

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA INC.,
Petitioner

v.

CHARGE FUSION TECHNOLOGIES, LLC,
Patent Owner

Case No. IPR2025-00153
Patent No. 11,631,987

**PETITIONER'S REPLY TO
PATENT OWNER'S RESPONSE**

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I. INTRODUCTION

Patent Owner's arguments in the Patent Owner Response (Paper 18) ("POR") (1) improperly narrow the claims to specific embodiments, (2) read-in limitations from specification embodiments, and (3) incorrectly assume that the Petition's grounds bodily incorporate secondary reference features. Because PO's contentions are contrary to claim construction and obviousness law and unresponsive to the Petition's mapping and motivations, they must be rejected.

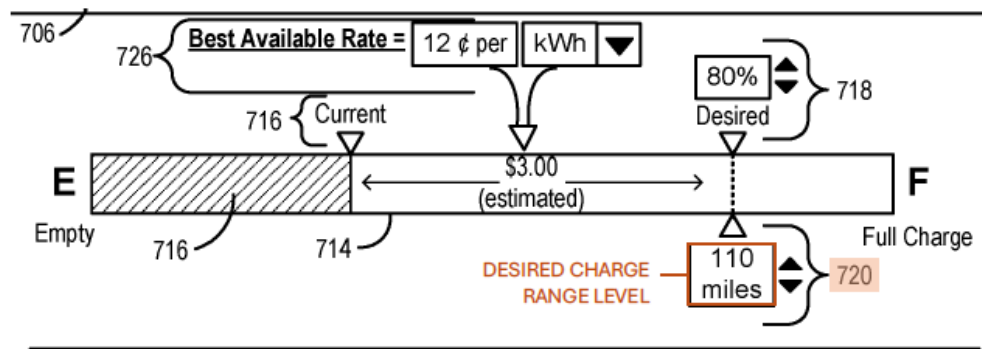
II. PO'S CLAIM CONSTRUCTION POSITIONS ARE UNSUPPORTED

A. PO's Interpretation of "Amount of Charge" Improperly Excludes an Embodiment

Claim 1[i] recites "a slider by which an amount of charge may be specified." EX1001. *See also id.*, Claims 8[e], 15[l]. PO argues the "'amount of charge' must be a percentage of charge" and not a charge level expressed in terms of travelable distance. POR, 21. No basis exists in the claims or the specification to arbitrarily limit the claims to one of the defined measures of charge level (i.e., charge percent level) and exclude the other measure of charge levels (i.e., charge range level).

1. *The Slider Embodiment*

The '987 Patent describes using a slider to set a “**desired charge percent level 718**” and also (or alternatively) a “**desired charge range level 720**.” EX1001, 14:53–15:8.



Pet., 58 (citing EX1001, FIG. 7 (excerpt, annotated)). Figure 7 shows the “charge range level” set at 110 miles, which *also* sets the “charge percent level” at 80%. As the Board found at institution, there is “no persuasive reason to limit the claims in a manner that covers one alternative but excludes the other.” Paper 12, 25.

The '987 Patent describes a vehicle charge indicator 714 that “visually indicates a current charge level 716 of the vehicle.” EX1001, 14:53-64. The '987 Patent states:

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.**

EX1001, 14:65–15:8. Reading the '987 Patent, 14:53–15:8 collectively, the '987 Patent describes (1) determining how far the vehicle can travel on a given charge amount; (2) utilizing this determination of how far the vehicle can travel to express a desired charge level; and (3) user selection of the “desired charge level” as either a charge percent level (expressed as a percentage amount) or charge range level (expressed as a mileage amount) using a slider.

2. *The Claims and Specification Do Not Distinguish “amount of charge” from “charge level”*

PO argues the '987 Patent “distinguishes **charge amount** from **charge level**[.]” POR, 21. PO’s distinction fails for several reasons.

First, nothing in the '987 Specification or claims mandates construing “amount of charge” (1) to be something different from a charge level; (2) to include *only* a charge percent level; or (3) to exclude a charge range level. The '987 Patent does not use the phrase “amount of charge” other than in the claims and at 11:8-15 (describing a vehicle requiring an “amount of charge ‘A’” in the context of charging a plurality of vehicles). The only use of “amount” in terms of a charge amount is at

14:66–15:4, which also refers to the “desired charge level[.]” Nowhere in the specification did the inventor act as a lexicographer to define “amount of charge” as a percentage only, nor did the inventor disclaim the charge range level embodiment of Figure 7.

Second, the '987 Patent's only slider-based disclosure is a slider used to set a “charge percent level 718” and/or a “charge range level 720.” *See* § II.A.1. There is no discussion in the '987 Specification of using the slider to set a charge “amount”; there is only description of setting a charge “level.” EX1001, 14:53–15:8. If the claimed *slider by which an amount of charge may be specified* is something different than a slider for specifying a “charge level[.]” as PO contends, then the Challenged Claims have no written description support.

Third, PO's arguments are internally inconsistent. PO alleges that “charge percent **level** 718” is an “amount of charge[.]” while a “charge range **level** 720” is not. POR, 21. PO provides no basis for this distinction. The '987 Patent uses the phrase “charge level” as a broad term encompassing both a charge percent level and a charge range level, where again, the charge level can be expressed as a percentage or a range (mileage). Logically, because charge percent level and charge range level are just two different units for specifying the same value, i.e., charge level, and because charge percent level is an “amount of charge” (per PO's argument), then charge range level is equally an amount of charge.

Fourth, the '987 Patent uses the phrases “charge amount” and “charge level” interchangeably for at least two reasons. First, the '987 Patent's Figure 7 depicts the charge range level and the charge percent level as interchangeable. Second, the '987 Patent refers to “how far the vehicle can travel on a given **charge amount**” and describes the “desired **charge level** in terms of distance capable of being traveled.” EX1001, 14:65–15:8. Reversing the bolded terms in the sentences does not change the meaning of either sentence. *Cf.* EX1001, 14:56-58 (“a current charge level”), 11:9-10 (“an amount of charge”). Different terms in the same patent have the same meaning when used interchangeably. *Baran v. Med. Device Techs., Inc.*, 616 F.3d 1309, 1316 (Fed. Cir. 2010); *Tehrani v. Hamilton Med., Inc.*, 331 F.3d 1355, 1361 (Fed. Cir. 2003).

Fifth, specifying a charge percent level (i.e., 80%) or charge range level (i.e., 110 miles) requires completing underlying calculations; neither value is measured directly. EX2006, 60:14–61:17 (identifying factors impacting vehicle range); EX2005, ¶45 (same); EX1001, 14:66–15:2 (describing use of “a general average...a specific itinerary and/or past driving habits”). The charge percent level depends on the battery capacity, which is impacted by temperature and the battery's age, for example. EX1096, 23:6-11; EX2006, 60:20–61:4, 61:18–62:5 (“The percentage is also an estimation”), 62:15-21.

Therefore, “amount of charge” must cover *both* slider embodiments in the ’987 Patent.

3. Mr. Andrews Testimony Does Not Support PO’s Position

PO claims Mr. Andrews testified that “amount of charge” is equivalent to “state of charge.” POR, 22, 42. Mr. Andrews actually testified: “you could say that [amount of charge and state of charge] are equivalent...depending on how you have specified the units[.]” EX2006, 59:8-13. This is true. An amount of charge may be expressed as a percentage of the battery’s capacity, according to the ’987 Patent (EX1001, 14:56-64, Fig. 7), and a state of charge is often represented as a percentage of the battery’s maximum capacity. EX1066, 1.

It is not Petitioner’s (or Mr. Andrews’) position that an amount of charge cannot be expressed as a percentage.¹ EX1001, 14:56-64, FIG. 7. But that is not the *only* way to express an amount of charge with a slider to meet Claim 1[i].

Accordingly, the Board should reject PO’s attempt to exclude a claim embodiment.

¹ Thus Mr. Andrews’ prior testimony in IPR2020-01189 is wholly consistent with his positions here. *Contra* POR 22, n.2.

B. The Petition Properly Construes “dynamic attribute of an electric charge provider”

A “dynamic attribute of an electric charge provider” at least includes “a changing or otherwise fluctuating cost (or price) of electricity for purchase from an electric charge provider.” Pet., 4-5. PO agrees. POR, 14-16. There is no dispute that the Board must resolve.

C. “determine...a charging schedule for the electric vehicle”

PO agrees that nothing in the claim invokes §112(6). POR, 16. To the extent the Board determines that §112(6) applies, PO provides no argument for why the Petition has not identified the corresponding structure within the cited prior art. *Id.*; Pet., 41.

D. The First and Second Portions of the Vehicle Charge Indicator Element Are Directed to Printed Subject Matter

It is not seriously disputed that step 1 of the printed subject matter doctrine is met. The claimed first and second portions of the vehicle charge indicator—which indicate the charged and uncharged portions of the battery—claim “the content of information[.]” *Praxair Distrib., Inc. v. Mallinckrodt Hosp. Prods. IP Ltd.*, 890 F.3d 1024, 1032 (Fed. Cir. 2018). Standing alone, they provide no other function. Even PO’s expert admits that though he initially claimed that “each portion of the indicator provides functionality” he “didn’t say what the functionality was” and was unable

to identify any function beyond indicating the amount of charge residing in a battery.
See e.g., EX1097, 17:18–19:4.

The remaining dispute is whether, at step 2, the printed matter is functionally related to its “substrate.” *i.e.*, whether the printed material is “interrelated with the rest of the claim.” *Praxair*, 890 F.3d 1032. It is not.

PO effectively argues that there are ways that a slider *could* be configured so that it would have a relationship to the first and second portions of the unitary vehicle charge indicator. POR, 17-19. That is very different from asking whether *as claimed* there *is* a relationship between the slider and the first and second portions of the unitary vehicle charge indicator. PO points to nothing *in the claims* that requires a relationship between the slider and the first and second portions of the unitary vehicle charge indicator, and there is no such claimed relationship.

PO summarily alleges that the first and second portions “define the scope of the charge indicator” and “may impact the user’s decision of where to place the slider.” POR, 18-19. But PO’s expert did not support this conclusion. EX1097, 16:13–17:2 (agreeing that the slider does not have to be placed over the first and second portions of the vehicle charge indicator).

Therefore, the first and second portions of the vehicle charge indicator, *as claimed*, do not “interact[] with the other elements of the claim to create a new functionality in a claimed device” or “cause a specific action in a claimed process”

C.R. Bard Inc. v. AngioDynamics, Inc., 979 F.3d 1372, 1381 (Fed. Cir. 2020). The printed subject matter doctrine applies.

The sole case relied on by PO does not compel a different conclusion. In *In re Gulack*, the Federal Circuit found a sequence of digits was printed on a band (the substrate) in a specific way to “exploit the endless nature of the band.” 703 F.2d 1381, 1387 (Fed. Cir. 1983). In contrast, here PO argues that the first and second portions of the unitary vehicle charge indicator do **not** have to be provided in any particular way, such as a bar graph. POR, 24. Therefore, PO’s argument is, in essence, that the user may consider the available charge when deciding how to set the slider. This is no different from a doctor considering dosage information provided with a drug when deciding how to prescribe it, and it is well established that that dosage information is not functionally related to the drug product for purposes of the printed matter doctrine. *Praxair*, 890 F.3d at 1032 (“adding an instruction sheet or other informational content to a drug product is not sufficient to create a functional relationship”).

Even if not printed matter, Donnelly teaches a bar graph indicating the amount of charge and uncharged capacity. Pet., 53-56.

E. PO's Vehicle Charge Indicator Element Arguments Misrepresent the Petition

PO continues to misunderstand the proposed construction. The Petition states “the claim term ‘unitary vehicle charge indicator element’ *at least* includes a bar graph comprising the charged, uncharged, and slider portions, such as illustrated in FIG 7.” Pet., 7 (emphasis added). In other words, Figure 7 provides an *example* of a unitary vehicle charge indicator. This was expressly recognized by the Board in the Institution Decision. Paper 12 at 9 (“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.”). PO’s expert agrees that Fig. 7 depicts a unitary vehicle charge indicator element. EX1097, 15:24–16:8. Therefore, Petitioner’s construction should be adopted.

PO further argues the “unitary vehicle charge indicator element” of Claim 1[i] must include the claimed subcomponents, “all integrated together” when displayed on the interface, and “not separate GUI components that are separately displayable on a GUI.” POR, 24-25. To the extent PO contends specific coding is required to satisfy “a vehicle charge indicator element,” PO identifies no support from the claims or specification. *Id.* Nevertheless, the Petition explains that programming would cause the GUI to display the co-located bar graphic and slider. EX1003, ¶239

(describing programming execution); *Fonar Corp., v. General Elect. Co.*, 107 F.3d 1543, 1549 (Fed. Cir. 1997) (“writing code for such software is within the skill of the art, not requiring undue experimentation, once its functions have been disclosed.”). Further, Dr. Goldstein has never designed an electric vehicle GUI (EX1096, 14:5-7) unlike Mr. Andrews (EX2006, 21:6–22:3), and for this additional reason, PO’s conclusory positions are not credible.

Regardless, the Petition mapped Claim 1[i] as a single element by “includ[ing] 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 (emphasis added); EX1003, ¶236. Even if the “indicator element” term requires the subcomponents to be “all integrated together,” the limitation is met.

III. DEFINITION OF A POSITA

The parties dispute whether a POSITA would have had electric vehicle experience. The ’987 Patent is directed to “[s]ystems and methods for ***charging electric vehicles***” and all claims are directed to electrical charging systems and methods. EX1001, Abstract, claims 1-30. Accordingly, the Petition explains a POSITA would have “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.**” Pet., 2 (emphasis added); EX1003 ¶¶14-15.

PO's alternative definition of a POSITA (EX2005, ¶25) does not require any electric vehicle experience and is inappropriate here. While PO's expert has additional degrees and formal training, his hands-on experience with electric vehicles is lacking. He has never worked on the design of an electric vehicle charging system, designed a GUI for an electric vehicle, or designed an HVAC system for an electric vehicle. EX1096, 12:11–14:7. He has never owned an electric vehicle, rented an electric vehicle, or even personally plugged in an electric vehicle to charge. EX1096, 22:19–23:5. His closest experience comes from being on the Board of an EV company where, admittedly, he “wasn't involved with engineering[.]” EX1096, 12:17-18. Accordingly, the opinions of PO's expert regarding what would have motivated a POSITA are entitled to little weight. *Ascend Performance Materials Operations LLC v. Samsung Sdi Co., Ltd.*, IPR2020-00349, Paper 53 at 11 (PTAB July 15, 2021) (“we take into account the qualifications of an expert witness—and any shortcomings revealed through cross-examination[.]”).

IV. THE '987 PATENT CLAIMS ARE UNPATENTABLE

A. The Prior Art Teaches Claim 1[i]

1. It Is Undisputed that Letendre Teaches a Slider Setting a Distance and Maximum Range

Because PO's proposed construction of “amount of charge” is incorrect, its challenge to whether Letendre teaches limitation 1[i] also fails. POR, 35-42. *Supra*, II.A.

Letendre teaches a slider that allows the user to specify a distance and a minimum range, which is undisputed. POR, 39. Because (1) setting an amount of charge, within the '987 Patent context, at least includes setting a charge percent or a charge range (e.g. distance) with a slider, and (2) Letendre teaches setting a distance/range with a slider to control charging, Letendre teaches a slider by which an amount of charge may be specified. Pet., 59-62.

2. PO Ignores a POSITA Being a Person of Ordinary Creativity

PO alleges the combination of Letendre's slider and Donnelly's bar graph is inoperable because the two references use different scales, attacking the Petition for not explaining how to bodily incorporate Letendre into the Ferro-Donnelly combination. POR 42, 45. But this is not the right analysis. *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1294 (Fed. Cir. 2015). PO provides no reason why a POSITA, a person of ordinary creativity with at least a bachelor's degree in engineering, would have been incapable of resolving any (unclaimed) implementation details, including a unified scale, with basic math. EX1003, ¶¶237-239 (describing common use of sliders).

Relatedly, PO's argument that adding Letendre's slider to Donnelly's battery bar graph would require putting "Letendre's slider in a different position on the Donnelly display similar to how the slider is in a different position in the Letendre display" misunderstands the combination presented in the Petition. POR, 49. The

Petition explains that a POSITA would have been motivated, and would have found it obvious to include Letendre's graphical slider "on the charge level bar graph of the GUI" and explains in detail why a POSITA would have been motivated to do so (Pet., 60-62; EX1003, ¶¶235-239) and why applying a slider was already a well-known technique. Pet., 62; EX1003, ¶237. Accordingly, PO's argument is unresponsive to the Petition and the question of whether it would have been obvious, and a POSITA would have been motivated to combine the teachings in the Ferro-Donnelly-Letendre combination as outlined in the Petition to satisfy the unitary vehicle charge indicator limitation.

PO also argues that the "scale of the slider is relevant to implementing a *unitary* vehicle charge indicator element as required by the Challenged Claims" because in Figure 7 the slider is set to 80%, 4/5ths of the way up the bar graph. POR, 50. But the claims do not recite any particular scale. In addition, as explained above at II.D, there is no claimed relationship between the slider and the portions of the vehicle charge indicator showing the charged and uncharged portions of the battery. Therefore, there is no requirement that the scale be the same for the first and second portions of the vehicle charge indicator as the slider scale (though, as mapped in the Petition, the same scale would be used). Accordingly, PO's argument reads limitations into the claims and should be rejected.

3. *Ferro Also Teaches Setting an Amount of Charge*

Ferro teaches “the user may input charging preferences including a minimum amount of charge, a maximum amount of charge, or specify different charge levels depending on the power source.” Pet., 58. PO argues this is not a teaching of an amount of charge because the claim requires a user to be able to “specify any amount of charge between 1% and 100%, not just to select between two choices.” POR, 44. Even if being able to specify “any amount of charge” were required to meet Claim 1[i] (it is not), Ferro does not just teach a user selecting between two choices but rather selecting “**different levels** of charge depending on power source[.]” EX1004, [0123]; EX1003, ¶229.

B. A POSITA Would Have Combined Ferro and Oyobe

Claim 1[e] recites: “receive, from a vehicle sensor, information indicative of a presence of a vehicle in a parking space[.]” *See also* Claim 8[a], 15[e]. PO challenges: (1) whether a POSITA would have incorporated Oyobe’s vehicle sensor into Ferro’s electric vehicle, and (2) whether Oyobe’s vehicle sensor detecting when a hybrid vehicle “is parked at the location where charging equipment is installed” (EX1005, [0142]-[0143]) teaches a vehicle sensor providing “information indicative of a presence of a vehicle in a parking space[.]” EX1001, Claim 1[e].

1. *Oyobe's Vehicle Sensor Improves Ferro*

PO argues a POSITA would not have incorporated Oyobe's vehicle sensor into Ferro's electric vehicle because Ferro already teaches the function of Oyobe. POR, 27-29. PO misapprehends Ferro.

Ferro already teaches *manual* options for initiating charging, such as “plugging into an electric outlet[,]” “selecting an option...associated with charging station 403,” or “informing an operator of the charging station.” EX1003, ¶124 (citing EX1004, [0109]). Ferro also refers to wireless charging but without implementation details. EX1004, [0036]; EX2006, 54:8–55:9 (for wireless charging, “what exactly that sensor would be is not described by Ferro”). A POSITA therefore would have been motivated to apply Oyobe's vehicle sensor to “instruct charging without exiting the vehicle and physically interacting with a charging station.” Pet., 20; EX1003, ¶¶129-130.

Therefore, PO's argument should be rejected here, just like it was in the Board's FWD in IPR2023-00062 (Paper 35): “that Ferro teaches its vehicle and charging station connected to a network, as well as ways in which charging can be manually initiated...does not detract from Petitioner's proposed modifications” with a reference that explicitly teaches detecting the presence of a vehicle in a parking space. *Id.*, 28-29.

2. *The Teachings of Oyobe and Ferro Are Compatible*

PO further argues the combination of Oyobe and Ferro would be inoperable. PO claims Oyobe's signal would not be usable as an "intention to charge" in Ferro's system because "Oyobe's device is not capable of identifying whether the vehicle is in a position to charge." POR, 32. PO's conjecture is unsupported. The purpose of Oyobe's "vehicle position detecting apparatus 108" is to "detect[] whether or not hybrid vehicle 100B is parked at the location where charging equipment is installed" so that charging can be performed. EX1005, [0142], [0145] ("informing apparatus 102 will not unnecessarily operate...where charging cannot be performed").

Further, PO misunderstands the "intention to charge" of Ferro's system; it does not necessarily indicate the vehicle is prepared to charge. Rather, in response to the "intention to charge" the dynamic energy transaction planner gathers inputs and submits a dynamic energy transaction plan **"for implementation once the vehicle is connected at the charge/discharge outlet at charging station** and/or electric vehicle 402 is authorized to begin charging/discharging after electric vehicle is connected to the outlet." EX1004, [0111]-[0113] (emphasis added).

PO next speculates Oyobe's vehicle would not be correctly aligned with Ferro's wireless charger. POR, 29-31. But it is undisputed that how to properly align a vehicle with a wireless charger was known. EX2005, ¶77; EX1052, 1 ("inductive charging...without any mechanical adjustment"). Even the '987 Patent recognized

exact alignment was not critical, and companies had “demonstrated power transmission *for quite a distance* [.]” EX1001, 18:46-51.

Claim 1[e] does not require any particular alignment relative to a *charger* at all. Claim 1[e] refers to “a presence of a vehicle in a parking space[.]” EX1001, Claim 1[e] (emphasis added). PO does not dispute the Petition’s evidence that (1) charging equipment is commonly installed proximate a parking space, (2) any space proximate the charging station is a parking space, and (3) Oyobe teaches detecting when a hybrid vehicle “is parked at the location where charging equipment is installed.” Pet., 29-30 (citing EX1003, ¶¶156-159).

The ’987 Specification does not limit vehicle sensors to sensors *only* detecting vehicles precisely aligned with a charger. EX1001, 9:57-60. One example uses Bluetooth®, which PO’s expert admits at the time of the invention had a range of **at least 30 feet**. EX1096, 51:11-23; EX1001, 9:66–10:3. Thus, PO’s focus on precise alignment is misplaced. POR, 30-31.

3. *PO Misrepresents Oyobe*

PO’s claim that Oyobe only “alert[s] the user when the battery is low” is not responsive to the Petition’s mapping. POR, 31 (citing EX1005, [0047]). The Petition does not rely on Oyobe’s informing apparatus 102, as the Board already recognized in the Institution Decision. Paper 12, 14-15.

PO's claim that "Oyobe would not desire to inform the driver of need to charge...when the Oyobe 'vehicle is parked at a charging station'" is likewise incorrect. POR, 33 (emphasis in original). Oyobe states the opposite: "informing apparatus 102 will not unnecessarily operate at the location with no charging equipment where charging cannot be performed." EX1005, [0145].

Finally, PO alleges there is a disconnect between Oyobe's teachings and the Petition's motivations to combine because the "entire purpose of Oyobe occurs when the user has exited the vehicle" since Oyobe teaches an informing apparatus "can easily be seen by the driver when the driver has exited[.]" POR, 34.

PO misrepresents the motivations to combine. The combination of Ferro and Oyobe would have "***allow[ed]*** a user to remain in the vehicle while charging[.]" not required the user to never leave. Pet., 20 (emphasis added). The combination further would have allowed the user to "instruct charging without exiting vehicle and without physically interacting with an external charging station," not required the user to stay in the car during charging. *Id.* (citing EX1003, ¶¶129-130). Therefore, the motivation to combine does not require the user to be in any particular location to benefit. By focusing on Oyobe's informing apparatus 102, PO "improperly fail[s] to read" Oyobe for "all that it teaches[.]" *In re Mouttet*, 686 F.3d 1322, 1331 (Fed. Cir. 2012).

C. PO Misunderstands How a POSITA Would Have Been Motivated to Apply Seelig’s Teachings²

PO’s claim that Seelig does not teach “transmitting a control signal to a parking space charge device that starts a charging, in accordance with the charging schedule” as required by claim 5 misrepresents the claim requirements and misunderstands the combination presented in the Petition.

PO does not dispute that the “charge initiation signal” of Seelig is transmitted to a parking space charge device. POR, 51-53. Further, PO admits that it is the “charge initiation signal, which *starts charging*[.]” IPR2025-00152, Paper 19 at 37 (emphasis added). Nothing else is required of Seelig in the combination.

The claims do not recite any details regarding a cause or trigger of the control signal’s transmission, only that the transmitted control signal starts charging. *See e.g.*, EX1001, claim 1. Nevertheless, PO argues that Seelig’s charge initiation signal is “reactionary” to a “coupling achieved, KER” signal. POR, 52. This argument is unresponsive to the Petition, which relies on Seelig only to provide an express example of transmitting a control signal that starts vehicle charging. Pet., 44-46. No further steps of Seelig’s charging process are relied on, and PO’s argument is unresponsive to the Petition’s mapping.

² The 987 Petition does not rely on Ferro. *Contra* POR, 36, 39, 40, 41.

To the extent discussion of the cause or trigger of the control signal is even necessary, the Petition relies on Ferro, not Seelig:

“[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[.]” Ferro, [0060], [0051] (“During the charging phase, electricity flows to, from, or is stored in the electric vehicle.”); EX1003, ¶¶185-186.

Pet., 42.

In the combination, Ferro’s transaction execution engine 316 initiates the request to begin the charging, without need for exiting the vehicle or inserting a coin. *See* Pet, 44 (referring to limitations 1(c)-(d), explaining the mapping is performed by the vehicle’s processor executing software within the vehicle’s memory). Thus, PO’s arguments are based on an inaccurate understanding of the Petition’s mapping.

D. Claims 2, 11, and 20 Are Obvious

Letendre teaches displaying its user interface (including its sliders) on a webpage, as PO admits. POR, 53. The Petition explains why a POSITA would have been motivated to implement a web-based GUI, and PO’s conclusory arguments do not address (much less rebut) the Petition’s well-reasoned motivations. Pet., 63-65; EX1003, ¶¶248-251.

V. PO'S MOTIVATION TO COMBINE CHALLENGES FAIL

PO repeatedly alleges the Petition improperly uses “hindsight.” POR, 54-58. But PO never directs the Board “to any knowledge *gleaned only from application’s disclosure* that Petitioner allegedly relies upon.” *Uber Tech, Inc. v. LBT IP II LLC*, IPR2022-00880, Paper 29, 54-55 (PTAB Dec. 6, 2023) (emphasis original); *Google LLC v. Ecofactor, Inc.*, IPR2020-01504, Paper 55, 43 (PTAB Aug. 1, 2024) (rejecting hindsight argument as “not fully developed”). For this reason, and the reasons below, PO’s further motivation to combine challenges fail.

A. Motivation to Combine Unitary Charge Indicator Teachings

The Petition explains exactly why a POSITA would have been motivated to combine the teachings of Ferro, Donnelly, and Letendre to arrive at a unitary vehicle charge indicator, with citation to analysis from an expert who has experience creating GUIs with sliders and with designing graphical user interfaces for electrical vehicles before the priority date (EX2006, 17:13-21, 21:6–22:3), and with citation to numerous documents describing the use of GUIs and sliders in the relevant timeframe. *See e.g.*, Pet., 50-53, 56-58, 60-63; EX1003, ¶¶66-74, 203-242. PO does not substantively engage with the Petition’s motivation to combine analysis, nor does its expert contradict any of the factual support underpinning the motivations to combine. POR, 2, 35-42.

Instead, PO contends that the Petition should not be allowed to point to a combination of multiple references for the “unitary vehicle charge indicator” limitation. POR, 47 (arguing “the ’987 Patent is the *only* document of record that shows a slider displayed *on* a bar graph”) (emphasis original). PO does not identify any authority supporting this proposition, which is contrary to Federal Circuit precedent. *See e.g., Bot M8 LLC v. Sony Interactive Ent. LLC*, 66 F.4th 1380, 1386 (Fed. Cir. 2023) (affirming obviousness though no single prior art reference disclosed limitation requiring executing a program on two different CPUs); *REC Solar Pte. Ltd. v. Hanwha Sols. Corp.*, No. 2023-1508, 2025 WL 251574, at *2 (Fed. Cir. Jan. 21, 2025) (affirming obviousness though no single prior art reference disclosed the claimed central cross-connector as a single assembly).

B. Ground 2’s Motivation to Combine Knockeart

PO admits Petitioner provided a motivation (Pet., 79-80), and does not argue the motivation is insufficient. POR, 54-55; EX2005, ¶115. Instead, PO argues Knockeart does not “monitor or input selected modes of operation.” *Id.*, 56. This is not a requirement of the claims or the combination. POR, 55. The Ferro system already implements a GUI on a touch screen for inputting charging preferences. Pet., 49-53. In the combination, the GUI would be adapted to be displayed on “a removable personal device that communicates with an in-vehicle system[,]” as taught by Knockeart. *Id.*, 79-80; EX1003, ¶¶327-328.

C. The Petition’s Detailed Motivations to Combine Are Sufficient

PO argues the motivations are “only general,” (POR, 56-57) without substantively engaging with the Petition’s many pages of specific reasoning:

- Oyobe’s vehicle sensor (Pet., 11-12; EX1003, ¶¶150-152);
- Donnelly’s battery charge bar graphic, with Letendre’s slider (Pet., 31-41; EX1003, ¶¶215-250);
- Seelig’s control signal (Pet., 46-48; EX1003, ¶¶192-197);
- Knockeart’s mobile display device (Pet., 79-80; EX1003, ¶¶323-328).

The Petition’s motivations are specific, and “virtually none of the substance of [Mr. Andrews’] testimony [is] unsupported by objective evidence.” Paper 12, 28. This is far afield from simply arguing “all of the elements of the claims disparately existed in the prior art.” *InTouch Techs., Inc. v. VGo Comm’cns, Inc.*, 751 F.3d 1327, 1348-49 (Fed. Cir. 2014); POR, 61-62³.

PO does not rebut the Petition’s showing that the applied prior art is analogous and reasonably pertinent to the problems addressed by the ’987 Patent. Pet., 4-9. Indeed, the phrases “analogous” and “reasonably pertinent” do not appear in the POR.

³ PO relies on outdated law; *In re Wesslau*, 353 F.2d 238 (CCPA 1965) predates and is superseded by *KSR. Ex Parte Stephanie Hoyas*, Appeal 2024-001144, at 9 (PTAB Mar. 5, 2025).

PO's claim that "four or more references...require[s] additional inquiry" is legally incorrect. POR, 59. "[A] large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention." *In re Gatabi*, No. 2022-1580, 2023 WL 3477285, at *3 (Fed. Cir. May 16, 2023).

PO misunderstands the standard for obviousness in multi-reference combinations. POR, 59-62. "There is no per se rule that requires each subset of prior art references to be independently combined[.]" *Ericsson Inc. v. Intellectual Ventures II LLC*, IPR2014-01195, Paper 37, 18-19 (PTAB Jan 29, 2016). When "two discrete combinations" are involved, "independent articulations addressing the combination[s]...sufficiently address the combination of the relevant teachings." *Nichia Corp. v. Lighting Science Group Corp.*, IPR2019-01259, Paper 45, 42 (PTAB Jan. 8, 2021). Where vehicle features are not disparate (e.g., slider on GUI), the Petition addresses the "proposed combination as a whole." *Samsung Electronics Co., Ltd. v. Smart Mobile Tech. LLC*, IPR2022-01249, Paper 13, 25-26 (PTAB Jan. 24, 2023).

PO's "contradictory motivation[s]" arguments fail, too. POR, 62. A user would benefit from the *option* to stay in the vehicle to instruct charging and value the *option* of being able to leave the vehicle during charging. Pet., 20, 47

Finally, Dr. Goldberg's conclusory motivation to combine statements are identical to the conclusory statements in the POR and should be afforded "little

weight.” *Cf.* POR, 56-62, with EX2005, ¶¶120-124; *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15 (PTAB Aug. 24, 2022). Dr. Goldberg has never plugged in an electric vehicle, and cannot credibly speak to what would be beneficial to a POSITA when charging an electric vehicle.

D. The Unrebutted Reasonable Expectation of Success

PO does not explain how any REOS is deficient, generically stating designing the claimed system “is extremely challenging[.]” POR, 63. This “argument,” absent “any actual evidence” of a challenge is “insufficient” to rebut the evidence of record. *Livanova, Inc. v. Neuro and Cardiac Tech., LLC*, IPR2019-00264, Paper 32, 40 (PTAB May 18, 2020).

Likewise, Dr. Goldberg’s claim that “GUI creation was not obvious or trivial,” is undermined by his lack of personal EV GUI design experience. EX2005, ¶125; EX1096, 12:5-7. Indeed, the evidence he points to indicates GUIs were in widespread use and regularly created using “pre-manufactured components” before the priority date. EX2004, 21; EX2006, 17:23–19:7 (discussing available GUI libraries).

VI. CONCLUSION

For the reasons provided above and in the Petition and supporting evidence, Petitioner Tesla Inc. requests cancellation of the Challenged Claims.

Respectfully submitted,
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APPENDIX OF EXHIBITS

Exhibit 1001	U.S. Patent No. 11,631,987 to Ambroziak, et al. (“the ‘987 Patent”)
Exhibit 1002	U.S. Patent No. 11,631,987 File History (“the ‘987 File History”)
Exhibit 1003	Declaration of Scott Andrews
Exhibit 1004	U.S. Patent Application Publication No. 2009/0313034 to Ferro, et al. (“Ferro”)
Exhibit 1005	European Patent Application Publication 1920968 to Oyobe, et al. (“Oyobe”)
Exhibit 1006	U.S. Patent No. 7,124,691 to Donnelly, et al. (“Donnelly”)
Exhibit 1007	Letendre, S.E. and Kempton, W. <i>The V2G Concept: A New Model for Power?</i> Public Util. Fortn. February 2002, 140, pp. 16-26. (“Letendre”)
Exhibit 1008	<i>Intentionally left blank</i>
Exhibit 1009	<i>Intentionally left blank</i>
Exhibit 1010	U.S. Patent No. 6,622,083 to Knockeart et al. (“Knockeart”).
Exhibit 1011	U.S. Patent Publication No. 2008/0136371 to Sutardja (“Sutardja”)
Exhibit 1012	Willett Kempton and Jasna Tomić. <i>Vehicle-to-grid power fundamentals: Calculating capacity and net revenue</i> . Journal of Power Sources. 2005. 144. pp. 268–279 (“Kempton 2005 – Revenue”)
Exhibit 1013	Chan, <i>The State of the Art of Electric and Hybrid Vehicles</i> , February 2002, Vol. 90, No. 2, IEEE (“Chan”)
Exhibit 1014	<i>Electric Vehicle Battery Systems</i> , Sandeep Dhameja, Newnes, 2002 (“Sandeep”)
Exhibit 1015	U.S. Patent No. 5,573,090 to Ross (“Ross”)
Exhibit 1016	Weed, R. <i>Electric Vehicles: Copper Applications in Electrical</i> . February 1998 (“Weed”)
Exhibit 1017	Rawson, Kateley, <i>Electric Vehicle Charging Equipment Design and Health and Safety Codes</i> , SAE Intl., 1999 (“Rawson”)
Exhibit 1018	U.S. Patent No. 7,693,609 to Kressner et al. (“Kressner”)
Exhibit 1019	U.S. Patent No. 7,084,859 to Pryor (“Pryor”)
Exhibit 1020	U.S. Patent Publication No. 2008/0039980 to Pollack et al. (“Pollack”)

Exhibit 1021	<i>Installation Guide for Electric Vehicle Charging Equipment</i> , Massachusetts Division of Energy Resources, September 200 (“Massachusetts Division of Energy Resources”)
Exhibit 1022	U.S. Patent No. 5,467,006 to Sims (“Sims”)
Exhibit 1023	U.S. Provisional Application 61/134,646 (“’646 Provisional”)
Exhibit 1024	U.S. Patent Publication No. 2009/0312903 to Hafner et al. (“Hafner”)
Exhibit 1025	U.S. Patent No. 6,081,205 to Williams (“Williams”)
Exhibit 1026	U.S. Patent No. 6,614,204 to Pellegrino et al. (“Pellegrino”)
Exhibit 1027	Brooks, Gage, <i>Integration of Electric Drive Vehicles with the Electric Power Grid – a New Value Stream</i> , EVS 18 Berlin, 2001 (“Brooks”)
Exhibit 1028	U.S. Patent Publication No. 2008/0312782 to Berdichevsky et al. (“Berdichevsky”)
Exhibit 1029	U.S. Patent No. 5,487,002 to Diller et al. (“Diller”)
Exhibit 1030	U.S. Patent No. 2,309,941 to Drummond (“Drummond”)
Exhibit 1031	U.S. Patent Publication No. 2003/0230443 to Cramer et al. (“Cramer”)
Exhibit 1032	Aylor et al., <i>A Battery State-of-Charge Indicator for Electric Wheelchairs</i> , IEEE Transactions on Industrial Electronics, Vol. 39, No. 5, October 1992 (“Aylor”)
Exhibit 1033	Nadal, M and Birbar, F. <i>Development of a Hybrid Fuel Cell/Battery Powered Electric Vehicle</i> . Iht. J. Hydrogen Energy. 1996. Vol. 21, No. 6. pp. 491-505. (“Nadal”)
Exhibit 1034	2006 Civic Hybrid Online Reference Owner’s Manual, Honda (“2006 Honda Civic Manual”)
Exhibit 1035	2000 Insight Online Reference Owner’s Manual, Honda (“2000 Honda Insight Manual”)
Exhibit 1036	Owners Manual: 2008 Tesla Roadster, Tesla (“2008 Tesla Roadster”)
Exhibit 1037	<i>The Human-Computer Interaction Handbook: Tangible User Interfaces</i> , Second Edition, 2007, Hiroshi Ishii, MIT Media Laboratory, (“Ishii”)
Exhibit 1038	<i>The Graphical User Interface: An Introduction</i> , Jansen, Computer Science Program University of Maryland, 1998, SIGCHI Bulletin (“Jansen”)
Exhibit 1039	Johnsgard et al., <i>A Comparison of Graphical User Interface Widgets for Various Tasks</i> , Proceedings of the Human Factors

	and Ergonomics Society, 39 th Annual Meeting, 1995 (“Johnsgard”)
Exhibit 1040	Olsen Jr. et al., <i>Input/Output Linkage in a User Interface Management System</i> , ACM, Vol. 19, No. 3, 1985 (“Olsen”)
Exhibit 1041	U.S. Patent No. 6,577,928 to Obradovich (“Obradovich”)
Exhibit 1042	<i>Intentionally left blank</i>
Exhibit 1043	<i>Intentionally left blank</i>
Exhibit 1044	<i>Intentionally left blank</i>
Exhibit 1045	<i>Intentionally left blank</i>
Exhibit 1046	<i>Intentionally left blank</i>
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Exhibit 1048	<i>Intentionally left blank</i>
Exhibit 1049	<i>Intentionally left blank</i>
Exhibit 1050	U.S. Patent No. 5,563,491 to Tseng (“Tseng”)
Exhibit 1051	U.S. Patent No. 6,154,005 to Hyogo et al. (“Hyogo”)
Exhibit 1052	<i>Sakamoto et al.</i> , Large Air-Gap Coupler for Inductive Charger, IEEE Transactions on Magnetics, Vol. 35, No. 5, September 1999 (“Matsuo”)
Exhibit 1053	U.K. Patent Application No. GB 2438979 to Taylor-Haw et al. (“Taylor-Haw”)
Exhibit 1054	U.S. Patent No. 5,523,666 to Hoelzl et al. (“Hoelzl”)
Exhibit 1055	<i>Understanding Your Motherboard’s Bus System</i> , James McPherson, TechRepublic, December 19, 2000 (“McPherson”)
Exhibit 1056	<i>Computer: History of Computers</i> , Gary Masters, Microsoft Encarta, 1994 (“History”)
Exhibit 1057	<i>Fukuda et al.</i> , <i>Evaluating Second Car System, an Electric Vehicle Sharing Experiment in Tama New Town District, Inagi City, Tokyo</i> , TRB Annual Meeting, 2003 (“Fukuda”)
Exhibit 1058	<i>Intentionally left blank</i>
Exhibit 1059	U.S. Patent No. 8,266,075 to Ambrosio et al. (“Ambrosio”)
Exhibit 1060	<i>An Introduction to Graphical User Interfaces and Their Use by CITIS</i> , Sherrick, Susan, U.S. Dept. of Commerce, 1992 (“Sherrick”)
Exhibit 1061	U.S. Patent No. 5,555,502 to Opel (“Opel”)
Exhibit 1062	<i>All Volkswagens Built after 2008 to get touchscreen system</i> , Rory Jurnecka, MT, November 12, 2007 (“Jurnecka”)

Exhibit 1063	<i>Geneva '08 Preview: BMW ConnectedDrive Allows Unrestrcited in-car Internet</i> , Michael Harley, February 22, 2008 (“Harley”)
Exhibit 1064	<i>Chicago 2008: Ford Introduces Work Solutions in-dash computer package for F-150 [w/video]</i> , Ford, February 5, 2008, (“Ford”)
Exhibit 1065	U.S. Patent No. 8,405,618 to Colgate et al. (“Colgate”)
Exhibit 1066	<i>A Guide to Understanding Battery Specifications</i> , MIT Electric Vehicle Team, December 2008 (“Electric Vehicle Team”)
Exhibit 1067	U.S. Patent No. 7,904,219 to Lowrey et al. (“Lowrey”)
Exhibit 1068	<i>Internet Multimedia on Wheels: Connecting Cars to Cyberspace</i> , Jameel et al., IEEE, 1998 (“Jameel”)
Exhibit 1069	U.S. Patent No. 7,285,936 to Ohnuma et al. (“Ohnuma”)
Exhibit 1070	U.S. Patent No. 7,501,793 to Kadouchi et al. (“Kadouchi”)
Exhibit 1071	U.S. Patent Application Publication No. 2005/0278079 to Maguire (“Maguire”)
Exhibit 1072	<i>PowerSafe: Safety, Storage, Operating, and Maintenance Manual</i> , VRLA Battery Systems mSeries, EnerSys, March 2008 (“PowerSafe”)
Exhibit 1073	Kempton et al., <i>Electric Vehicles as a New Power Source for Electric Utilities</i> , Transpn Res., Vol. 2, No. 3, Elsevier, 1997 (“Kempton”)
Exhibit 1074	<i>Webster’s New World Telecom Dictionary</i> , Ray Horak, Wiley Publishing, 2008 (“Webster’s New World Telecom Dictionary”)
Exhibit 1075	Eick, SG. <i>Data Visualization Sliders</i> , ACM UIST, November 2004, (“Eick”)
Exhibit 1076	U.S. Patent No. 5,615,347 to Davis et al. (“Davis”)
Exhibit 1077	Patent Owner’s Preliminary Response IPR2022-01217
Exhibit 1078	U.S. Patent No. 5,654,621 to Seelig (“Seelig”)
Exhibit 1079	U.S. Patent No. 5,734,872 to Kelly (“Kelly”)
Exhibit 1080	<i>Pervasive Computing: The Smart Phone – Customizing User Interaction in Smart Phones</i> , Korpipää et al., IEEE CS, 2006 (“Pervasive Computing: The Smart Phone”)
Exhibit 1081	<i>Spotlight: The Rise of the Smart Phone</i> , Pei Zheng et al., IEEE Computer Society, Vol. 7, No. 3, March 2006 (“Zheng”)
Exhibit 1082	<i>Intentionally left blank</i>
Exhibit 1083	<i>Intentionally left blank</i>
Exhibit 1084	<i>Intentionally left blank</i>

Exhibit 1085	IPR2022-00519 Declaration of Scott Andrews
Exhibit 1086	Declaration of June Ann Munford (“ <i>Munford Dec.</i> ”)
Exhibit 1087	Charge Fusion Technologies, LLC v. Tesla, Inc. 1:22-cv-00488, No. 79 Plaintiff Charge Fusion Technologies, LLC’s Motion for Leave to Amend Complaint (W.D.Tex. June 5, 2024)
Exhibit 1088	Charge Fusion Technologies, LLC v. Tesla, Inc., 1:22-cv-00488, No. 74 Order to Stay (W.D.Tex. Feb. 23, 2023)
Exhibit 1089	U.S. Patent No. 9,853,488 to Fincham et al. (the ’488 Patent”)
Exhibit 1090	<i>Happy Birthday, Palm Pilot</i> , Gary Krakow, March 22, 2006, (“Krakow”)
Exhibit 1091	<i>Your Palm Treo 700p Smartphone User Guide</i> , Palm, 2006 (“PALM Treo 700P Manual”)
Exhibit 1092	U.S. Patent No. 5,596,261 to Sunyama (“Sunyama”)
Exhibit 1093	Charge Fusion Technologies, LLC v. Tesla, Inc. 1:22-cv-00488, No. 100 Order Denying Plaintiff’s Opposed Motion for Leave to File First Amended Complaint (W.D.Tex. Oct. 31, 2024)
Exhibit 1094	U.S. Patent No. 6,618,650 B1 to Nakai, et al.
Exhibit 1095	U.S. Patent Application Publication No. 2009/0313174 A1 to Hafner, et al.
Exhibit 1096	Deposition Transcript of Dr. Steven Goldberg November 3, 2025
Exhibit 1097	Deposition Transcript of Dr. Steven Goldberg December 10, 2025

CERTIFICATION OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. § 42.24 that the foregoing Petitioner's Reply to Patent Owner's Response, excluding any table of contents, mandatory notices under 37 C.F.R. § 42.8, certificates of service or word count, or appendix of exhibits, contains 5598 words according to the word-processing program used to prepare this document (Microsoft Word).

Dated: December 22, 2025

/s/ Jennifer C. Bailey

Jennifer C. Bailey, Reg. No. 52,583

ATTORNEY FOR PETITIONER

CERTIFICATE OF SERVICE ON PATENT OWNER
UNDER 37 C.F.R. § 42.6

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on December 22, 2025, the foregoing *Petitioner's Reply To Patent Owner's Response* was served via electronic filing with the Board and via Electronic Mail on the following practitioners of record for Patent Owner:

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