on the declaration testimony of Dr. Steven Goldberg. *See* Ex. 2005. The parties also submit cross-examination testimony from each of these expert witnesses. *See* Exs. 1096, 1097 (cross of Dr. Goldberg); Ex. 2006 (cross of Mr. Andrews).

II. ANALYSIS

A. Level of Ordinary Skill

We review the asserted grounds of unpatentability in light of the understanding of one of ordinary skill in the art at the time of the invention. Tesla submits that one of ordinary skill in the art would have had

at least a bachelor’s degree in electrical or mechanical engineering (or an equivalent field) and at least two years of work experience involving automotive systems, including electric vehicle power management. . . . Additional industry

¹ US 2009/0313034 A1, pub. Dec. 17, 2009 (Ex. 1004, “Ferro”).

² EP 1,920,968 A1, pub. May 14, 2008 (Ex. 1005, “Oyobe”).

³ US 7,124,691 B2, iss. Oct. 24, 2006 (Ex. 1006, “Donnelly”).

⁴ Steven E. Letendre, *The V2G Concept: A New Model for Power?* PUBLIC UTILITIES FORTNIGHTLY, Feb. 15, 2002, at 16 (Ex. 1007, “Letendre”).

⁵ US 5,654,621, iss. Aug. 5, 1997 (Ex. 1078, “Seelig”).

⁶ US 6,662,083 B1, iss. Sep. 16, 2003 (Ex. 1010, “Knockeart”).

experience or technical training may offset less formal education, while advanced degrees or additional formal education may offset lesser levels of industry experience.

Pet. 2 (citing Ex. 1003 ¶¶ 14–15). Charge Fusion “takes no position with respect to Petitioner’s proposed level of ordinary skill.” PO Resp. 17. For purposes of our analysis, we apply Tesla’s proposed level of ordinary skill, which we find to be consistent with the problems addressed in the ’987 patent and the prior art.

B. Claim Interpretation

We interpret claims in the same manner as a district court 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 be 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).

Here, Tesla provides a proposed construction of three claim terms common to each of the independent claims—(1) “dynamic attribute of an electric charge provider,” (2) “determine . . . a charging schedule,” and (3) “unitary vehicle charge indicator” comprising a “first portion” and a

“second portion.” *See* Pet. 4–9. Charge Fusion responds to Tesla’s proposed constructions, while also proposing a construction of yet a fourth term—“amount of charge.” *See* PO Resp. 14–25. We address each of the four in turn.

1. *“dynamic attribute of an electric charge provider”*

In the Petition, Tesla proposes that we construe “dynamic attribute of an electric charge provider,” as recited in every independent claim, to mean “a changing or otherwise fluctuating cost (or price) of electricity for purchase from an electric charge provider.” Pet. 4–5. Charge Fusion responds that Tesla improperly narrows the meaning of this claim limitation. PO Resp. 15 (arguing this claim term “is *not just limited* to ‘changing or otherwise fluctuating cost (or price)’ as alleged by the Petition” (emphasis added)). Although we consider Tesla’s proposed construction to identify an exemplary “dynamic attribute of an electric charge provider,” we see no need to limit the meaning of this limitation as proposed by Tesla. Indeed, Tesla agrees. *See* Pet. Reply. 7 (arguing only that this claim limitation “at least includes” such an example). And Charge Fusion does not contend otherwise. *See* PO Resp 15 (arguing only that this limitation “is not just limited to” cost fluctuations). As such, we see no need to further construe this claim limitation.

2. *“determine . . . a charging schedule for the vehicle”*

Limitation 1[g] recites “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.” Independent claim 8, 15, and 22 recite a materially identical limitation. Tesla submits that this limitation should *not* be construed as a means-plus-

function limitation under 35 U.S.C. § 112(6). *See* Pet. 5. Charge Fusion agrees that “nothing in the claim invokes [§] 112(6).” PO Resp. 16. As such, we discern no dispute regarding the meaning of this claim limitation.

3. *“unitary 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”*

Limitation 1[i] recites a “unitary vehicle charge indicator element” that comprises three sub-elements, “a first portion” indicating the amount of charge in the battery, “a second portion” indicating the uncharged capacity of the battery, and “a third portion” for specifying the amount of charge.⁷ Charge Fusion argues that this “element” refers only to “a GUI element having subcomponents . . . all integrated together” and does not encompass the display of these sub-elements “separately.” PO Resp. 23–24.

Tesla does not dispute Charge Fusion’s contention, but does note that this limitation “at least includes a bar graph” as shown in Figure 7 of the ’987 patent. Pet. 6–7. Charge Fusion responds that Tesla’s proposed construction should be rejected because it “improperly imports limitations from the specification.” PO Resp. 24–25. We discern no dispute over the meaning of “unitary vehicle charge indicator element” because, contrary to what Charge Fusion argues, Tesla does not contend that this limitation is

⁷ This limitation is also recited in independent claims 8, 15, and 22, albeit claim 22 uses slightly different, but not materially different, wording—“a unitary combined input/output element” comprising “a graphical depiction of a current charge level” and “a graphical depiction of a graphical input slider element.” *Compare* Ex. 1001, 29:55–63 (claim 1), 30:33–39 (claim 8), 31:19–27 (claim 15), *with id.* at 32:1–6 (claim 22).

“limited to” or otherwise “require[s]” the bar graph embodiment of Figure 7, only that it “at least includes” that embodiment. *Compare* Pet. 7, with PO Resp. 24–25.

Tesla also argues that the “first” and “second” portions of the unitary vehicle charge indicator—which indicate the charged and uncharged capacities of the battery—recite merely “communicative content,” and thus, constitute “printed matter” that is “not entitled to any patentable weight.” Pet. 7–9. At the same time, however, Tesla maintains that “[e]ven if not printed matter,” the asserted combination (namely, Donnelly) “teaches a bar graph indicating the amount of charge and uncharged capacity.” Pet. Reply 9 (citing Pet. 53–56); *see also* Hrg. Tr. 74:22–25, 75:9–11. For reasons expressed below, we agree that Tesla persuasively demonstrates that the asserted combination teaches the “unitary vehicle charge indicator element” as claimed and construed by Charge Fusion. Accordingly, we need not decide the printed matter issue.

4. “*amount of charge*”

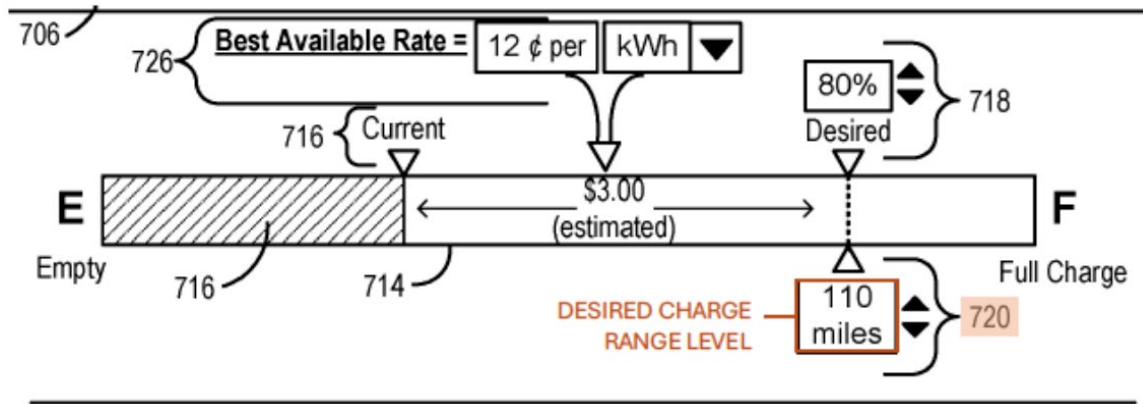
Central to this proceeding is the meaning of “amount of charge” as recited in limitation 1[i], as well as in similar limitations of independent claims 8, 15, and 22.⁸ In particular, limitation 1[i] recites that the “first portion” of the unitary vehicle charge indicator is “indicative of an *amount of charge* residing in a battery of the electric vehicle” and the “third portion” is “a slider by which an *amount of charge* may be specified.” Ex. 1001, 29:55–63 (emphases added).

⁸ As mentioned earlier, claim 22 uses slightly different language for this limitation. *See infra* n.8.

Charge Fusion argues that “an ‘amount of charge’ cannot encompass the selection of a desired range,” such as a desired distance or mileage, but instead “must be a percentage of charge of the battery.” PO Resp. 19–21; *see also id.* at 21 (“arguing the “amount of charge” be construed “according to its plain ordinary meaning such as a quantity (including in percentage) of electrical charge residing in the battery that is measurable by the electric vehicle – not as a user selected travel distance.”). We disagree.

Initially, we note that, as claimed, there is no express restriction on the manner in which the “amount” or “charge” is specified or otherwise expressed. Indeed, the Specification uses both “desired charge *percent* level” and “desired charge *range* level” as alternative ways for a user to specify an “amount of charge.” Ex. 1001, 14:53–15:8 (emphases added). The Specification defines “desired charge range level” as meaning “a desired distance to travel.” *Id.* at 15:3–8. Elsewhere, the Specification describes that a user may specify the amount of charge 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*.” *Id.* at 19:49–57 (emphasis added).

More specifically, annotated Figure 7 of the ’987 patent, reproduced below, demonstrates how a user may select “amount of charge” in terms of a desired mileage range 720 or a percentage level 718. *See* Pet. Reply 2.



As shown in red, annotated Figure 7 illustrates that a user selects “desired charge level 720” on “vehicle charge indicator 714” by moving a slider to a value specified in “miles” (e.g., 110 miles). The Specification, after discussing selecting a desired charge percent level 718, 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. Thus, the Specification confirms that “amount of charge” may be expressed in terms of a desired mileage as well as a desired percentage level.

Charge Fusion alleges the Specification “makes clear *charge amount* (i.e., the claimed ‘amount of charge’) is *different* from *charge level* (which may include distance of travel).” PO Resp. 20 (citing Ex. 1001, 14:66–15:4). According to Charge Fusion, the Specification uses only “desired charge percent level 718” as referring to an “amount of charge” and that the reference to “desired charge range level 720” reflects an estimated

“amount.” *Id.* at 20–21 (again citing Ex. 1001, 14:66–15:4). However, we read the cited passage as favoring Tesla’s position that “range” is an alternative way of specifying the “amount of charge” as claimed. *See* Pet. Reply 2–5. Indeed, the sentence immediately preceding the portion of the Specification cited by Charge Fusion equates selecting the desired charge percent level 718 with the desired charge range level 720 by stating: “The user may *also or alternatively* view and/or *change* the desired charge range level 720.” Ex. 1001, 14:65–66 (emphases added). Thus, the intrinsic record unequivocally supports that “amount of charge” can refer to a range as well as a percentage.

C. Ground 1—Obviousness in View of Ferro, Oyobe, Donnelly, Letendre, and Seelig

Tesla challenges claims 1–4, 6–11, 13–18, 20–27, 29, and 30 as obvious over the combined teachings of five references: Ferro, Oyobe, Donnelly, Letendre, and Seelig. *See* Pet. 15–79. All five references relied upon by Tesla relate to vehicles having batteries that supply significant levels of power to propel the vehicle. *See id.* at 9–13.

To begin, Tesla relies on Ferro as disclosing most of the limitations recited in independent claims 1, 8, 15, and 22 and cites various features of the other four references as teaching the remaining limitations recited throughout the claims. *See id.* at 15–79. In other words, Tesla relies on the other references as teaching enhancements or modifications to Ferro’s system. For example, Tesla relies on Oyobe as teaching that the vehicle sensor sends information sufficient to determine whether a vehicle is in a parking space. *See id.* at 10. Tesla relies on Ferro, Donnelly, and Letendre as teaching aspects of the claimed GUI with a slider. *See id.* at 30–41. Tesla relies on Seelig as teaching wirelessly charging an electric vehicle. *See id.*

at 44–54. Tesla relies on Donnelly as teaching aspects of tracking the level of charge residing in the battery as it relates to a threshold and sending an alert if the threshold is reached. *See id.* at 54–58. For the reasons discussed below, we find that Tesla demonstrates by a preponderance of evidence that the challenged claims of Ground 1 are unpatentable as obvious over the combined teachings of these references.

1. Independent Claim 1

We begin with claim 1. Tesla argues that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render claim 1 unpatentable as obvious. *See* Pet. 15–63. For clarity, Tesla subdivides claim 1 into a preamble (labeled “1[Pre]”) and nine other limitations (labeled 1[a]–1[i]). Charge Fusion does not contest Tesla’s showing that the asserted combination describes or suggests the subject matter of limitations 1[pre], 1[a]–1[d], and 1[f]–1[h]. *See* PO Resp. 26–55 (disputing only the asserted combination’s disclosure of limitations 1[e] and 1[i]⁹). Based on our review of Tesla’s showing and evidence in support, we find that Tesla demonstrates by a preponderance of evidence that the asserted combination teaches the subject matter of those *undisputed* limitations.

In terms of contested issues, Charge Fusion argues that Tesla’s showing for claim 1 fails for essentially four reasons:

1. the asserted combination fails to teach limitation 1[e] (*see* PO Resp. 26–35);
2. the asserted combination fails to teach limitation 1[i] (*see id.* at 35–42);

⁹ The Patent Owner Response, Section X.B, indicates that “element 1[h]” is in dispute, but that section is clearly discussing element 1[i] and its recitation of “amount of charge” and “vehicle indicator element.” *See* PO Resp. 35.

3. one of ordinary skill in the art would not have been motivated to combine the teachings of Ferro, Oyobe, Donnelly, and Letendre or reasonably expect success in doing so (*id.* at 43–51, 55–64); and
4. one of ordinary skill in the art would not have been motivated to combine the teachings of Ferro and Seelig (*id.* at 51–53).

For the reasons explained below, we find that Tesla demonstrates that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render claim 1 unpatentable as obvious.

a. Limitation 1[e]

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

To show that the asserted combination meets this limitation, Tesla begins with Ferro’s disclosure of 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). Furthermore, according to Tesla, Ferro suggests detecting a vehicle at a charging station because 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).

Next, Tesla points to Oyobe’s undisputed teaching of a vehicle sensor in the form of “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 (citing Ex. 1005 ¶¶ 142–143, Fig. 16). Indeed, as Tesla notes, 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.* at 19 (citing Ex. 1005 ¶ 142). As Tesla also notes, such radio communication is akin to “the ’987 patent’s wireless interrogation vehicle sensor example.” *Id.*; *see also* Ex. 1001, 9:57–10:3 (using “wireless interrogation” to “detect an arrival, proximity, and/or presence of the vehicle”), 16:39–42 (describing the vehicle sensor detecting a proximity of the vehicle via “wireless electronic transmission sensing”). Moreover, it is undisputed that Oyobe’s control apparatus 60B (vehicle “processor” of limitation 1[d]) 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 ¶ 156).

Tesla argues that one of ordinary skill in the art 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 ¶¶ 128–130). Tesla also contends that this combination would be made “according to known methods to yield predictable results of allowing the vehicle to indicate ‘an intention to charge’ without an operator having to leave the vehicle to interact with the charging station.” *Id.* (citing Ex. 1004 ¶ 36; Ex. 1003 ¶ 129). Tesla relies on the testimony of its expert (Mr. Andrews) as proving that one of ordinary skill in the art 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).

Charge Fusion responds with essentially four arguments, each of which we address in turn.

i. Motive to Combine Ferro With Oyobe Based on Allegedly Improper Hindsight

Charge Fusion contends that one of ordinary skill in the art would not have been motivated to incorporate Oyobe's position detecting apparatus into Ferro's system to meet limitation 1[e]. PO Resp. 27–29. In particular, Charge Fusion argues that Tesla's proposed motivation amounts to “improper hindsight” because Ferro already teaches “wireless” charging, so incorporating Oyobe's vehicle sensor 108 into Ferro's system “is redundant to the Ferro system.” *Id.* at 27–28. According to Charge Fusion, “[t]he Federal Circuit has confirmed that where the primary reference already includes the function of the secondary reference, an allegation to incorporate that function into the primary reference is improper hindsight and no motivation to combine exists.” *Id.* at 27 (citing *Wonderland Nursery Goods Co. v. Thorley Indus., LLC*, 988 F.Supp. 2d 479, 498–99 (W.D. Pa. 2013), *aff'd*, 644 F. App'x 1011 (Fed. Cir. 2016)).

We disagree. Charge Fusion's reliance on *Wonderland* is misplaced and does not support the proposition for which it is cited. In *Wonderland*, the district court denied the accused infringer's motion for summary judgment of invalidity, in part, because genuine issues of material fact existed as to whether there was sufficient motivation to combine the prior art. *Wonderland*, 988 F. Supp. 2d at 511. As such, the district court's *Wonderland* decision does not constitute a final ruling on the motivation to combine issue, and the Federal Circuit's summary affirmance of the district court's ruling neither addresses the issue nor reflects how the issue was

resolved at trial. *See Wonderland NurseryGoods Co. v. Thorley Indus., LLC*, 644 F. App'x 1011 (Fed. Cir. 2016).

Moreover, contrary to Charge Fusion's assertion, Tesla correctly notes that although Ferro refers to wireless charging, it provides no implementation details. Ex. 1004 ¶ 36; Ex. 2006, 54:8–55:9. Nonetheless, Ferro does describe manual options for initiating charging, and Tesla's expert credibly testifies that one of ordinary skill in the art would have been motivated to apply Oyobe's vehicle sensor to allow a user to initiate Ferro's charging methods more easily without having to leave the vehicle. *See* Ex. 1003 ¶¶ 146, 151, 152 (citing Ex. 1004 ¶ 109). Accordingly, we find that Tesla establishes that one of ordinary skill in the art would have been motivated to incorporate Oyobe's use of a sensor to establish presence of a vehicle near a charging station into Ferro's system.

ii. Alleged Differences Between Oyobe's Teaching and the '987 Patent's Wireless Interrogation Example

Charge Fusion accuses Tesla of mischaracterizing the use of Oyobe's vehicle sensor as being “akin to ‘the wireless interrogation vehicle sensor example’” from the '987 patent. PO Resp. 29–31. The '987 patent explains that “vehicle sensor 454 may comprise a communication device such as a Bluetooth® and/or passive-inductive device.” Ex. 1001, 9:60–10:3. Additionally, the '987 patent indisputably describes sensor 454 as enabling the system to determine “whether the vehicle is properly positioned, oriented, and/or outfitted for charging services.” Ex. 2005 ¶ 70 (citing Ex. 1001, 16:45–51). In contrast, according to Charge Fusion, “nothing [in] Oyobe establishes that Oyobe's vehicle sensor 108 provides information that the vehicle is in position to charge.” PO Resp. 31.

We disagree. That the '987 patent may provide a more detailed description of its vehicle sensor does not overcome Tesla's clear showing that Oyobe's vehicle sensor provides "information indicative of a presence of an electric vehicle in a parking space," as required by limitation 1[e]. As Tesla points out, Oyobe indisputably teaches a vehicle sensor in the form of "vehicle position detecting apparatus 108" that "detects whether or not hybrid vehicle 100B is parked at the location where charging equipment is installed." Pet. 18–19 (citing Ex. 1005 ¶¶ 142–143, Fig. 16). Indeed, as Tesla notes, one of the ways in which Oyobe's sensor 108 detects the presence of a vehicle at the charging location is via "communication with a radio apparatus" at the charging location. *Id.* at 19 (citing Ex. 1005 ¶ 142). Those disclosures provide ample support for Tesla's showing that Oyobe satisfies limitation 1[e].

iii. Alleged Failure by Oyobe to "provide information that enables identifying an intention to charge"

Charge Fusion argues that, because Oyobe "alert[s] the user when the battery is low" rather than "identifying that the vehicle is in a position ready to charge," Tesla's proposed combination is "analogous to illuminating the low on fuel indicator in a standard gasoline powered vehicle only when the driver has pulled into a filling station and parked next to the gas pump, which is nonsensical." PO Resp. 31 (citing Ex. 2005 ¶ 73).

It is true that Oyobe discloses alerting a user to the vehicle's low state of charge by raising a physical indicator on the exterior of the vehicle (i.e., "informing apparatus 102") when the battery is low. Ex. 1005 ¶ 40. In particular, 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. But, the fact that Oyobe’s system raises a physical indicator on the vehicle as a reminder to the user 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. Thus, regardless of the reason that Oyobe provides for including low battery indicator 102, the fact remains that Oyobe clearly teaches a vehicle sensor that provides “information indicative of a presence of an electric vehicle in a parking space” near a charging station, as required by limitation 1[e].

iv. Alleged Contradiction Between Purpose of Oyobe and Reason to Combine Oyobe and Ferro

Charge Fusion contends that “[t]he only use of Oyobe’s detecting apparatus is as ‘disposed at a location where it can easily be seen by the driver *when the driver has exited from the vehicle.*’” PO Resp. 34 (citing Ex. 1005 ¶¶ 132–133, Fig. 14). As such, Charge Fusion surmises that Oyobe’s teaching of the driver exiting the vehicle contradicts Tesla’s reason for combining Oyobe’s position sensor 108 with Ferro’s system, i.e., to keep the driver in the vehicle. *Id.*

We disagree. As Tesla correctly notes, the combination of Oyobe and Ferro “would have ‘*allow[ed]*’ a user to remain in the vehicle while

charging,” but does not require that the user remain in the vehicle. Pet. Reply 19 (quoting Pet. 20). Similarly, as noted, the combination “would have allowed the user to ‘instruct charging without exiting vehicle and without physically interacting with an external charging station,” but does not require that the user stay in the vehicle during charging. *Id.* (citing Ex. 1003 ¶¶ 129–130). Charge Fusion therefore mischaracterizes Tesla’s stated reason for combining Oyobe and Ferro as somehow *requiring* the user to stay in the vehicle rather than simply permitting the user to do so. Moreover, Charge Fusion’s unfair focus on Oyobe’s “informing apparatus 102” is a red herring that distracts from Oyobe’s overall teaching of using vehicle position sensor 108 to determine whether the car “is parked at the location where charging equipment is installed.” Ex. 1005 ¶ 142. Thus, Charge Fusion does not persuade us of a contradiction between Oyobe’s express teaching and Tesla’s reason for combining it with Ferro’s system.

v. Conclusion

For all the above reasons, we find that Tesla demonstrates by a preponderance of evidence that the combined teachings of Ferro and Oyobe suggest the subject matter of limitation 1[e].

b. Limitation 1[i]

Limitation 1[i] defines a graphical user interface (“GUI”) for setting charging preferences using “a slider” to specify “an amount of charge” for the battery. As claimed, the slider is part of “a unitary vehicle charge indicator” having two portions that provide information about the battery’s charge—“a first portion indicative of an amount of charge” and “a second

portion indicative of an uncharged capacity.” In particular, limitation 1[i] reads as follows:

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.

Tesla relies on Ferro to disclose the basic aspects of the claimed GUI with Donnelly and Letendre describing certain details. *See* Pet. 48–63. Charge Fusion counters that Tesla cobbles together three references in ways that: (1) demonstrate an improper hindsight bias; and (2) one of ordinary skill in the art would not reasonably expect to succeed. PO Resp. 35–51. Charge Fusion also contends Tesla’s proposed combination of these references 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 Tesla demonstrates by a preponderance of evidence that Ferro, as modified by the teachings of Oyobe, Donnelly, and Letendre, suggests the subject matter of limitation 1[i]. We also find that Tesla establishes that one of ordinary skill in the art would have been motivated to combine the teachings of Ferro, Oyobe, Donnelly, and Letendre with a reasonable expectation of success in doing so. We now address each aspect of limitation 1[i] as argued by the parties.

i. Charging Preferences Defined by User Input

Limitation 1[i] begins by reciting that the user input defines “one or more charging preferences.” Tesla 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); *see also* Ex. 1004 ¶ 93 (disclosing “input/output device located on-board the electric vehicle to create [charging] preferences”). Charge Fusion does not contest Tesla’s showing, and we find it to be persuasive as to this aspect of limitation 1[i].

ii. GUI for Receiving User Input

Limitation 1[i] requires that user input is “received via a graphical user interface.” Tesla 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. 49–50 (citing Ex. 1006, 1:36–38, 21:47–58, 26:6–8; Ex. 1003 ¶¶ 200–202). 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 expressly described as a touchscreen, so Tesla points to Donnelly for teaching the use of a touchscreen GUI to specify charging preferences. *Id.* at 51–52.

According to Tesla, one of ordinary skill in the art would have been motivated to incorporate Donnelly’s touchscreen GUI into Ferro’s system in which a user inputs charging preferences because, as its expert confirms, 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). Moreover, as Tesla’s expert also confirms, GUIs presented on touchscreens in vehicles were ubiquitous at the

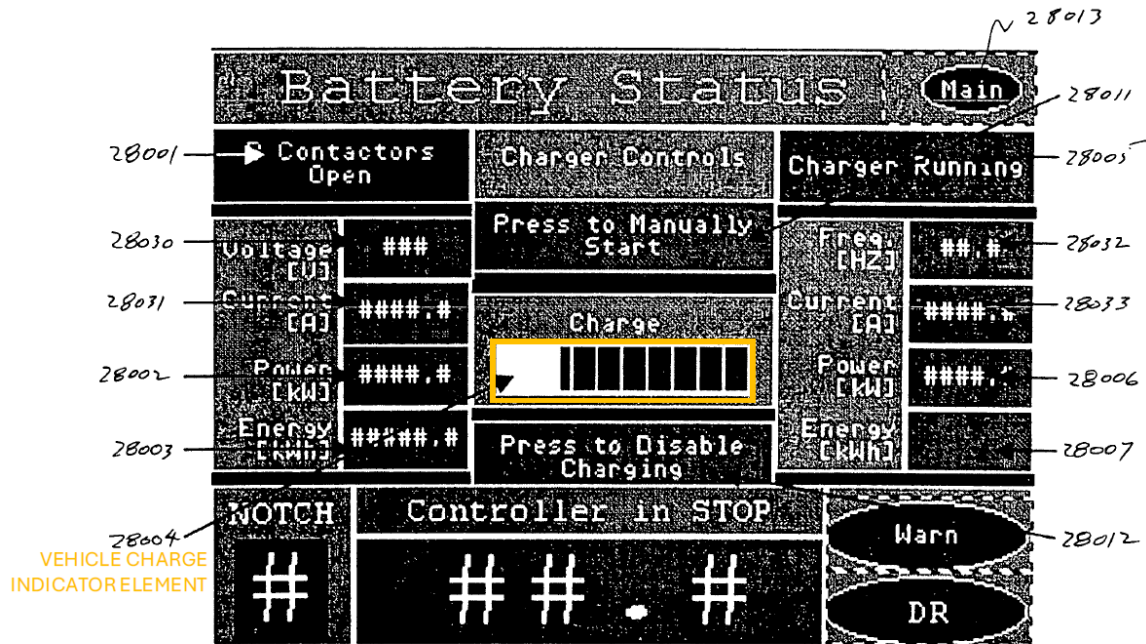
time of the '987 patent and were commonly used to view and control various functions in an automobile. *See* Ex. 1003 ¶ 206 (citing Ex. 1041, 2:52–55, 3:55–58, Figs. 15A, 15B; Ex. 1061, 2:14–17; Ex. 1062, 3). As such, one of ordinary skill in the art would have been found it advantageous to use a touchscreen to control charging parameters and recognized that 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. *See* Pet. 52–53 (citing Ex. 1003 ¶¶ 206–209).

Charge Fusion does not contest Tesla's showing, and we find it persuasive on this aspect of limitation 1[i].

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

Limitation 1[i] recites that the “unitary vehicle charge indicator” comprises “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.”

To begin, Tesla points to Ferro's disclosure that the user can specify “amount of charge 514 preferences including a minimum and/or maximum level of charge.” Pet. 53 (citing Ex. 1004 ¶ 123, Fig. 5); *see also* Ex. 1004 ¶ 93 (disclosing “input/output device located on-board the electric vehicle to create [charging] preferences”). Next, Tesla relies on Donnelly for teaching a GUI that displays the charged and uncharged capacity of a vehicle battery. *Id.* at 53–56 (citing Ex. 1006, 21:47–58, 23:16–33, Fig. 28). In particular, Tesla annotates Figure 28 from Donnelly, reproduced below, to illustrate its GUI with the charge indicator



As shown above, Donnelly’s touchscreen GUI is entitled “Battery Status,” and Tesla highlights in yellow an area labeled “Battery State of Charge 28004,” which depicts 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). Relying on its expert, Tesla contends that one of ordinary skill in the art would have understood that the black bars in Donnelly’s bar graph 28004 represent the “amount of charge residing in the battery” and the white space represents the uncharged capacity of the battery. *Id.* at 55–56 (citing Ex. 1003 ¶¶ 216–222).

In addition, Tesla explains that one of ordinary skill in the art 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’s system according to well-known methods that would have yielded predictable results. *See* Pet. 56 (citing Ex. 1003 ¶¶ 223–226). Tesla also shows that such ordinarily skilled artisan would have reasonably expected to

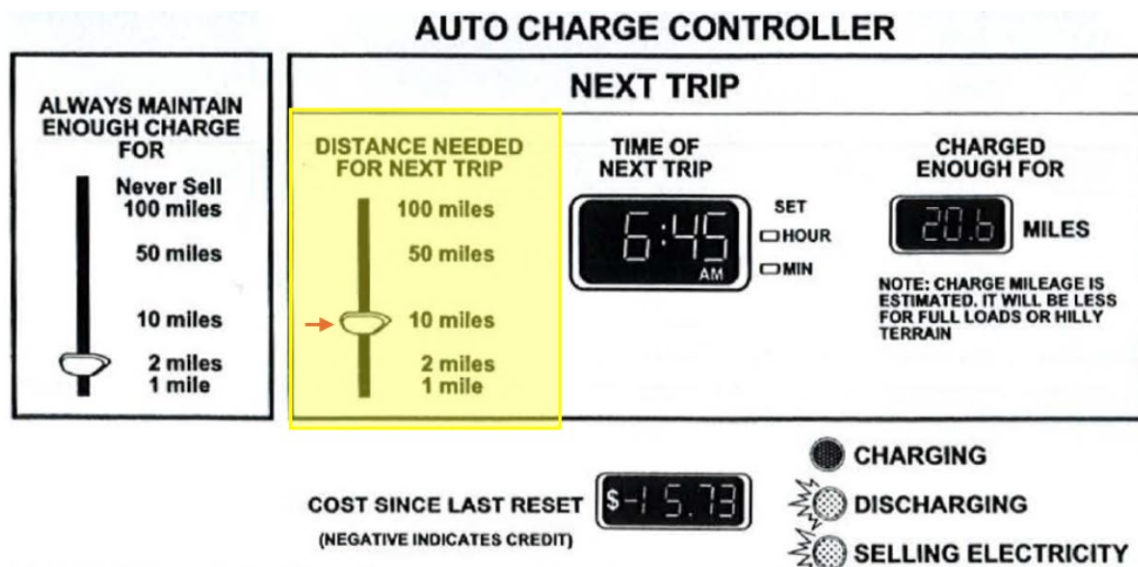
successfully combine Donnelly's state-of-charge GUI into Ferro's system, which already processes information about the state of charge of its battery and includes a display showing such charging parameters. *Id.* at 57–58 (citing Ex. 1004 ¶¶ 40, 93, 112, 162; Ex. 1003 ¶ 227).

Charge Fusion does not contest Tesla's showing, and we find it persuasive on these aspects of limitation 1[i].

iv. Slider for Specifying an Amount of Charge

In addition to first and second portions, limitation 1[i] also requires that the unitary vehicle charge indicator comprises “a third portion comprising a slider by which an amount of charge may be specified.”

As discussed above in conjunction with the claimed first and second portions, Ferro already describes that its user can set a preference for an amount of charge and/or maximum amount of charge. *See* Ex. 1004 ¶ 123; *see also* Ex. 1003 ¶ 229 (Tesla's expert confirming as much). With that in mind, Tesla relies on Letendre as teaching the slider aspect of the unitary vehicle charge indicator and argues that one of ordinary skill in the art would have found it obvious to incorporate Letendre's slider interface into Ferro's display as modified by Donnelly's GUI. *See* Pet. 59–60. More specifically, Tesla submits an annotated version of Letendre's Figure 1, reproduced below, to highlight its use of a slider to set charging preferences. *See id.* at 59 (citing Ex. 1007, 18–20).



Letendre's Figure 1 depicts a control panel, labeled "Auto Charge Controller," that has a slider (highlighted in yellow) for a user to set a desired amount of charge expressed in miles of range. Ex. 1007, 18,¹⁰ Fig. 1. As shown, the desired amount of charge is set to "10 miles." *Id.* at 20, Fig. 1. Letendre refers to the control panel for setting the desired amount of charge as "a control that the driver sets according to driving needs" and identifies the source of Figure 1 as "Kempton and Letendre, 1997." Ex. 1007, 18, 19; Ex. 1003 ¶ 231 (citing Ex. 1073, 162). Importantly, Letendre explains that the control panel illustrated in its Figure 1 may be "physical, on the dash, or on a Webpage." Ex. 1007, 19–20 (emphasis added). According to Tesla, one of ordinary skill in the art would have understood the webpage version of Letendre's selectable control to be an element of a GUI. *See* Pet. 59–60 (citing Ex. 1003 ¶ 233). And, because Letendre states "it is essential that the driver be able to limit any draw down so travel is not affected,"

¹⁰ The page citations to Letendre refer to the internal page numbering of the exhibit rather than the page numbering applied by Tesla.

Tesla contends that Letendre expressly motivates one of ordinary skill in the art to use its graphical slider element. *Id.* at 60 (citing Ex. 1007, 19).

Charge Fusion responds 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.” PO Resp. 39 (citing Ex. 2005 ¶¶ 84–87). According to Charge Fusion, Letendre’s user does not specify an amount of charge because “Letendre receives a user specified mileage condition and then *estimates* a corresponding charge amount that will likely meet the condition.” *Id.* at 38. As such, Charge Fusion 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.* Essentially, Charge Fusion interprets the “amount of charge” of limitation 1[i] as requiring that the user specify the amount in *percentage* terms. But, as discussed above, we construe “amount of charge” as also referring to a desired mileage. *See supra* Section II.B.1 (citing Ex. 1001, 19:49–53). Thus, Charge Fusion’s argument fails because it is based on an improper construction of “amount of charge.”

Charge Fusion does not otherwise contest Tesla’s showing that Letendre teaches setting an “amount of charge” using a slider moved to a desired range, and we find Tesla’s showing on this aspect of limitation 1[i] to be sufficiently persuasive.

v. Motive to Combine Ferro, Donnelly, and Letendre

Tesla argues that one of ordinary skill in the art “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. 60–61 (citing Ex. 1003 ¶¶ 235–237). We agree.

As discussed above, Ferro as modified by Donnelly already (and indisputably) reflects a system with a GUI on a touchscreen for depicting state of charge. *See supra* Section II.C.1.b.(i) and (iii). Modifying that GUI touchscreen to add a slider for specifying the state of charge is expressly motivated by (1) Letendre’s instruction that “it is essential that the driver be able to limit any draw down so travel is not affected” and (2) its use of a GUI slider as “a control that the driver sets according to driving needs.” Ex. 1007, 19. Thus, Ferro’s express description of an input/output device for managing charging preferences, along with Letendre’s express description of a GUI for setting charging parameters, suggest using Letendre’s GUI slider with Ferro’s system as modified by Donnelly’s GUI touchscreen. *See* Ex. 1003 ¶¶ 235–236. Indeed, modifying Ferro/Donnelly’s bar graph GUI to incorporate Letendre’s slider constitutes nothing more than applying a known technique (using Letendre’s slider to adjust a charge setting) to a known device ready for improvement (Ferro/Donnelly’s vehicle GUI showing a charge bar graphic) to yield predictable results (easily allowing a user to choose a desired level of charge). *See* Ex. 1003 ¶¶ 237–238. And one of ordinary skill in the art would have reasonably expected success in doing so given that the GUI suggested by Ferro-Donnelly already enabled setting charging preferences including “amount of charge” (i.e., minimum and maximum). *See id.* ¶ 239.

Charge Fusion responds that that Tesla fails to establish how and why Letendre’s slider would have been combined with Ferro and Donnelly to arrive at a “vehicle charge indicator element” with the first, second, and

“third portion comprising a slider” unified into one GUI element. PO Resp. 43–46 (citing Ex. 2005 ¶¶ 90–96). According to Charge Fusion, Tesla’s reason for combining Letendre’s slider with Ferro-Donnelly’s GUI fails because Letendre’s slider for specifying *range* is “incompatible” with Ferro/Donnelly’s bar graph for specifying *percentage* of charge. *Id.* at 44–45 (citing Ex. 2005 ¶¶ 94–95). In particular, Charge Fusion disputes that one of ordinary skill in the art would have incorporated Letendre’s slider element, with its logarithmic scale, onto the proportional scale taught by Ferro/Donnelly. *Id.*; *see also* PO Sur-Reply 11–12.

To the extent Charge Fusion relies on the testimony of its expert, who speculates about the motives behind Letendre’s use of mileage as the charge parameter being set by the user, we are not persuaded. *See* Ex. 2005 ¶¶ 90, 92–94 (citing Ex. 1007, 18, Fig. 1). That is because Charge Fusion’s expert ignores the proper construction of “amount of charge,” which, consistent with Specification of the ’987 patent, allows a user to specify either percentage or miles as if they are interchangeable. *See* Ex. 1001, 14:53–15:8, Fig. 7 (showing “80%” charge and “110 miles” as equivalent levels of charge). Thus, we reject Charge Fusion’s argument that Letendre’s method of specifying an amount of charge is incompatible with the methods taught by Ferro/Donnelly.

Moreover, Charge Fusion and its expert fail to account for the level of skill and creativity of an ordinarily skilled artisan, who would have possessed a bachelor’s degree in engineering and easily accounted for the differences in scale depicted by Letendre’s GUI slider and Ferro/Donnelly’s GUI touchscreen. *See* Ex. 1003 ¶¶ 235–237; *see also* *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1294 (Fed. Cir. 2015) (“The test for

obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. . . . Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”). Accordingly, we find that Tesla’s showing of a reason for combining the teachings of Ferro, Donnelly, and Letendre to arrive at limitation 1[i] is persuasive and supported by the evidence of record.

vi. Motive to Combine Ferro and Seelig

Charge Fusion argues that Tesla’s reason for combining Seelig with Ferro “is flawed as it is based on a fundamentally incorrect premise.” PO Resp. 52. According to Charge Fusion, Tesla “incorrectly alleges that Seelig’s control signal LA ‘starts a charging of the vehicle,’” when, instead, “Seelig requires manual activation . . . for example by the deposit of a coin.” *Id.* at 51–52 (citing Ex. 1078, 4:55–57). “This coin,” Charge Fusion argues, “starts a coupling process between the ‘charging element 1’ and ‘transmission element 2’ where the elements are iteratively moved towards one another until a ‘coupling achieved KER’ signal is generated.” *Id.* at 52 (citing Ex. 1078, 4:67–5:3). As such, Charge Fusion surmises that “[i]ncorporating Seelig into Ferro and Oyobe does not provide an advantage because the resulting combination would require manual intervention every time the charging was to be initiated (e.g., any time the charging schedule was operated, a coin would need to be inserted),” and, thus, “the Petition has not shown a reason or motivation to combine Ferro (or Oyobe/Donnelly/Letendre) with Seelig.” *Id.* at 52–53.

At the outset, we note that Charge Fusion does not dispute Tesla’s showing that Seelig teaches the transmission of a “charging initiation signal”

to a parking space charge device. *Compare* Pet. 44–46, *with* PO Resp. 51–53. As for Seelig’s example that the control signal’s transmission is initiated via insertion of a coin, Charge Fusion’s argument ignores that claim 1 (i.e., limitation 1[h]) does not recite any details regarding a cause or trigger of the control signal’s transmission; it simply requires that the transmitted control signal “starts a charging.” *See* Ex. 1001, 29:50–51. Moreover, Charge Fusion’s argument that combining Seelig’s charge initiation signal with Ferro’s system would require manual intervention (i.e., insertion of a coin) every time the charging was to be initiated ignores that Tesla relies on Seelig solely for its teaching of transmitting a control signal that starts vehicle charging. *See* Pet. 44–48.

In any event, to the extent the cause or trigger of the control signal is necessary, Tesla clearly relies on Ferro, not Seelig, for such a disclosure: “[T]he charging phase *begins* when energy transaction execution engine 316 sends the transaction plan” and “*initiates* the request to begin charging the electric vehicle” and “[d]uring the charging phase, electricity flows to, from, or is stored in the electric vehicle.” Pet. 42 (quoting Ex. 1004 ¶¶ 60, 51, respectively) (emphasis added). Thus, in the asserted combination, Ferro’s transaction execution engine 316 initiates the request to begin the charging, without the need to exit the vehicle or insert a coin. *See* Pet. 44 (referring to limitations 1[d]) and explaining that the request to initiate charging is performed by the vehicle’s processor executing software within the vehicle’s memory). As such, Charge Fusion’s arguments are based on an inaccurate understanding of Tesla’s reason for combining the teachings of Ferro and Seelig.

c. Conclusion

For all the reasons set forth above, we find that Tesla successfully demonstrates that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render claim 1 unpatentable as obvious.

2. Independent Claims 8, 15, and 22

With few exceptions, Tesla cross-references its showing for independent claim 1 as demonstrating that independent claims 8, 15, and 22 are also unpatentable as obvious over the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig. *See* Pet. 69–70 (claim 8); 70–75 (claim 15); 76–78 (claim 22). Tesla also explains how the asserted combination teaches limitations 15[j]–15[k], which are unique to claim 15, focusing on teachings from Ferro. *Id.* at 72–75 (citing Ex. 1004 ¶¶ 60, 73–76, 114–117, 138–139, 148–151, Figs. 8, 12; Ex. 1003 ¶¶ 292–295). Tesla does the same for a limitation unique to claim 22, namely, limitation 22[d], focusing on teachings from Ferro and Donnelly. *Id.* at 76–78 (citing Ex. 1006, 23:16–19, Fig. 28; Ex. 1003 ¶¶ 217–219, 306–308, 310).

Charge Fusion responds to Tesla’s showing for these independent claims by cross-referencing its arguments for claim 1 (which we address in Part II.C.1 above) without otherwise advancing any argument unique to these claims. *See* PO Resp. 26–53 (addressing claims 1, 8, 15, and 22 solely as a group). As such, Charge Fusion does not contest Tesla’s showings relating to any aspects of independent claims 8, 15, and 22 that differ from Tesla’s showing for claim 1.

To the extent that Tesla’s showing for claims 8, 15, and 22 differ from its showing for claim 1, we agree with and adopt as our own Tesla’s showing as supported by the relied-upon evidence. On that basis, we find

that Tesla demonstrates by a preponderance of evidence that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render independent claims 8, 15, and 22 unpatentable as obvious.

*3. Dependent Claims 2, 9, and 16*¹¹

Claims 2, 9, and 16 depend directly from claims 1, 8, and 15, respectively, and recite “wherein the graphical user interface is adapted to display a web page.” Ex. 1001, 29:64–65 (claim 2), 30:40–41 (claim 9), 31:28–29 (claim 16). Tesla correctly notes that Letendre describes implementing its slider-based user interface on a webpage. *See* Pet. 63 (citing Ex. 1007, 19–20). Tesla further contends that vehicles including an on-board display were well known and that Ferro describes hardware and software for communicating with a remote server via a wireless network including the internet. *Id.* at 64 (citing Ex. 1003 ¶¶ 248–250). As such, Tesla contends, one of ordinary skill in the art would have been motivated to modify Ferro’s input/output display into a webpage as suggested by Letendre so that both the user of the vehicle and the entity providing charging services would have access to the same GUI. *Id.* (citing Ex. 1004 ¶¶ 83, 91, 93; Ex. 1003 ¶ 250). Also, according to Tesla, one of ordinary skill in the art would have reasonably expected success at implementing that modification because Ferro already teaches that communication units wirelessly connected to the internet via wireless networks [or “a wireless network”?] and web-based GUIs were well known before the ’987 patent

¹¹ The Patent Owner Response, Section X.D, indicates that “Claims 2, 11, and 20” are in dispute, but the analysis under that heading is clearly discussing the limitation recited in dependent claims 2, 9, and 16. *See* PO Resp. 53.

such that the ordinarily skilled artisan would need only to program Ferro's processor to access a webpage via the network and display the webpage on Ferro's display. *Id.* at 64–65 (citing Ex. 1004 ¶¶ 38, 42; Ex. 1003 ¶ 251). For the identical limitations in dependent claims 9 and 16, Tesla merely cross-references its showing for claim 2. *Id.* at 70, 75.

In response, Charge Fusion argues that Tesla “fails to point to any reference that contains a GUI that displays a webpage.” PO Resp. 53. We disagree. Tesla clearly identifies Letendre as expressly suggesting that the GUI can be a webpage. *See* Pet. 63 (citing Ex. 1007, 19–20). We also find that Tesla's showing relating to how and why one of ordinary skill in the art would have followed Letendre's teaching to modify Ferro's interface to display a webpage is persuasive for the reasons set forth in the Petition and summarized above. Thus, in our view, Tesla demonstrates by a preponderance of evidence that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render dependent claims 2, 9, and 16 unpatentable as obvious.

4. Dependent Claims 3, 4, 6, 7, 10, 11, 13, 14, 17, 18, 20, 21, 23–27, 29, and 30

Tesla identifies specific disclosures from the asserted combination of references that teach the limitations introduced by each of the other challenged dependent claims (i.e., claims 3, 4, 6, 7, 10, 11, 13, 14, 17, 18, 20, 21, 23–27, 29, and 30) and render those claims unpatentable as obvious. *See* Pet. 65–69 (claims 3, 4, 6, and 7), 70 (claims 10, 11, 13, and 14), 75–76 (claims 17, 18, 20, and 21), 78–79 (claims 23–27, 29, and 30). Charge Fusion does not contest Tesla's showing for those dependent claims. We have considered Tesla's showing and, for the reasons set forth in the Petition as supported by the relied-upon evidence, we find that Tesla demonstrates

by a preponderance of evidence that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, and Seelig render dependent claims 3, 4, 6, 7, 10, 11, 13, 14, 17, 18, 20, 21, 23–27, 29, and 30 unpatentable as obvious.

D. Ground 2—Obviousness in View of Ferro, Oyobe, Donnelly, Letendre, Seelig, and Knockeart

Claims 5, 12, 19, and 28 depend from one of independent claims 1, 8, 15, and 22 and add the limitation that “the graphical user interface forms a part of a smartphone.”¹² Ex. 1001, 30:4–5 (claim 5), 30:47–48 (claim 12), 31:35–36 (claim 19), 32:40–41 (claim 28).

Tesla identifies Knockeart as teaching a removable personal device, such as a cellular telephone or a Palm PDA,¹³ that communicates with a “driver information system” within a vehicle that includes a “graphical interface.” *See* Pet. 79–80 (citing Ex. 1010, Abstract, 2:46–50, 4:32–67, 6:39–47, 12:38–41, Figs. 1, 3–6); *see also* Ex. 1003 ¶¶ 323–324 (confirming a cellular telephone is a smartphone). Tesla contends that one of ordinary skill in the art would have been motivated to adapt Ferro’s GUI to be displayed on a removable smartphone, as suggested by Knockeart, so that the user could view and enter charging preferences while away from the vehicle. *See id.* at 80 (citing Ex. 1004 ¶¶ 32, 33, 37, 64; Ex. 1003 ¶¶ 325–328).

In disputing Tesla’s showing for dependent claims 5, 12, 19, and 28, Charge Fusion argues that Tesla fails to show how one skilled in the art would have configured Knockeart’s removable smartphone with the teachings of the other five references in the asserted combination. *See* PO

¹² Claim 28 omits the word “graphical.”

¹³ “PDA” is short for Personal Digital Assistant.

Resp. 54–55. According to Charge Fusion, Tesla “does not specify how a POSITA would utilize Knockeart’s PDA to monitor or input selected modes of operation as claimed in the ’987 Patent” given that “Knockeart’s PDA *does not control any mode of operation of the vehicle remotely.*” *Id.* at 55 (citing Ex. 2005 ¶ 118).

We disagree. To begin, Knockeart clearly discloses that its PDA is used to control “certain functionality” of the in-vehicle driver information system—

In-vehicle system 105 is configured to use a removable personal device 160 to provide certain functionality of the in-vehicle system, or to enhance functionality of components of the in-vehicle system that are permanently affixed to the vehicle. In this description, a “removable” device is understood to be a device that is intended to be brought in and out of the vehicle by the operator of the vehicle and coupled to the in-vehicle system in some manner that provide a communication path between the in-vehicle system and the removable personal device.

Ex. 1010, 4:31–40.

We find that one of ordinary skill in the art reasonably would have understood Knockeart’s disclosure of remotely controlling the vehicle’s “functionality” as including the vehicle’s modes of operation. Moreover, Charge Fusion attacks Knockeart individually without addressing the asserted combination as proffered by Tesla. In the asserted combination, the remote control of the vehicle’s functionality, as taught by Knockeart, would have included the vehicle’s charging information. And to the extent Charge Fusion relies on the testimony of its expert to argue the contrary, we are not persuaded for the simple reason that Charge Fusion’s expert focuses solely on several examples in Knockeart while ignoring Knockeart’s teaching as a whole, which, more accurately, is reflected in the above-quoted passage of

Knockeart. *See* Ex. 2005 ¶ 117 (focusing solely on “Knockeart, Column 1, Line 62, to Column 2, Line 24” while failing to address Tesla’s reliance on Knockeart’s other disclosures). Thus, we consider Charge Fusion’s evidence to be lacking and of little probative value. On the other hand, as discussed above, Tesla provides more than sufficient evidence for why one skilled in the art would have combined Knockeart’s teaching with the other references of Tesla’s asserted combination. *See* Pet. 79–80 (citing Ex. 1010, Abstract, 2:46–50, 4:32–67, 6:39–47, 12:38–41, Figs. 1, 3–6; Ex. 1003 ¶¶ 323–328). As such, Tesla demonstrates by a preponderance of evidence that the combined teachings of Ferro, Oyobe, Donnelly, Letendre, Seelig, and Knockeart render claims 5, 12, 19, and 28 unpatentable as obvious.

III. CONCLUSION¹⁴

Claims Challenged	35 U.S.C. §	Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–4, 6–11, 13–18, 20–27, 29, 30	103	Ferro, Oyobe, Donnelly, Letendre, Seelig	1–4, 6–11, 13–18, 20–27, 29, 30	
5, 12, 19, 28	103	Ferro, Oyobe, Donnelly, Letendre, Seelig, Knockeart	5, 12, 19, 28	
Overall Outcome			1–30	

IV. ORDER

Accordingly, it is:

ORDERED that claims 1–30 of U.S. Patent 11,631,987 B2 are *unpatentable* as obvious under 35 U.S.C. § 103; and

FURTHER ORDERED because this is a final written decision, the parties to this proceeding seeking judicial review of our Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

¹⁴ Should Charge Fusion wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw its attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). And should Charge Fusion choose to file a reissue application or a request for reexamination of the challenged patent, we remind it of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. §§ 42.8(a)(3), (b)(2).

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