

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner

v.

CHARGELOGIC LLC,
Patent Owner

Inter Partes Review Case No. IPR2026-00381
U.S. Patent No. 11,909,010

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 11,909,010**

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I. INTRODUCTION

Petitioner Tesla, Inc. (“Petitioner”) requests *inter partes* review (“IPR”) of Claims 1-20 (collectively, the “Challenged Claims”) of U.S. Patent No. 11,909,010 (“the ’010 Patent”).

II. THE ’010 PATENT

A. Priority

The ’010 Patent claims priority to Provisional Application No. 61/189,353, filed August 18, 2008. EX1001, (63), (60). For this Petition only, Petitioner applies August 18, 2008, as the priority date for the Challenged Claims.

B. File History

Patent Owner distinguished the prior art (primarily USPN 8,193,766 to Rondoni) as not “display[ing], **during the active charging session but before starting charging of the battery** according to the at least one condition, the amount of time upon the display.” EX1002 (Prosecution History), 497-499. Patent Owner stated “the initial estimated time in Rondoni is either displayed while charging is happening or prior to the commencement of a recharging session,” and argued the amended claims required “the updates to the displayed time are provided during the active charging session – including during a **delay time** within the session during which charging hasn’t started yet (e.g., the condition associated with the charger session hasn’t yet been satisfied).” *Id.* A Notice of Allowance was thereafter issued. EX1002, 499, 567-574.

C. Level of Skill

A POSITA at the time of the '010 Patent 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 battery charging systems. Additional industry experience or technical training may offset less formal education, while advanced degrees or additional formal education may offset lesser levels of industry experience. EX1003-Dec., ¶¶29-31.

III. REQUIREMENTS UNDER 37 C.F.R. §42.104

A. Grounds for Standing Under 37 C.F.R. §42.104(a)

Petitioner certifies the '010 Patent is eligible for IPR.

B. Identification of Challenge Under 37 C.F.R. §42.104(b)

Petitioner requests the Challenged Claims be found unpatentable on the following grounds.

Proposed Grounds of Unpatentability of the '010 Patent	Exhibits
<u>Ground 1:</u> Claims 1, 7-9, 13-14 are obvious under §103(a) over Ishii, Hayashi, and Fujita	EX1004-Ishii EX1005-Hayashi EX1006-Fujita
<u>Ground 2:</u> Claims 2-4, 10, 15, 17-18 are obvious under §103(a) over Ishii, Hayashi, Fujita, and Kelty-078	EX1004-Ishii EX1005-Hayashi EX1006-Fujita EX1007-Kelty-078
<u>Ground 3:</u> Claims 5, 11, 19 are obvious under §103(a) over Ishii, Hayashi, Fujita, Kelty-078, Sutardja, and Kelty-218	EX1004-Ishii EX1005-Hayashi EX1006-Fujita EX1007-Kelty-078 EX1008-Sutardja

	EX1010-Kelty-218
Ground 4: Claims 6, 12 are obvious under §103(a) over Ishii, Hayashi, Fujita, and Suyama	EX1004-Ishii EX1005-Hayashi EX1006-Fujita EX1009-Suyama
Ground 5: Claim 16 is obvious under §103(a) over Ishii, Hayashi, Fujita, Kelty-078, and Suyama	EX1004-Ishii EX1005-Hayashi EX1006-Fujita EX1007-Kelty-078 EX1009-Suyama
Ground 6: Claim 20 is obvious under §103(a) over Ishii, Hayashi, Fujita, Kelty-078, and Izuno	EX1004-Ishii EX1005-Hayashi EX1006-Fujita EX1007-Kelty-078 EX1011-Izuno

C. Claim Construction Under 37 C.F.R. §42.104(b)(3)

For all terms not included below, Petitioner applies the ordinary and customary meaning of the claim terms.

1. “cost of power”

Claims 5, 11, 19: “[C]ost of power” should be construed to mean “monetary price of power.”

The ’010 Specification is consistent with the understanding that “cost of power” means “monetary price of power.” EX1001, 18:16-18 (“cost of power” is “(e.g., \$0.50/hr., \$0.45/hr., \$0.40/hr.)[.]”). The Specification describes a “threshold cost of power (e.g., per unit time) at or below which battery charging will begin.” EX1001, 42:49-50. When describing the “charge cost per hour indicator 70,” the ’010 Patent explains the “cost per kWh” can be multiplied “by an estimated kWh

level at which the vehicle charging cord 22 will charge the battery 20 to display the charge cost per hour 70 for the current battery charging session.” EX1001, 13:46-59. The “total cost to the present time for a charging session” is calculated by “multiplying the values of [power used indicator] 68 and [charge cost per hour] 70 together.” EX1001, 13:56-59. Accordingly, “cost of power” means “monetary price of power.”

IV. SHOWING OF ANALOGOUS ART

The prior art is analogous to the claimed invention of the '010 Patent.

The prior art is from the same field of endeavor of the '010 Patent, namely electric vehicle battery charging systems. EX1001, 1:64-5:2; EX1004-Ishii, [0001]-[0002], [0009]-[0019], FIG. 1; EX1005-Hayashi, [0002], [0005], [0008], [0015], [0032]; EX1006-Fujita, 1:52-2:42, FIGS. 1, 3, 6; EX1009-Suyama, 1:50-45; 2:5-14; 5:29-5:65; 6:25-59, FIGS. 1-2; EX1007-Kelty-078, 1:63-2:14, 2:39-3:4, FIG. 3; EX1008-Sutardja, [0008]-[0207]; EX1010-Kelty-218, [0013]-[0014], [0023]-[0032], FIG. 2; EX1011-Izuno, [0012], [0015]; EX1003-Dec., ¶¶33-35, 64-99.

The prior art is also reasonably pertinent to at least one problem facing the '010 Patent's inventor, namely at least one of:

(A) programming a vehicle charging session. EX1001, 16:21-42, 17:12-16, 20:48-65, 40:11-22, FIG. 14; EX1004-Ishii, [0046]-[0049], [0059], FIGS. 3-4;

EX1005-Hayashi, [0029], [0031], [0099], [0134]; EX1010-Kelty-218, [0034], [0037]; EX1011-Izuno, [0018], [0023], [0027]-[0028].

(B) calculating the amount of time required to charge the battery. EX1001, 13:29-39, 13:64-14:3, 41:18-28; EX1004-Ishii, [0051]-[0052]; EX1005-Hayashi, [0094], [0098]-[0099], [0102], [0104], FIGS. 4-5; EX1006-Fujita, 4:27-34, FIG. 5; EX1009-Suyama, 9:6-19;

(C) displaying the amount of time required to charge the battery. EX1001, 3:22-24, 40:6-22, FIG. 25; EX1004-Ishii, [0057], [0065], FIG. 3; EX1005-Hayashi, [0031], [0095]-[0096], [0170], FIG. 9b; EX1006-Fujita, 4:27-34, 4:59-64, FIGS. 5-6; EX1009-Suyama, 7:43-51, 9:6-19, FIGS. 4-5;

(D) establishing wireless communication with a controller remote from the vehicle. EX1001, Abstract, 1:64-2:8, 2:66-3:2, 9:13-19; EX1007-Kelty-078, 2:25-30, 4:16-21, 4:53-58, 5:2-3, FIGS. 2-3; EX1008-Sutardja, [0234], [0245]-[0247], FIGS. 3A-3B;

(E) using a controller/processor in a vehicle to perform processing operations. EX1001, 2:9-65, 8:64-9:19, FIG. 15; EX1004-Ishii, [0021], [0024]-[0025], [0047], FIG. 1; EX1006-Fujita, 3:9-13; 3:54-4:49, FIG. 2; FIG. 4A; EX1009-Suyama, 6:18-7:42, 8:4-19, 14:34-15:17, FIGS. 1-2; EX1007-Kelty-078, 7:44-8:6, FIG. 2; EX1008-Sutardja, [0241]-[0244], FIG. 4A; EX1010-Kelty-218, [0035]; EX1011-Izuno, [0016]-[0018].

(F) updating the amount of time required to charge the battery. EX1001, 13:65-14:3; EX1004-Ishii, [0065], EX1005-Hayashi, [0096], [0115]-[0116], FIGS. 4, 7, 12; EX1006-Fujita, 4:39-49, FIGS. 4-5. EX1003-Dec., ¶¶36-42, 64-99.

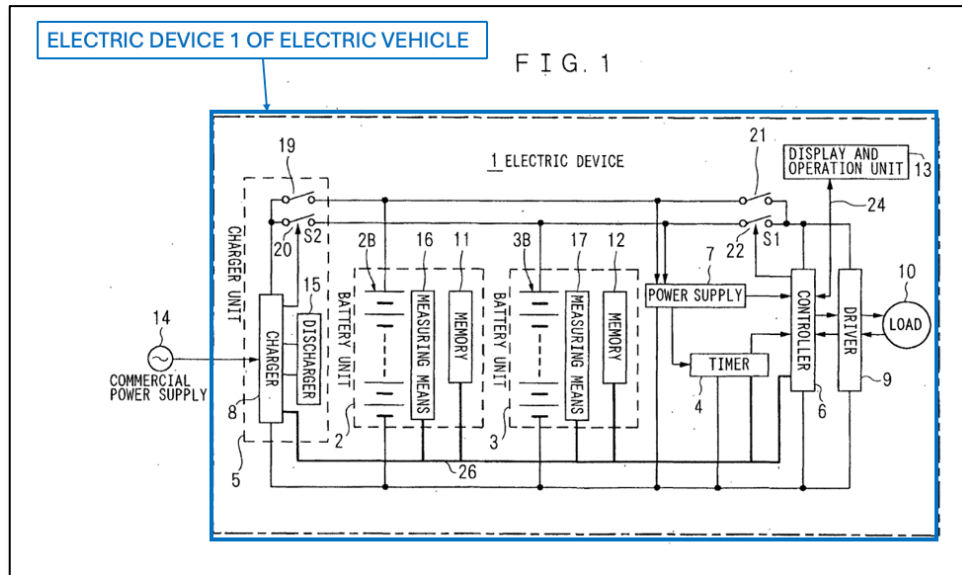
V. GROUND 1: CLAIMS 1, 7-9, 13-14 ARE OBVIOUS OVER ISHII, HAYASHI, AND FUJITA

A. Claim 1

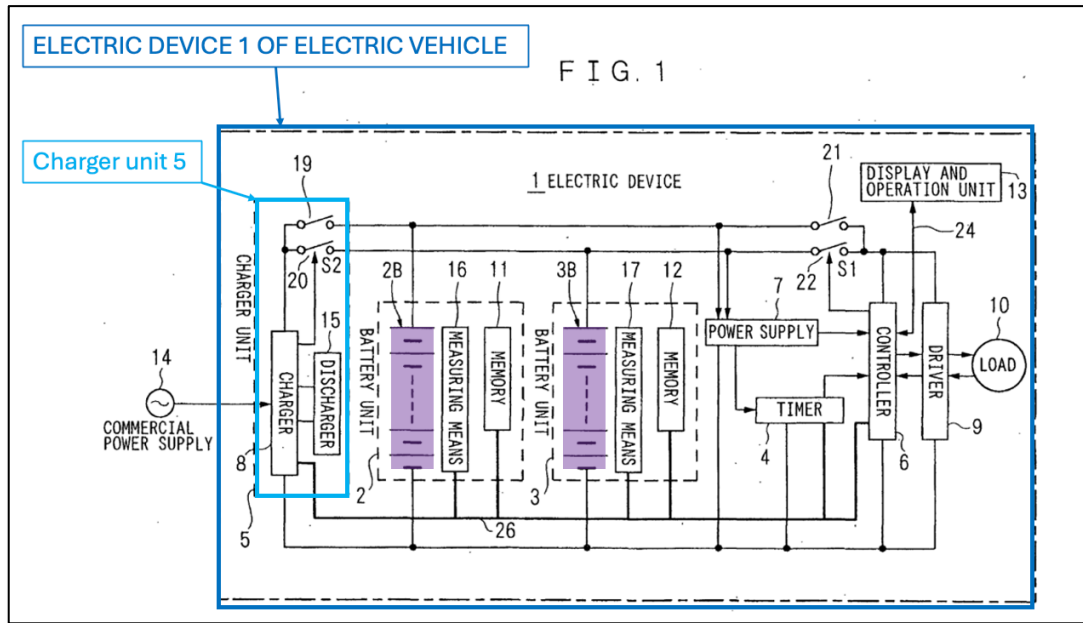
1. Claim 1[Pre]

Ishii teaches *a vehicle charger*¹, namely Ishii’s “electric device [1] of an electric vehicle”:

¹ Claim language provided in italics. All drawing annotations and emphases added unless otherwise noted. Citations to a claim limitation (e.g., Claim 1[a]) and/or section number are to the limitations mapping such claim limitation in this Petition and are incorporated by reference, including the motivations to combine (MTC) and showing of reasonable expectation of success (REOS) provided in the cross-referenced section. All REOS include the benefits described for the respective MTC.



EX1004-Ishii, [0119], [0021-0022], FIG. 1, Claim 1 (Preamble). Ishii's **electric device 1** (*vehicle charger*) is for charging a **battery** of a vehicle, namely **batteries 2B, 3B** of respective battery units 2, 3 “fixedly provided at an electric device main body (vehicle body).” EX1004-Ishii, [0033], [0023] (disclosing **batteries 2B, 3B**), [0119] (teaching the “industrial applicability” is an “electric device of an electric vehicle”), [0001] (disclosing electric device is for a “compact electric automobile”), [0009]. Battery units 2, 3 include rechargeable secondary batteries 2B, 3B, where the claimed **battery** is either or both of **batteries 2B, 3B** of respective battery unit 2, 3. EX1004-Ishii, [0023].



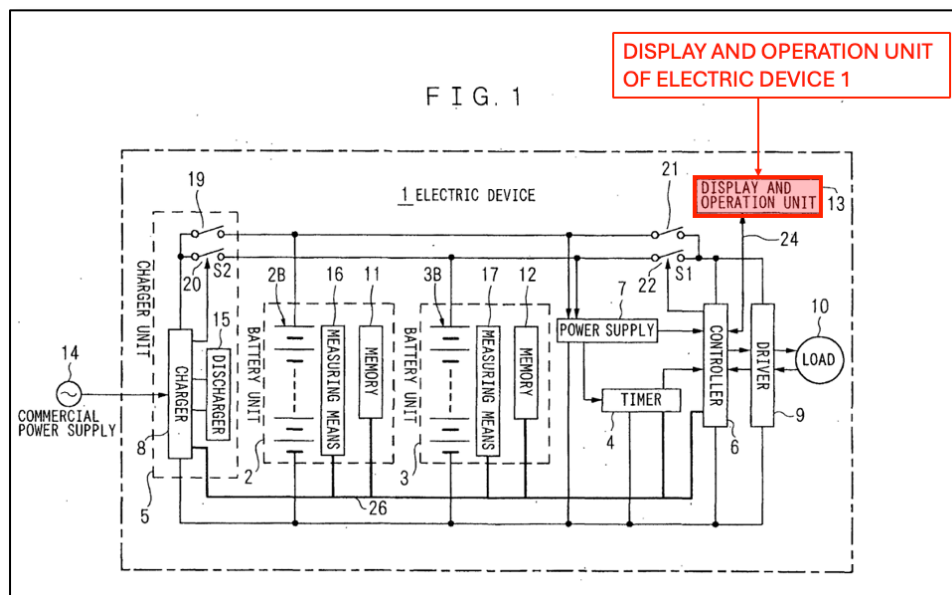
EX1004-Ishii, FIG. 1. **Electric device 1** is a *vehicle charger* because electric device 1 includes **charger unit 5**, where “charger 8 turns ON either switch..., selects the battery unit 2 or 3 to be charged, and supplies charge electric power to the secondary **battery 2B or 3B** of the selected battery unit.” EX1004-Ishii, [0064], [0059-0060], FIG. 4 (Step B4), FIG. 1, EX1004-Ishii, [0021], [0033].

2. Claim 1[a]

Ishii teaches a *display mounted within the vehicle*, namely “**display** and operation unit 13” of electric device 1 of electric vehicle. EX1004-Ishii, [0010], [0014], [0021], [0029], FIG. 1. Alternatively, Fujita teaches a *display mounted within the vehicle*, providing additional implementation details regarding *mount[ing] within the vehicle*.

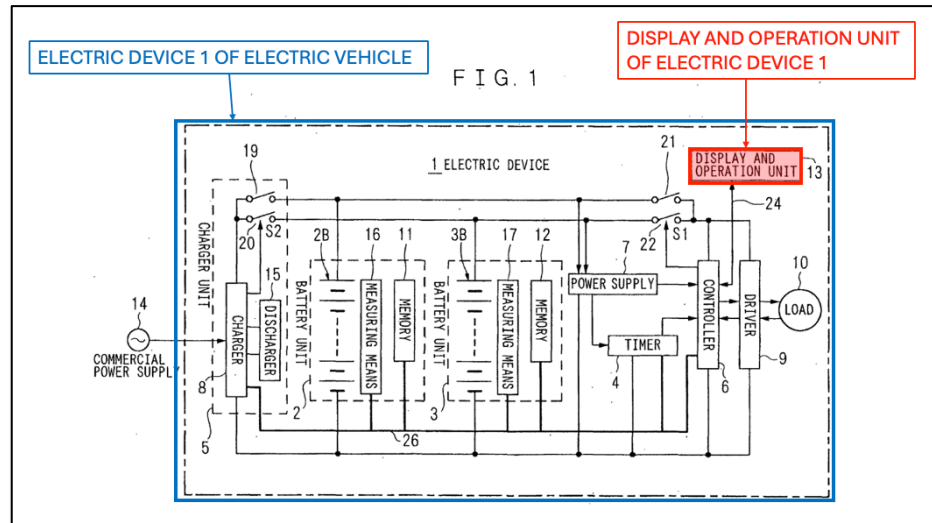
a) Ishii's Teachings

Ishii's electric device 1 (*vehicle charger*) “is constituted by...a **display** and operation unit 13,” with the display includes an “LCD display or the like for displaying necessary states and information such as a state of the electric device 1, a state of the charger 8 of the charger unit 5 and time[.]” EX1004-Ishii, [0021], FIG. 1, [0029].



EX1004-Ishii, FIG.1.

Ishii teaches display and operation unit 13 is *mounted within the vehicle* because unit 13 is included “in the electric device [1]” within the “electric vehicle.” EX1004-Ishii, [0001], [0014], [0119], [0021].

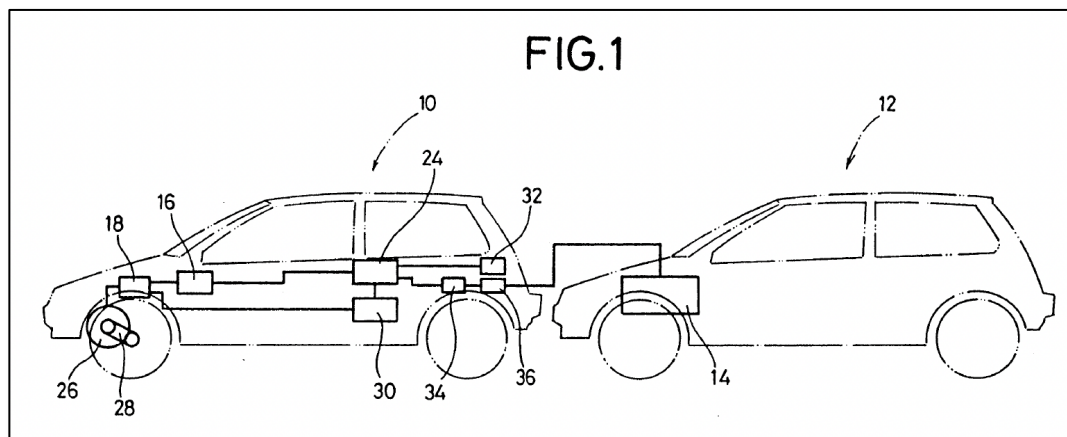


EX1004-Ishii, FIG. 1. The “electric device” main body is that of the “vehicle body.” EX1004-Ishii, [0033] (“The battery units 2 and 3 and the charger unit 5 may be fixedly provided at an **electric device main body (vehicle body)**...”).

Because Ishii teaches (1) electric device 1 is “of an electric vehicle,” (2) electric device 1 contains the display and operation unit 13, and (3) the batteries, including secondary batteries comprised in the electric device 1, are “in an electric vehicle,” the electric device 1 is *mounted within a vehicle*, and thus, display and operation unit 13 is mounted in the vehicle. EX1004-Ishii, [0119], [0021], [0023]; [0001]-[0002], [0014], [0021], [0033], FIG. 1; EX1003-Dec., ¶¶103-104. Indeed, per Ishii, it was known that “an electric device of an electric vehicle such as a compact electric automobile” for charging the power supply of the vehicle is mounted in the vehicle, so the electric device can provide “vehicle-mounted charging.” EX1004-Ishii, [0002], [0003]; EX1003-Dec., ¶104.

b) Fujita's Teachings

Fujita provides additional implementation details of a vehicle charging system including a display mounted within a vehicle. Fujita teaches a “battery charging device” mounted in “electric vehicle 10,” which includes “alarm/display means 22” (*display*) and “electronic control unit 16” (ECU 16) controlling battery charging. EX1006-Fujita, 3:9-53, FIG.1, FIG.2; EX1003-Dec., ¶105. Because Fujita’s display 22 is “provided on an instrument panel 38 of the electric vehicle 10,” the *display* is *mounted within the vehicle*. EX1006-Fujita, 3:38-40, FIG. 3. Other components of the battery charging device are also mounted within vehicle 10, including ECU 16:



EX1006-Fujita, FIG. 1.

c) Motivation to Combine

A POSITA would have been motivated and found obvious to modify Ishii’s display and operation unit 13 (*display*) to be mounted within the vehicle, per Fujita. Specifically, it would have been obvious to mount Ishii’s electric device 1, which includes unit 13, in the vehicle that is otherwise being charged by electric device 1,

to advantageously increase ease of use of the charger. A user would appreciate not having to attach electric device 1 to the vehicle themselves every time they needed to drive and/or charge their vehicle. EX1003-DEC., ¶106. Additionally, mounting electric device 1 within the vehicle would protect the various electrical components, including display and operation unit 13 and controller 6, from environmental variables, such as weather. *Id.*

Such a modification is nothing more than use of a known technique (mounting a vehicle charging device in a vehicle) to improve similar devices (vehicle chargers) in the same way by protecting components of the electric device 1 and increasing ease of use of the electric device for a user.

The modification would have had a reasonable expectation of success (REOS), given Ishii already teaches electric device 1 being “of an electric vehicle” and the “(vehicle body)” is the body of electric device 1. EX1004-Ishii, [0033], [0119]. Such a modification would have been well within the skill of a POSITA, given mounting vehicle chargers, including displays for the vehicle chargers, within a vehicle was well-known. EX1003-Dec., ¶108.

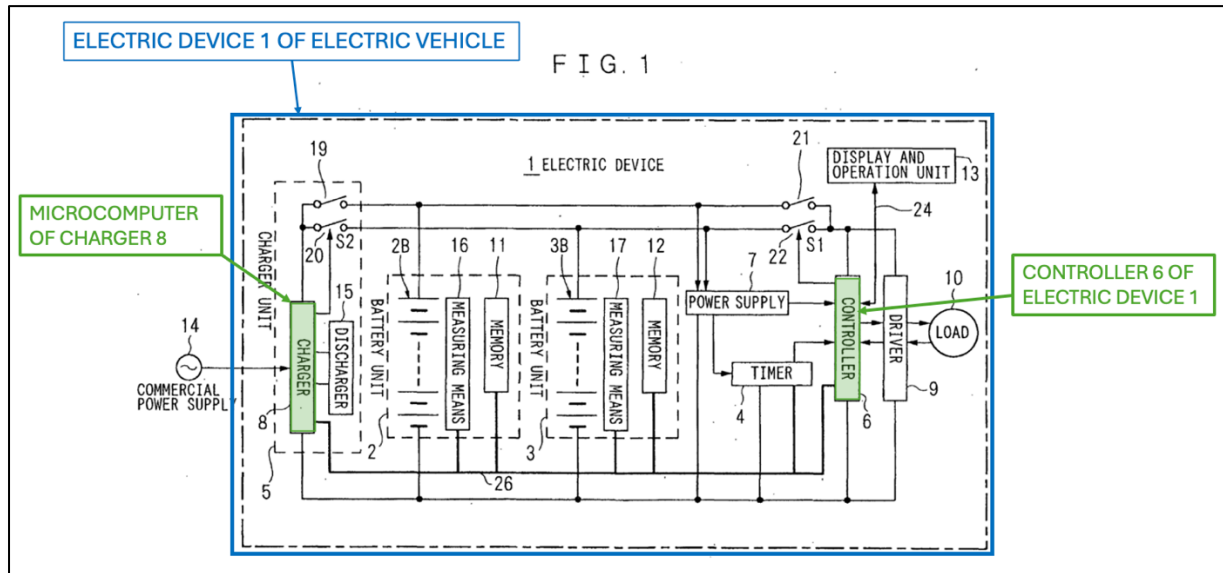
3. *Claim 1[b]*

Ishii teaches *a controller*, namely the collective controller 6 and microcomputer of charger 8. EX1004-Ishii, [0021], [0024-0025], FIG. 1. Ishii teaches certain functionality of electric device 1 is performed by controller 6 and

certain functionality is performed by charger 8, which includes the microcomputer. The *controller* is mapped to both Ishii's controller 6 and microcomputer of charger 8, dependent on the performed functionality. The Board has repeatedly affirmed that "use of 'a' or 'an' before a noun naming an object" requires that the phrase be construed to mean "'one or more' unless the context sufficiently indicates otherwise." *ABS Global, Inc. v. Cytonome/ST, LLC*, 84 F.4th 1034, 1040 (Fed. Cir. 2023) (quoting *Lite-Netics, LLC v. Nu Tsai Capital LLC*, 60 F.4th 1335, 1346 (Fed. Cir. 2023)).

Ishii teaches controller 6 "includes a control function by means of a microcomputer or the like, and has a function of performing a main control of the operation of the electric device." EX1004-Ishii, [0024], FIG. 1. Ishii also teaches charger 8 includes a "control function by means of a microcomputer," and the microcomputer "execute[s]" the charge modes that are selected by a user. EX1004-Ishii, [0022], [0044]. Because the charger 8 microcomputer controls functions such as executing charge modes for charging the battery, the microcomputer is a *controller*. EX1003-Dec., ¶110. Thus, charger 8 microcomputer and controller 6 (including controller 6's microcomputer) collectively teach the *controller*.

Controller 6 and charger 8's microcomputer are *onboard the vehicle* because electric device 1 is within an electric vehicle and includes controller 6 and charger 8. EX1004-Ishii, [0001], [0119], [0021], [0033], FIG. 1; Claim 1[a].



EX1004-Ishii, FIG. 1. Alternatively, for the same reasons discussed for Claim 1[a], Ishii's electric device 1 would be mounted in the vehicle, per Fujita, including controller 6 and charger 8 microcomputer accordingly being *onboard the vehicle*.

Controller 6 is *coupled to the display*. Controller 6 “has an interface with the display and operation unit 13” and sends signals and information via “operation bus 24.” EX1004-Ishii, [0025], [0029], FIG. 1. Display and operation unit 13 also displays information such as “a state of the electric device 1, a state of the charger 8 of the charger unit 5 and time[.]” EX1004-Ishii, [0029]. To perform displaying of this information, unit 13 receives signals from controller 6 via operation bus 24. EX1004-Ishii, [0029].



FIG. 1

The diagram shows a multi-processor system. On the left, a vertical bar represents the 'DISPLAY AND OPERATION UNIT 13'. A horizontal line, labeled '10', represents the 'OPERATION BUS 24'. A green box labeled 'CONTROLLER 6' is shown on the right, connected to the bus line. A green arrow points from the text 'CONTROLLER 6 COUPLED TO DISPLAY AND OPERATION UNIT 13 VIA OPERATION BUS 24' to the connection point between the controller and the bus. The bus line is also labeled '24' at its top end.

EX1004-Ishii, FIG. 1, [0021], [0025], [0029]; EX1003-Dec., ¶111-112.

As mapped below, Ishii's *controller* (controller 6 and charger 8 microcomputer) alone or as modified by Hayashi and/or Fujita is *configured to* perform the claimed functions. Claims 1[c]-[f].

4. Claim 1[c][1]

a) '010 Patent Description Regarding “*active charging session*”

The '010 Patent describes the “charging session” begins once the user selects a charge start time and sets the programmed charge: **“Once the charge start time has been selected by a user as just described,** the user can select the navigation button 82 described above to return to the first screen 40, and **can command the vehicle charging cords 22 to begin a charging session by pressing the power button 34.”** EX1001, 16:43-52. The controller then “compare[s] the start time 90

entered by the user to the current time of day...and will begin charging the battery 20 at the entered charge start time.” EX1001, 16:47-52, FIG. 24.

Per Claim 1[e] and Patent Owner’s statements during prosecution, “active charging session” includes a “delay time” between when the programmed charge is set and when the *at least one condition* is met, where actual charging of the battery (i.e., current or power supplied to the battery for charging the battery) does not occur during the delay time (because the condition has not been met). Claim 1[e]; §II.B; EX1001, 15:2-5; EX1002, 497-499.

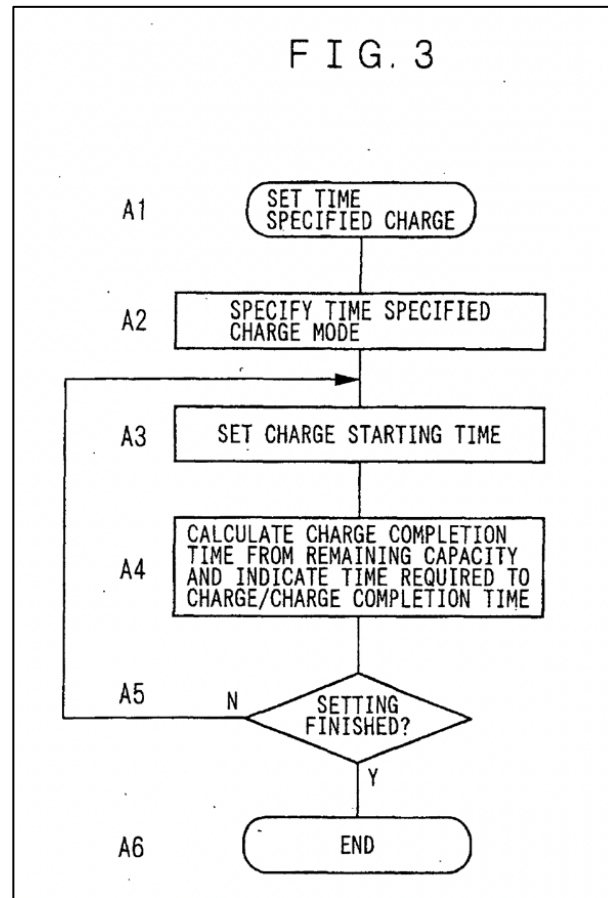
b) ’010 Patent Description Regarding “*programmed manner of charge*” and “*at least one condition*”

The ’010 Patent describes a “programmed charge” based on a “charge start time” (*at least one condition*). EX1001, 23:63-24:5, FIG. 10.

c) Ishii’s Teachings

Ishii teaches *begin an active charging session of the battery based on the programmed manner of charge and at least one condition* by beginning the time-specified charge mode when charger 8 determines the user selected a time-specified charge mode, per step B2 of FIG. 4. The *active charging session* (i.e., the time-specified charge mode) is *based on the programmed manner of charge and at least one condition*; namely, the user selecting and confirming the mode is time-specified charge mode (FIG. 3) and selecting the charge start time (*at least one condition*).

Ishii teaches a method for a user setting a charge mode, including setting a time-specified charge mode, as shown in FIG. 3:

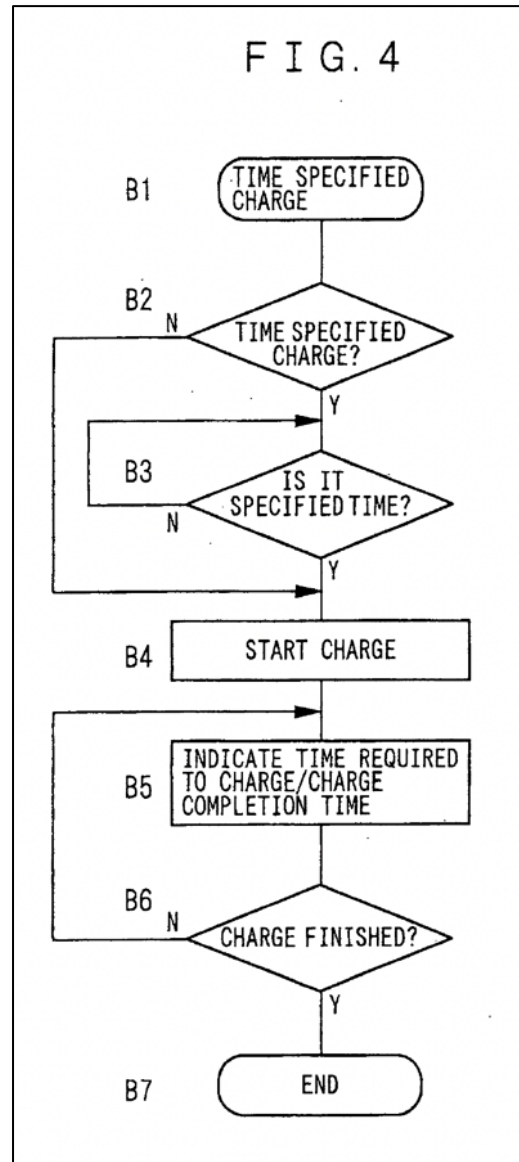


EX1004-Ishii, FIGS. 3; FIG. 3, [0047]. During the setting process, the user specifies their “charge mode” as the time-specified charge mode (step A2) and inputs the charge starting time (step A3). EX1004-Ishii, [0048]-[0049]. When the charge time is entered by the user, the charge start time is “stored in the memory of charger 8[.]” EX1004-Ishii, [0050], FIG. 3. Then, charger 8 calculates the “charging time (time required to charge)” (step A4). EX1004-Ishii, [0051-0052], FIG. 3. A user confirms

the operation by pressing down a confirmation key and accordingly the “setting of the charge is finished” (steps A5-A6). EX1004-Ishii, [0058], FIG. 3.

“Setting of the time-specified charge is carried out by the charger 8 of the charger unit 5 via the controller 6.” EX1004-Ishii, [0047]. Ishii’s user-selected time-specified charge mode that is set by the charger 8 via controller 6 is *a programmed manner of charge* and specifies *at least one condition* by specifying the charge starting time, similar to the ’010 Patent’s “programmed charge” selected by the user and specifying a charge start time “entered by the user.” EX1004-Ishii, [0047]-[0050]; EX1001, 23:63-24:5.

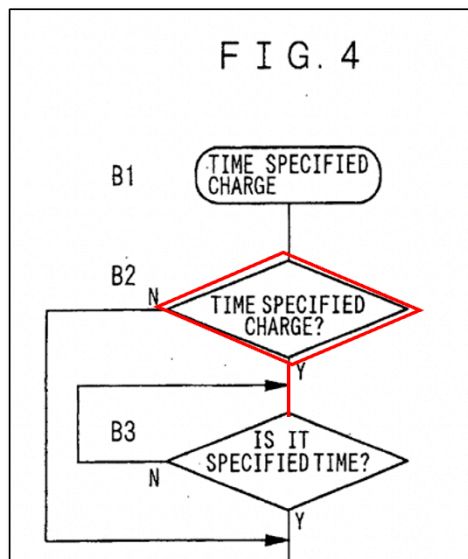
Once a user confirms the charge setting, charger 8 goes into “charge mode” (Step B1), per FIG. 4:



EX1004-Ishii, [0059]-[0060], FIG. 4. At step B2, charger 8 checks “whether it is the time-specified charge or not,” and “if it is one of the other charge modes, it immediately proceeds to” charging the battery (Step B4). EX1004-Ishii, [0062], [0064]. If the selected charge mode is time-specified charge, the present time is obtained from timer 4 and compared “with the specified charge starting time that is stored” (step B3). EX1004-Ishii, [0063], FIG. 4. Charger 8 begins charging the

battery of the vehicle “[w]hen the present time corresponds to the charge starting time” (steps B3-B4). EX1004-Ishii, [0063-0064]. Specifically, charger 8 supplies “electric power to the secondary battery 2B or 3B of the selected battery unit to start the charge.” EX1004-Ishii, [0064].

When charger 8 determines in step B2 that the mode “is the time-specified charge” (Denoted by “Y” annotated below), the time-specified charge mode begins:



EX1004-Ishii, FIG. 4 (annotated), [0062]. Thus, Ishii teaches *begin an active charging session of the battery* by charger 8 performing step B2 and determining the user-selected mode is a time-specified charge mode. The time-specified charge mode is for charging the battery 2,3, and thus the *active charging session is of the battery*. EX1004-Ishii, [0064].

Ishii's time-specified charge mode (*active charging session*) is *based on a programmed manner of charge* because step B2 only begins the time-specified charge mode if the user selects and confirms the time-specified charge mode (*programmed manner of charge*) option during the setting process of FIG. 3. EX1004-Ishii, [0058]-[0062] (disclosing if step B2 determines "it is the time-specified charge, it proceeds to B3"), [0049]; EX1003-Dec., ¶¶117-121.

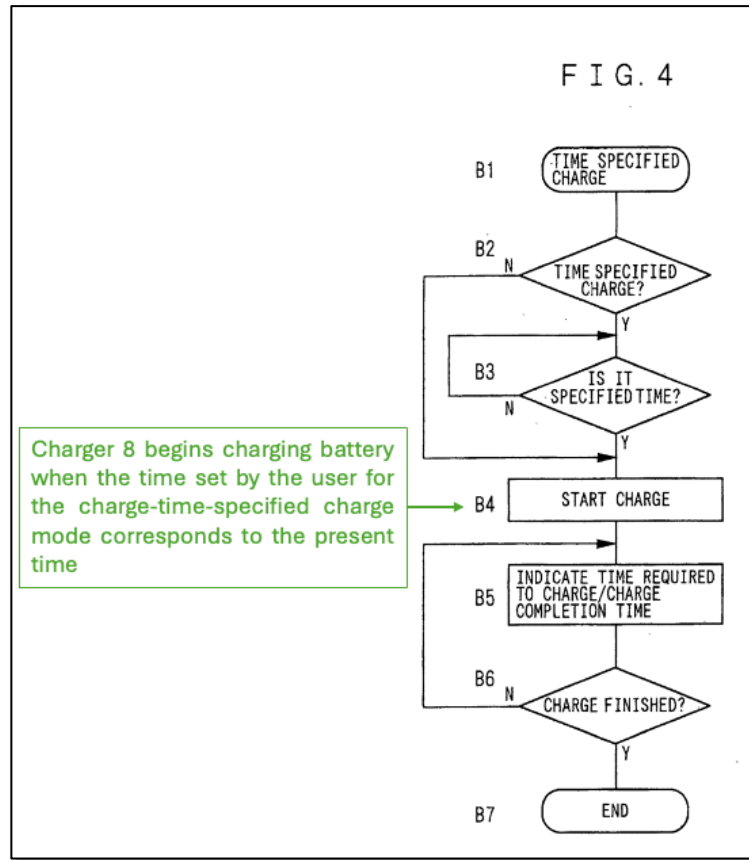
Ishii's time-specified charge mode for charging the battery (*active charging session*) is also *based on at least one condition*, namely the charge start time set by the user for the time-specified charge mode. EX1004-Ishii, [0049]-[0050]; EX1003-Dec., ¶122.

Therefore, Ishii's charger 8 begins a time-specified charge mode when charger 8 determines the time-specified charge mode was selected by the user at step B2 (*begin an active charging session of the battery*), and the *begin[ning]* of such a time-specified charge mode is *based on* the programmed time-specified mode the user selected and confirmed (*a programmed manner of charge*), including the charge start time specified (*at least one condition*). EX1004-Ishii, [0047-0058], [0062-0064], FIGS. 3-4. Because "setting of the time-specified charge is carried out by the charger 8 of the charger unit 5 **via the controller 6**" and the microcomputer of charger 8 "execute[s] time-specified charge" operations of FIG. 4, Ishii's *controller*

is configured to begin an active charging session.... EX1004-Ishii, [0044], [0047], [0064], [0060]; EX1003-Dec., ¶123.

5. Claim 1[c][2]

Ishii teaches *the programmed manner of charge starting charging of the battery in response to the at least one condition being met*, namely charger 8, during the time-specified charge mode (*active charging session*), begins charging the battery by supplying power when the “present time corresponds to the charge starting time.” EX1004-Ishii, [0062-0064], FIG. 4. When charger 8 is in the time-specified charge mode, the present time is obtained and compared with the “specified charge starting time.” EX1004-Ishii, [0062-0063], FIG. 4. “When the present time corresponds to the charge starting time,” the charger will begin to supply charge to the battery unit. EX1004-Ishii, [0064], FIG.4.



EX1004-Ishii, FIG. 4. Thus, Ishii's time-specified charge mode selected and confirmed by the user (*the programmed manner of charge*) starts charging the battery when the current time meets the specified start time (*in response to the at least one condition being met*). Because charger 8 microcomputer executes the time-specified charge mode, including comparing the times and "start[ing] the charge," Ishii's controller is configured to...starting charging of the battery in response to the at least one condition being met via the programmed manner of charge. EX1004-Ishii, [0044], [0060], [0063]-[0064]; EX1003-Dec., ¶124.

6. Claim 1[d]

Ishii alone or Ishii in combination with Hayashi teaches Claim 1[d].

a) Ishii's Teachings

Ishii teaches *calculate an amount of time required to charge the battery*. Ishii's charger 8 "calculates a charging time (time required to charge) from the remaining capacity" after the charge starting time is stored in the memory of charger 8. EX1004-Ishii, [0051]-[0052], FIGS. 3-4; EX1003-Dec., ¶126 (opening Step A4 illustrates calculating "time required to charge," per [0051]). Because Ishii also teaches during charging of the battery (FIG. 4, Step B5), when in the time-specified mode (during the *active charging session*), the "charging time" (meaning "time required to charge") is updated, Ishii teaches calculating the *amount of time required to charge* during the *active charging session*. EX1004-Ishii, [0065] ("as the charge proceeds, **it calculates the charging time...to indicate the time taken before the completion of the charge...**"), [0051]; EX1003-Dec., ¶127.

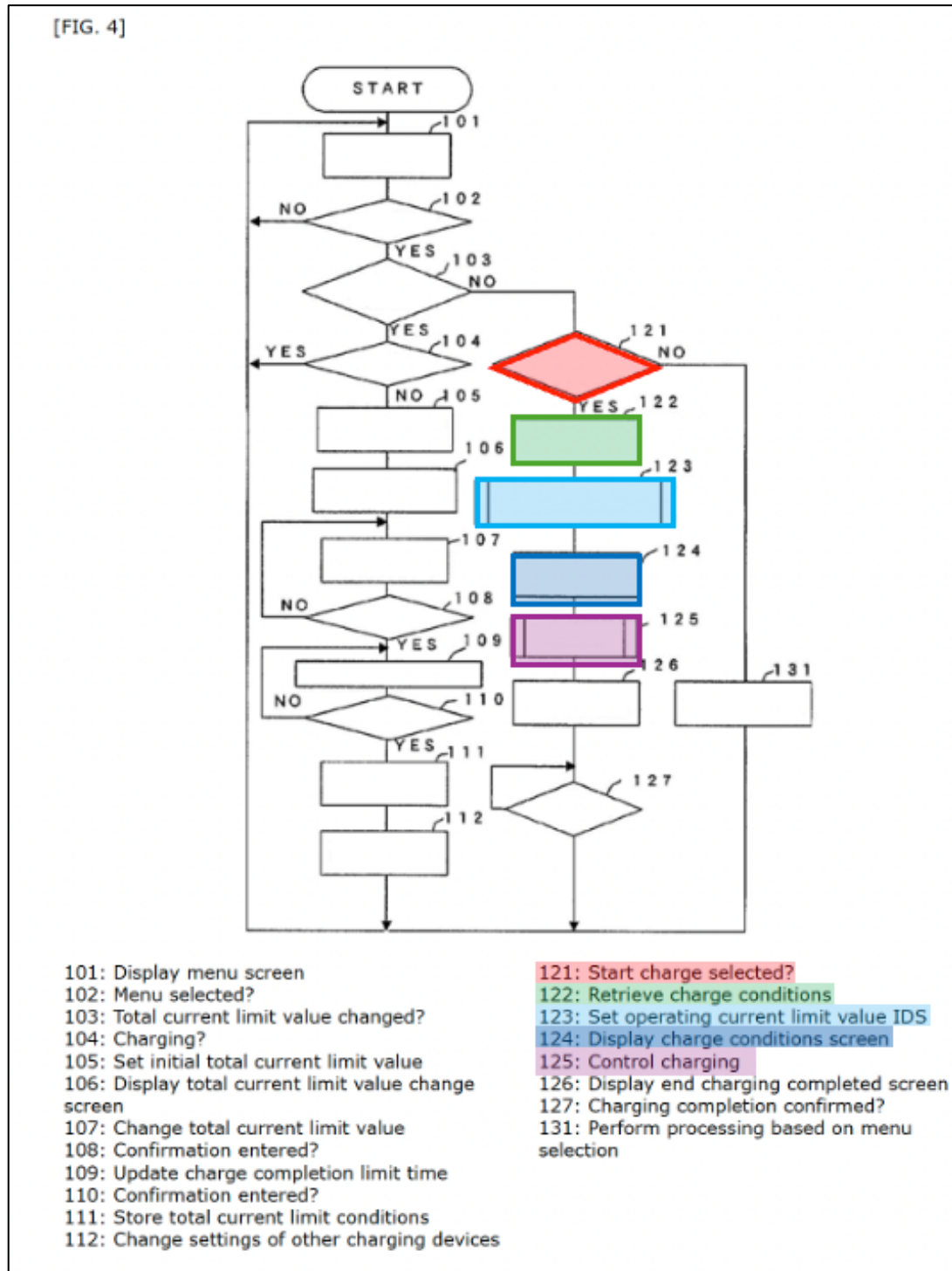
Because Ishii's controller 6 controls charger 8 to set the time-specified charge mode (via steps in FIG. 3) and charger 8 microcomputer controls performing the time-specified charge mode (via steps in FIG. 4), Ishii's *controller* is *configured to* calculate the time required to charge the battery, both before entering time-specified charge mode and after entering time-specified charge mode (during the *active charging session*). EX1004-Ishii, [0047].

b) Hayashi's Teachings

Alternatively, Hayashi teaches *calculate an amount of time required to charge the battery* **after** beginning an *active charging session* but before actual charging of the battery (i.e., during a delay time); namely, calculating a “time required to charge the battery” when determining “the predicted charging completion time” during a “standby for charging state.” EX1005-Hayashi, [0094], [0102], [0104].

Hayashi teaches a vehicle charger that “predict[s] **the time required for charging the battery**” and a charge completion time. EX1005-Hayashi, [0030]-[0031], [0169] (disclosing the “**time required to charge the battery 6** is estimated”), [0102]. To calculate the charge completion time, the time required to charge is calculated. EX1005-Hayashi, [0102] (disclosing “to predict the charging completion time,” the “device calculates the required time to charge the battery”).

Hayashi teaches the charge completion time is predicted (which includes calculating time required to charge) **after** the user selects “start charging” (*begin an active charging session*) but **before** actual charging of the battery. EX1005-Hayashi, [0031], [0098-0099], [0102], [0087]. EX1003-Dec., ¶¶129-134.

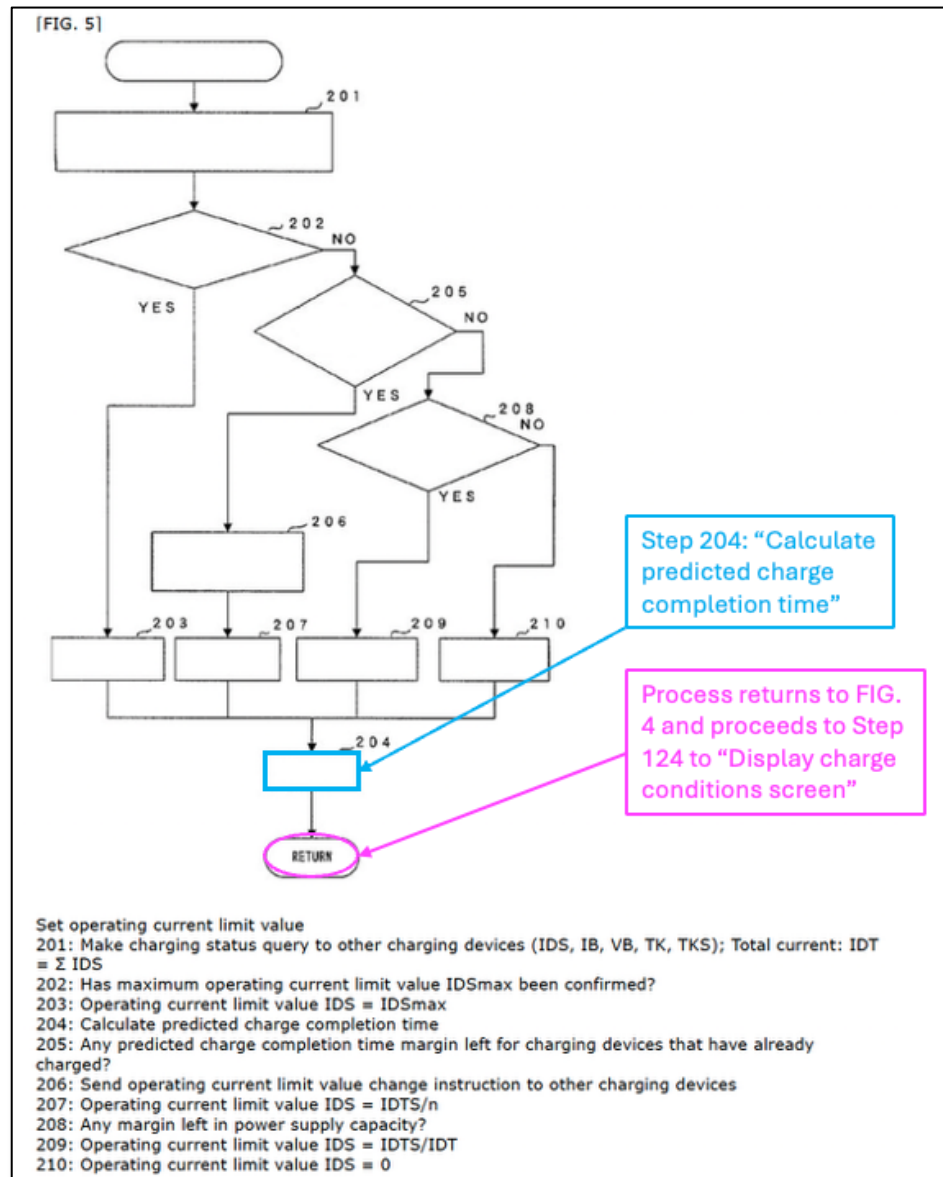


EX1005-Hayashi, FIG. 4, [0094-0096]. During FIG. 4's charging process, the processing "determine[s] whether the instruction selected by operating the 'M' key

is an instruction to start charging.” (S121). EX1005-Hayashi, [0094]. If it is not, “the processing proceeds to S131” to schedule an “intentionally delayed” charging session via the user setting a charging start date and time. EX1005-Hayashi, [0098]-[0099]. The processing “returns to S101” after S131. EX1005-Hayashi, [0094], [0098].

After S131 returns to S101, the process reaches S121 to determine whether the user instructed “**start charging.**” EX1005-Hayashi, [0094]. If the user instructed “start charging” after selecting an intentionally delayed charge, the system enters a “**standby state** waiting to start charging” at the future set time. EX1005-Hayashi, [0094]-[0095]. Thus, to start a charging session via an intentionally delayed charge selected by the user, the user selects the intentionally-delayed charging schedule (at S131) prior to selecting “start charging” via S121. EX1003-Dec., ¶131. Accordingly, Hayashi *begin[s] an active charging session...* when the user instructs “start charging” at S121 that places the system in a standby state where current is not supplied *based on* a user “set” intentionally delayed charge (S131) (*programmed manner of charge*) that includes a selected future time and date (*at least one condition*). Hayashi begins charging the vehicle when the set future time and date is reached (performs S125 when the current time meets the future time) (*the programmed manner of charge starting charging...in response to the at least one condition being met*, per Claim 1[c][2]). EX1005-Hayashi, [0095]- [0096].

When the instruction is “start charging” at S121, the process proceeds to S123 where “the predicted charging completion time TK is determined.” EX1005-Hayashi, [0094]. FIG. 5, S204 discloses predicting/calculating the charging completion time:



EX1005-Hayashi, FIG. 5., [0102]; EX1003-Dec., ¶¶133-134. During S204, Hayashi teaches “[i]n order to predict the charging completion time,” the device “calculates

the required time to charge the battery.” EX1005-Hayashi, [0102]. Hayashi teaches that “[w]hen in the standby for charging state, the predicted charging completion time is calculated” via S204. EX1005-Hayashi, [0104]. Because S204 is performed during standby for charging, and S204 includes calculating the time required to charge in order to predict the charge completion time, Hayashi teaches *calculate an amount of time* (i.e., the time required to charge) **after** beginning the *active charging session* (after a “start charging” command at step S121) but before actual charging of the battery. EX1005-Hayashi, [0102], [0104]; EX1003-Dec., ¶135.

Further, Hayashi teaches control unit 20 (*controller*) executes FIGs. 4-7 control processing (*is configured to*), including calculating the time required to charge. EX1005-Hayashi, [0086], [0030]-[0031], [0170]. EX1003-Dec., ¶136.

c) Motivation to Combine

A POSITA would have found obvious and been motivated to modify Ishii’s *controller* controlling setting and executing time-specified charge to perform Ishii’s calculation of the time required to charge **after** beginning Ishii’s time-specified charge mode (*active charging session*) and before charging the batteries, per Hayashi’s teachings. EX1003-Dec., ¶137. Additionally calculating Ishii’s time required to charge during the delay time, per Hayashi’s teachings, would have been a trivial modification to Ishii with resulting benefits.

A POSITA would have appreciated that calculating the time required to charge **after** Ishii's time-specified charge mode was initiated (FIG. 4, Step B2) but before charging commences would improve the accuracy of the time presented to the user, because the time would be representative of current battery conditions and temperature, closer to the actual charging time, and thus provide a more accurate prediction than during time-specified mode set-up. EX1003-Dec., ¶138. By calculating the time required to charge between entering time-specified charge mode and actual charging, the device would take the most current time and remaining battery capacity into account for its calculations, increasing the accuracy of the calculation and charging operation overall. EX1003-Dec., ¶138.

Additionally, a POSITA would have appreciated this modification would allow for verification that the scheduled charging still works for a user before commencing charging. EX1003-Dec., ¶139. This verification would provide an opportunity for correction to the charge mode if a user's plans change, and allow a user to better manage their own schedule based on the charge time required. EX1003-Dec., ¶139.

The modification is simple use of a known technique (Hayashi's calculating time required to charge during a charge session delay) to improve similar devices (vehicle charging systems) in the same way (improve accuracy of calculation and user convenience). EX1003-Dec., ¶140.

A POSITA would have had a reasonable expectation of success (REOS) modifying Ishii per Hayashi. EX1003-Dec., ¶141. Ishii already teaches calculating a “time required to charge” from “remaining capacity.” EX1004-Ishii, [0051-0056], FIG. 3. Further, Ishii teaches setting the time specified charge is performed by charger 8 via controller 6 and time-specified charge mode is executed via charger 8 microcomputer. EX1004-Ishii, [0024], [0047]; EX1003-Dec., ¶141. Modifying Ishii to implement the functionality of calculating the time required to charge during standby, per Hayashi, would have required only straightforward modifications to the programming instructions of Ishii’s collective controllers, which would have been well within the skillset of a POSITA. EX1003-Dec., ¶141. In the modified system, Ishii’s *controller* would be *configured to calculate the amount of time* after entering the time-specified charge mode by, e.g., charger 8 microcomputer calculating the time required to charge during standby. EX1003-Dec., ¶141.

7. *Claim 1[e]*

a) **’010 Patent Description Regarding “*active charging session*”**

The ’010 Patent describes “active charging session” to include a time where actual charging of the battery (i.e., current supplied to the battery) is not occurring. Specifically, the ’010 Patent describes that “the battery 20 **may not be actively charging the battery 20 at one or more times during a charging session.**” EX1001, 15:2-5; Claim 1[c][1]. Patent Owner also argued during prosecution that

the “active charging session” includes “**a delay time within the session during which charging hasn’t started yet (e.g., the condition associated with the charger session hasn’t yet been satisfied).**” EX1002, 497-499.

b) Ishii’s Teachings

Ishii teaches that during the time-specified charge mode being carried out (*during the active charging session*), the calculated “time required to charge” (*the amount of time*) is *display[ed]* (step B5). EX1004-Ishii, [0065], FIG. 4. The displaying of the time required to charge occurs after charging of the batteries has started (after step B4). In related art, Hayashi teaches displaying the time required to charge during a standby mode prior to charging the batteries.

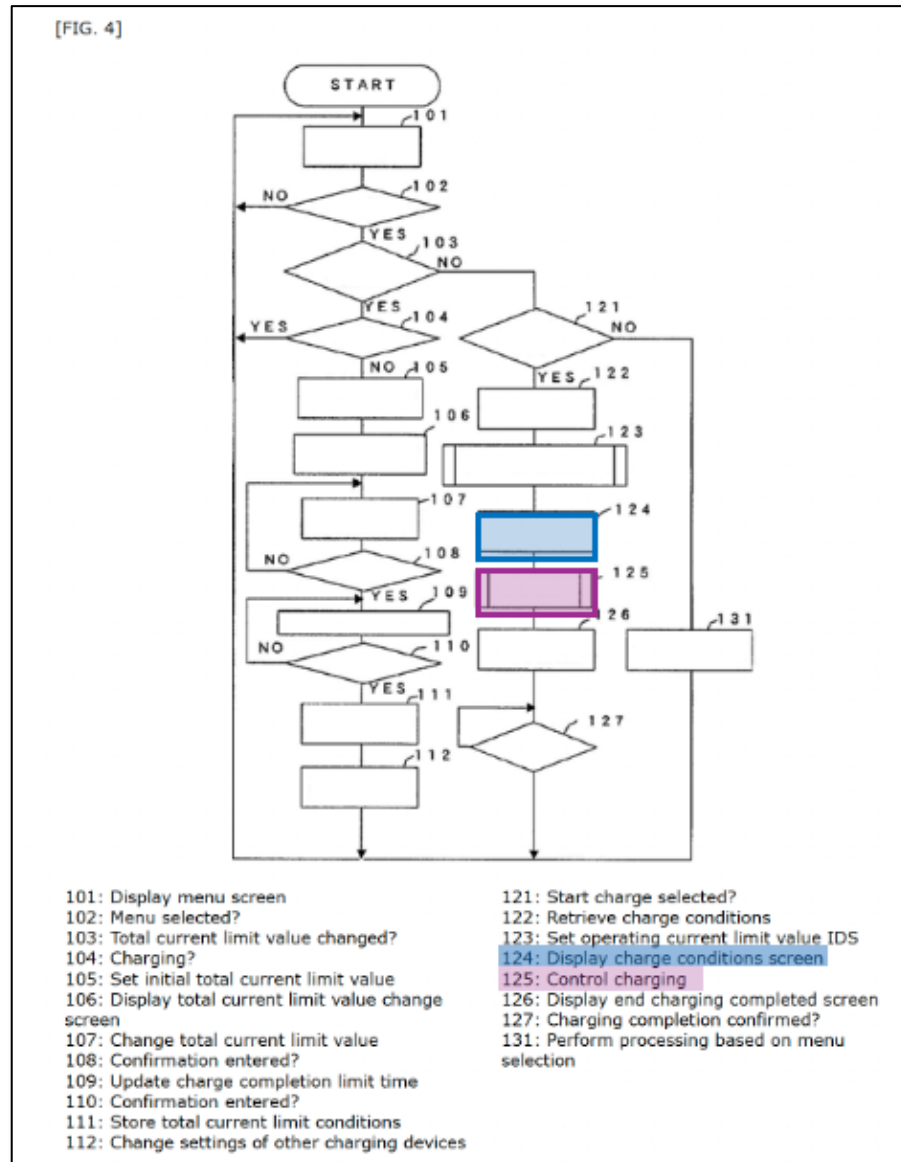
c) Hayashi’s Teachings and Internal MTC for Hayashi

Hayashi teaches displaying the time required to charge *before starting charging of the battery....*; namely, displaying the time required to charge during standby of the “start charging” session. Hayashi teaches the *amount of time* is displayed on the display unit 24; namely, “the predicted charging time (the time required to charge the battery 6) may simply be displayed.” EX1005-Hayashi, [0170].

Hayashi teaches displaying both (1) the time required to charge the battery; and (2) the charge completion time. EX1005-Hayashi, [0170], [0030]-[0031] (describing “the result of the prediction **displayed**” is the time required to charge or

the charge completion time); Claim 1[d]. Hayashi expressly teaches: “If the system is in standby waiting to start charging, as shown in FIG. 9 (b), the start time for charging is displayed **along with the completion time for charging.**” EX1005-Hayashi, [0095]. Therefore, Hayashi teaches (1) displaying the charge completion time during the standby period; and (2) displaying the time required to charge.

Following the calculation (S123) and display (S124) of the charge completion time, “the processing proceeds to S125 and begins controlling the charging of battery 6”:



EX1005-Hayashi, [0096], FIG. 4.

Instead of displaying the charge completion time during standby, as expressly taught at [0095], a POSITA would have found obvious to display the predicted result of the time required to charge during standby prior to charging (*during the active charging session but before starting charging of the battery*, i.e., after step S121 begins the intentionally-delayed session, but before charging of the battery

commences at step S125). EX1003-Dec., ¶¶145-147. Hayashi expressly motivates the modification at [0170], stating “the predicted charging time (the time required to charge the battery 6) may simply be displayed” instead of the charge completion time. The modification is simply substituting Hayashi’s displayed charge completion time during standby with displaying the time required to charge during standby, with the predictable result of “allow[ing] the user to plan the next scheduled use of the charging device.” EX1005-Hayashi, [0029]. A POSITA would have had a REOS in displaying the time required to charge during “standby,” given the time required to charge is already calculated and displayed during charge control. EX1003-Dec., ¶148 (*citing* EX1005-Hayashi, [0104]).

Further, Hayashi teaches the control processing is executed by the charging control unit 20, which is thus *configured to... display, during the active charging session but before starting charging of the battery, the amount of time upon the display*. EX1005-Hayashi, [0086]; EX1003-Dec., ¶149. Additionally, the user selects a charging start time when selecting an intentionally-delayed charge, and thus the *starting charging of the battery is according to the at least one condition*. EX1005-Hayashi, [0099]; Claim 1[d].

d) Motivation to Combine

A POSITA would have been motivated and found obvious to modify Ishii’s to be *configured to display the time required to charge the battery while the system*

is in standby waiting for charging to begin (during the time-specified charge mode), per Hayashi. EX1003-Dec., ¶151.

The modified Ishii system is already modified to calculate the time required to charge during the delay period prior to starting charging, per Hayashi. Claim 1[d]. A POSITA would have further been motivated to display such a calculated time required to charge for user convenience to review the charging time. EX1003-Dec., ¶152. A POSITA would have appreciated that displaying the required time to charge would allow the user to confirm the charging schedule before leaving the vehicle. EX1003-Dec., ¶152. A POSITA would have also been motivated because displaying the required amount of time required to charge before the scheduled charging begins would allow the user to confirm whether the charging time works with the user's own schedule, or if the scheduled charging should be modified. EX1003-Dec., ¶152. Additionally, presenting charging information was known to be beneficial to users, and thus a POSITA would have recognized the advantage of providing the time required to charge at various stages of the charging session, including during the delay time. EX1003-Dec., ¶152.

A POSITA would also have been motivated to make the modification to allow the user to adjust their own schedule if needed based on the displayed required charge time prior to starting charging, especially if the current charge of the vehicle was low. EX1003-Dec., ¶153.

This modification entails the use of a known technique (Hayashi's display of the time required to charge the battery while in standby waiting for charging to begin) to improve similar devices (Ishii's electric device of an electric vehicle) in the same way. EX1003-Dec., ¶154.

A POSITA would have had a REOS in modifying Ishii per Hayashi. Ishii already teaches displaying the time required to charge during the charging of the battery, which charger 8 microcomputer controls. EX1004-Ishii, [0065], FIG. 4; EX1003-Dec., ¶155. Ishii teaches controller 6 already communicating with display and operation unit 13, charger 8 microcomputer executing the time-specified charge mode, and controller 6 and charger 8 communicating via bus 26. EX1004-Ishii, [0024], [0044], [0047], [0024], [0029], [0030]; EX1003-Dec., ¶155. Thus, modifying Ishii to implement the functionality of displaying the time required to charge the battery while the system is in standby, per Hayashi, would have required only straightforward modifications to the programming instructions of controller 6 and charger 8 microcomputer. EX1003-Dec., ¶¶150, 155. This modification would have required nothing more than ordinary skill in the art and would have been well within the skillset of a POSITA. EX1003-Dec., ¶155.

8. *Claim 1[f]*

a) '010 Patent Description Regarding “*Repeatedly*”

The word “repeatedly” does not appear in the '010 Specification. The closest support is found at EX1001, 13:60-14:13, generally describing “continually” or “periodically” updating, “such as every second, minute, or other time interval.” EX1001, 13:60-14:13; EX1003-Dec., ¶156.

b) Explanation of the Combination of Ishii-Hayashi or Ishii-Hayashi-Fujita

Both Ishii and Hayashi teach modes or states where a charging session has been programmed and set but actual charging of the battery (e.g., supplying current) has not begun. Claims 1[c]-1[d]. In the Ishii-Hayashi combination and per Hayashi’s teachings, the time required to charge (*amount of time required to charge*) is displayed during the delay time where the time-specified charge mode (*active charging session*) has begun but *before starting charging of the battery*. Claim 1[e]. Claim 1[f] requires *repeatedly* updating and displaying the time required to charge during this delay period. Both Hayashi and Fujita teach repeatedly updating and displaying the time required to charge.

Hayashi teaches, when displaying the time required to charge (also referred to by Hayashi as “charging time”), “the **charging time displayed** on the display unit 24 should be **incrementally reduced** in accordance with progress in the charging process to indicate the remaining time until charging is complete.” EX1005-Hayashi,

[0170]. Fujita similarly teaches repeatedly updating and displaying a time required to charge while the battery is actively charging and provides further implementation details and specificity. Claim 1[f].

In the combination, it would have been obvious to apply either Hayashi's or Fujita's teachings of repeatedly updating/displaying a time required to charge during Ishii's delay time encompassing the time period from when Ishii's time-specified charge mode begins to actual charging of the battery (e.g., supplying current to the battery). §V.A.8.e; EX1003-Dec., ¶159.

c) Hayashi's Teachings

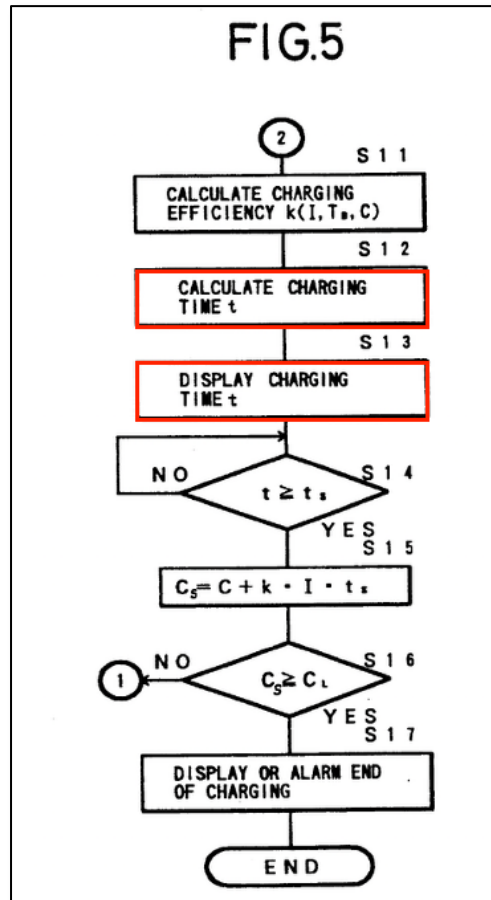
Hayashi teaches *repeatedly update the amount of time upon the display during the active charging session*. Specifically, Hayashi teaches that during the “charging of battery 6,” “charging control is executed.” EX1005-Hayashi, [0096]. The charging control includes "incrementally" updating the time required to charge displayed on display 24 during charging of the battery. EX1005-Hayashi, [0170]. Hayashi's control unit 20 performs the charging control process and thus is *configured to...repeatedly....* EX1005-Hayashi, [0086].

d) Fujita's Teachings

Fujita additionally teaches *repeatedly update...* and provides additional implementation details and specificity. Fujita teaches *repeatedly update* (i.e., repeat steps S9-S16 including steps S12, “calculate charging time t,” and S13, “display

charging time t ”) *the amount of time upon the display* (i.e., display charging time on alarm/display means 22, step S13). EX1006-Fujita, 3:58-4:49, FIGS. 4-5.

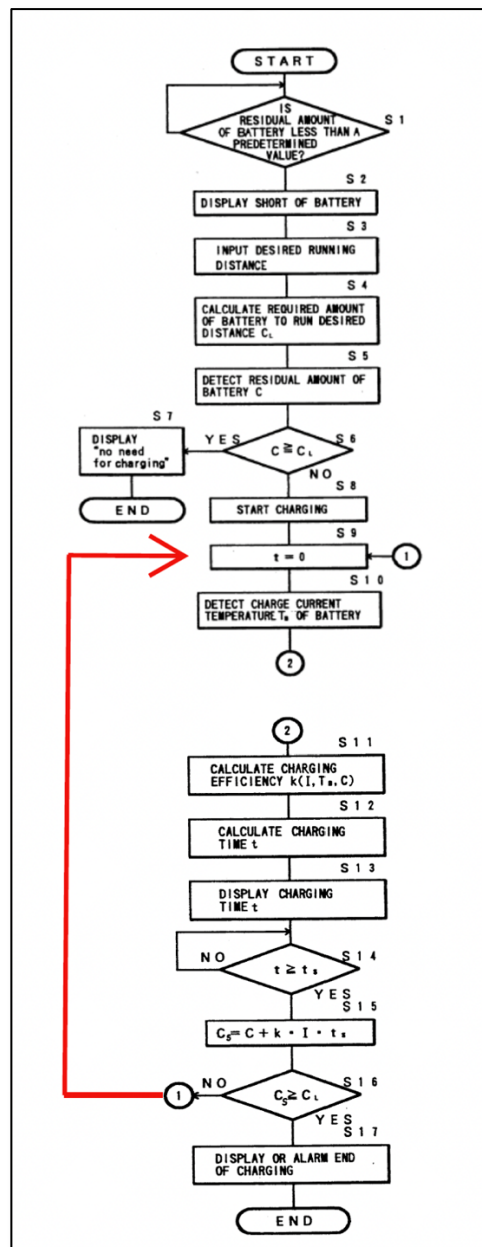
First, Fujita teaches calculating and displaying the *amount of time* required to charge the battery. EX1006-Fujita, Abstract, 1:7-8, 2:14-36, 3:58-4:49, FIGS. 4-5. EX1003-Dec., ¶162. Based on an input from the user specifying a “desired running distance L ”, the electronic control unit (ECU) 16 of the electric vehicle 10 “calculates a required amount C_L of electric energy of the battery to run the desired distance L (step S4)[.]” EX1006-Fujita, 3:58-62, 3:65-4:2. The ECU 16 “calculates a current residual amount C of electric energy of the battery (step S5),” and compares the input amount C_L obtained with the residual amount C (step S6).” EX1006-Fujita, 3:65-4:2. If the ECU 16 determines that $C < C_L$, the user must charge the electric vehicle. EX1006-Fujita, 4:5-14. During charging, the ECU detects parameters and then “calculates a charging efficiency $k(I, T_B, C)$.” EX1006-Fujita, 4:21-24. The charge efficiency is used to calculate a “charge time t .” EX1006-Fujita, 4:27-30. “This **charge time t is displayed on the charge time display 44 of the alarm/display means 22.**” EX1006-Fujita, 4:32-34; EX1003-Dec., ¶162. FIG. 5 below illustrates charging time t is calculated and displayed:



EX1006-Fujita, FIG. 5. Thus, Fujita teaches calculating and displaying the *amount of time* required to charge the battery.

Fujita further teaches that the calculating and display of charging time t is done *repeatedly*. After charge time t is calculated and displayed in steps S12 and S13, the “ECU 16 compares the charge time t with a predetermined time t_s (step S14) and **when a lapse of time t_s is detected**, the values of the charge current I , temperature T_B and residual amount C of the battery are renewed.” EX1006-Fujita, 4:35-40. If the current amount of electric energy of the battery (C_s) is less than the required amount of electric energy of the battery (C_L) (i.e., $C_s < C_L$), “**the**

operations after step S9 are repeated.” EX1006-Fujita, 4:48-49. Fujita teaches the operations of steps S9 through S16 are performed if $C_S < C_L$ after a particular lapse of time t_s has passed (i.e., periodically). FIGS.4-5 below demonstrate the repeated portion of the operation including the steps of calculating and displaying charging time t (steps S12 and S13). EX1006-Fujita, FIGS.4-5.



EX1006-Fujita, FIGS. 4-5, 4:35-49. ECU 16 is performing the steps of this operation and is thus *configured to repeatedly update the amount of time upon the display*.

e) Motivation to Combine

A POSITA would have found obvious and been motivated to modify Ishii-Hayashi's electric device with either of Hayashi's or Fujita's operation of periodically renewing parameters and recalculating and displaying the updated charging time while in the delay period waiting to charge. EX1003-Dec., ¶¶165-166.

A POSITA would have appreciated periodically recalculating and displaying an updated time required to charge would provide the user with a more accurate representation of the amount of time required to charge. EX1003-Dec., ¶166. A POSITA would have appreciated some conditions could vary while the charger is in Ishii's time-specified charge mode or Hayashi's standby and affect the calculated time required to charge the battery, and thus providing an updated charging time calculation would improve accuracy of the predicted time. EX1003-Dec., ¶166.

Hayashi expressly motivates the combination, as it recognizes charge time varies, including during standby (i.e., before actual charging has begun): "if the charging device is in **standby waiting for charging to begin...**, **the time at which charging is completed will vary** depending on the status of the other charging devices." EX1005-Hayashi, [0032]; EX1003-Dec., ¶167.

Additionally, a POSITA would have been motivated to modify Ishii-Hayashi to provide an accurate time required to charge to improve scheduling efficiency. EX1003-Dec., ¶168. Hayashi understands the importance of providing an accurate charging time as “the subsequent scheduling of use of the vehicle equipped with the battery being charged by this charging device becomes more accurate, thereby improving efficiency.” EX1005-Hayashi, [0033]; EX1003-Dec., ¶168. A POSITA would have appreciated that performing periodic recalculations of the time required to charge and displaying that to the user during the standby (delay time) would allow the user to more accurately plan trips with the vehicle. EX1003-Dec., ¶168.

This modification entails the use of a known technique (either Hayashi’s or Fujita’s periodically repeated operation based on renewed time required to charge) to improve similar device (Ishii-Hayashi’s electric device) in the same way. EX1003-Dec., ¶169.

A POSITA would have had a REOS further modifying Ishii-Hayashi. EX1003-Dec., ¶170. Ishii, Hayashi, and Fujita teach similar algorithms that ultimately calculate the time required to charge the vehicle. EX1004-Ishii, [0045], [0052]; EX1005-Hayashi, [0102], [0170]; EX1006-Fujita, 3:65-67, 4:27-34; EX1003-Dec., ¶170. Additionally, Ishii updates the “charging time” during the actual charging of the battery “to indicate the time taken before the completion of the charge” in “succession.” EX1004-Ishii, [0065]. Modifying Ishii-Hayashi’s

system would have required only straightforward and routine modifications to the programming instructions of controller 6 and charger 8 microcomputer. EX1003-Dec., ¶171. Implementing either Hayashi's or Fujita's repeated operation in Ishii-Hayashi during Ishii's delay time would have required nothing more than ordinary skill of a POSITA. EX1003-Dec., ¶171. In the modified system, Ishii's *controller* would be programmed to *repeatedly update the amount of time upon the display during the active charging session, including during the active charging session but before starting charging of the battery according to the at least on condition* as the controller would update the display and operation unit 13 with the updated time required to charge during the "delay time" before the present time has reached the input charge starting time.

B. Claim 7

1. Ishii's Teachings

Ishii teaches a *user interface*; namely, the "operation section" of "display and operation unit 13 [] constituted by the display section...and **the operation section composed of a plurality of keys, buttons, a touch panel** or the like capable of instructing the operation of the electric device 1." EX1004-Ishii, [0021], [0029], FIG. 1. The operation section of unit 13 is a *user interface* because "**charge starting time is inputted by key operation on the display and operation unit 13.**" EX1004-Ishii, [0029], [0050]; EX1003-Dec., ¶172.

Ishii teaches the *user interface is positioned within the vehicle* because the operation section is part of display and operation unit 13 in electric device 1 in the electric vehicle (or in view of Fujita). EX1004-Ishii, [0029], [0119]; EX1003-Dec., ¶173; Claim 1[a].

Ishii teaches *wherein the at least one condition includes a time of day*; namely, the “charge starting time” input by the user during setting of the time-specified charge mode. EX1004-Ishii, [0046-0049]; *see* Claim 1[c][1]; EX1003-Dec., ¶174.

Ishii’s controller 6 (part of Ishii’s *controller*) receives the charge start time via the operation unit (*receives the time of day via the user interface*) because the start time is “inputted by key operation on the display and operation unit 13” while setting the time-specified charge mode, which is carried out “via the controller 6.” EX1004-Ishii, [0050], [0047]; Claim 1[c][1].

2. Hayashi’s Teachings

Hayashi specifies implementation details of *at least one condition* including a *time of day*. Hayashi teaches the user inputting the “charging start **date** and **time**.” EX1005-Hayashi, [0099]; EX1003-Dec., ¶176.

During the control processing executed by charging control unit 20, the processing includes “start scheduling processing that initiates charging at a time that has been intentionally delayed.” EX1005-Hayashi, [0086], [0099]. Hayashi teaches *at least one condition includes a time of day* because during processing, “a screen is

displayed on display unit 24 allowing the user to set the **charging start date and time[.]**” EX1005-Hayashi, [0099]. Hayashi teaches *the controller receives the time of day via the user interface* because the **start date and time** is received by control unit 20 “based on a user input via the control panel 22.” EX1005-Hayashi, [0099].

3. *Motivation to Combine*

A POSITA would have been motivated and found obvious to modify Ishii’s operation section of display and operation unit 13 to allow the user to input a “charging start date and time,” per Hayashi’s teachings. EX1003-Dec., ¶178. Ishii already teaches inputting the charge start time via the operation section of unit 13. EX1004-Ishii, [0050]; EX1003-Dec., ¶178. To the extent not already taught in Ishii, a POSITA would have been motivated to modify Ishii’s operation section of unit 13 to allow the user further specificity when setting a time-specified charge mode, thus allowing the user to specify both the charging time and date and thereby increasing charging schedule accuracy and creating less room for error during scheduling by providing more detailed parameters. EX1003-Dec., ¶179. This combination uses a known technique (Hayashi’s inputting the charge starting date and time) to improve similar devices (vehicle charging systems) in the same way. EX1003-Dec., ¶180.

A POSITA would have had a REOS because Ishii already teaches “charge starting time is inputted by key operation on the display and operation unit 13[.]” EX1004-Ishii, [0050]. Thus, modifying Ishii to input the charge start date and time,

per Hayashi, would have required only minor and straightforward modifications to the operation section of display and operation unit 13 as well as minor modifications to the programming instructions of controller 6. EX1003-Dec., ¶181.

C. Claim 8

Ishii's operation section of display and operation unit 13 is the *user interface*. See Claim 7. “The **display and operation unit is constituted by the display section...and the operation section** composed of a plurality of keys, buttons, a **touch panel** or the like capable of instructing the operation of the electric device 1....” EX1004-Ishii, [0029]. Ishii therefore teaches the operation section comprises a touch panel, which is part of *the user interface...defined at least in part by the display*.

A POSITA would have found obvious and been motivated to form Ishii's display as a touch panel, to the extent not otherwise taught in Ishii. In the modification, Ishii's operation unit that contains the touch panel (*user interface*) is *defined at least in part by the display*. A POSITA would have been motivated to modify Ishii to make the display of unit 13 a touch panel to reduce the amount of hardware required in unit 13, making it less complex and accordingly more convenient for users. EX1003-Dec., ¶183. For example, a POSITA would appreciate using the same interface to both view charging information and set charging information therefrom. The modification would have had a REOS, given Ishii

teaches part of unit 13 already containing a touch panel and teaches a display as part of unit 13. EX1003-Dec., ¶183. It was known to combine touch panels and displays, and thus the modification would have been within the skill of a POSITA. *Id.*

D. Claim 9

1. Claim 9[Pre]

Ishii teaches *a method for charging a battery of a vehicle with a vehicle charger*. EX1004-Ishii, [0125], [0022]-[0023], [0046], [0059], FIGS. 1, 3-4; Claim 1[Pre]. EX1003-Dec., ¶184.

2. Claim 9[a]

Claims 1[c][1]-1[c][2].

3. Claim 9[b]

Claims 1[b], 1[d].

4. Claim 9[c]

Claim 1[e].

5. Claim 9[d]

Ishii teaches *supplying...power to the battery of the vehicle to charge the battery*; namely, “supplies charge electric power to the secondary battery 2B or 3B of the selected battery unit to start the charge.” EX1004-Ishii, [0065]. During Ishii’s carrying out of the time-specified charge mode, Ishii teaches “[w]hen the present time corresponds to the charge starting time, it proceeds to B4” where “the charger 8 turns ON either switch 19 or 20 according to the switch control signal S2, selects

the battery unit 2 or 3 to be charged, and **supplies charge electric power to the secondary battery 2B or 3B of the selected battery unit to start the charge.**”

EX1004-Ishii, [0059]-[0064], FIG. 4; Claims 1[c][1]-[2]. Because Ishii’s charger 8 microcomputer executes the time-specified charge mode, which includes supplying power to the batteries (FIG. 4, Step B4), power is *suppl[ied] under the control of the controller of the vehicle* (Ishii’s collective controllers 6 and charger 8 microcomputer). EX1004-Ishii, [0060], [0065], [0044]; EX1003-Dec., ¶188.

6. Claim 9[e]

Claim 1[f].

E. Claim 13

Claim 7.

F. Claim 14

Claim 8.

VI. GROUND 2: CLAIMS 2-4, 10, 15, 17-18 ARE OBVIOUS OVER ISHII, HAYASHI, FUJITA, AND KELTY-078

A. Claim 2

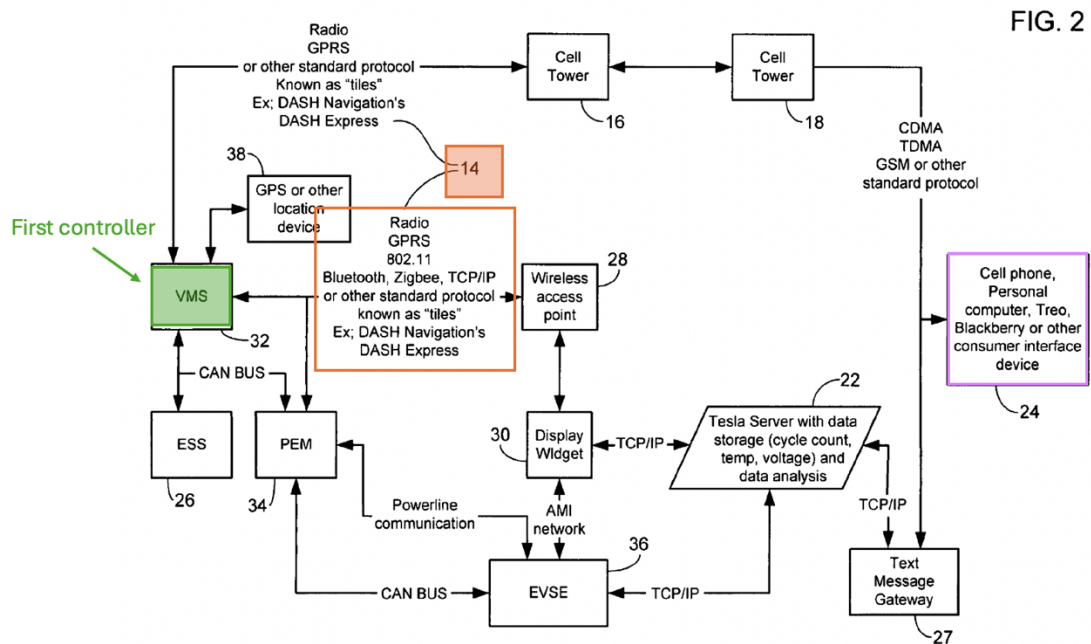
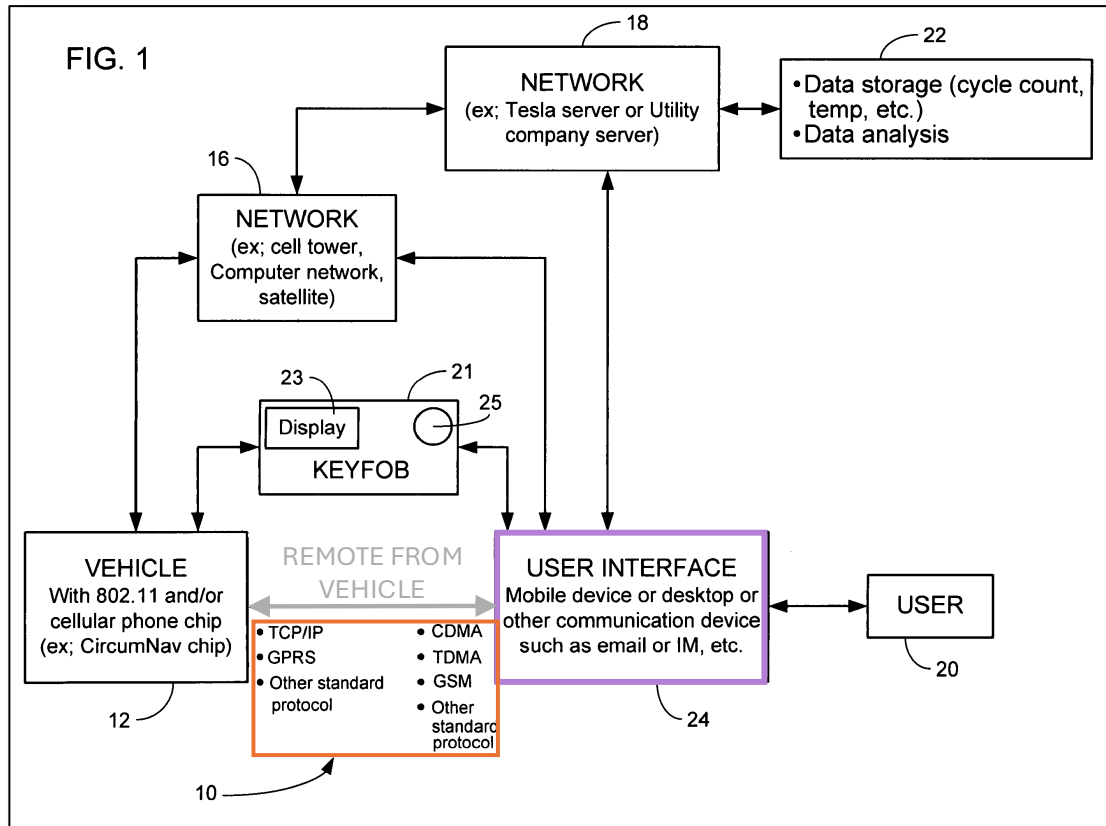
1. “the controller is a first controller”

Ishii teaches *the controller is a first controller*; namely, controller 6 and charger 8 microcomputer. Claim 1[b]. Kelty-078 additionally teaches a *first controller*, namely vehicle management system (VMS) 32. Kelty-078 teaches VMS 32 “is the onboard computer that monitors, controls and coordinates various systems

in the electric vehicle 12[.]” EX1007-Kelty-078, 7:44-51, 4:1-39 (disclosing communication between vehicle and portable user interface device 24 via communication chip utilizing various known, wireless protocols), 4:53–5:9, 3:62–4:1. Kelty-078’s VMS 32 is an onboard vehicle computer, and therefore, is a *first controller*. EX1007-Kelty-078, 7:44-51; EX1003-Dec., ¶192.

2. “the vehicle charger further comprising a receiver coupled to the first controller”

Kelty-078 teaches *a receiver*, namely communication chip 14 using “standard” wireless protocols to communicate with Kelty-078’s vehicle computer (VMS 32; *first controller*). Communication chip 14 communicates with VMS to “allow for the vehicle 12 to contact the user 20 via the user interface device 24 by any known mobile device....” EX1007-Kelty-078, 4:43-58. Communication chip 14 uses “standard protocol[s]” such as Bluetooth. EX1007-Kelty-078, 3:62-65, 4:1-4, 4:24-30, 7:44-51, FIGS. 1-2; EX1003-Dec., ¶193.



EX1007-Kelty-078, FIGS. 1-2.

Communication chip 14 (also referred to in Kelty-078 as “communication device 14”) is “arranged and installed within the electric vehicle” and “may also be incorporated into the computer controlling the vehicle internal network.” EX1007-Kelty-078, 3:53-59. Various types of information are exchanged between VMS and device 24 using communication chip 14, such as instructing powering on/off charging. EX1007-Kelty-078, 5:40-44. Because (1) Kelty-078’s communication chip 14 (serving as a “radio” or transceiver) utilizes standard protocols (Bluetooth) to communicate with VMS 32 and interface device 24 over such standard wireless communication protocols; and (2) both VMS and chip 14 are onboard or otherwise installed in the vehicle, Kelty-078’s communication chip 14 includes a *receiver coupled to the first controller*. EX1007-Kelty-078, 4:53-58, 7:43-47; EX1003-Dec., ¶¶194-195; EX1001, 6:29-35 (stating “coupled” is “used broadly” in the ’010 Patent).

Kelty-078’s communication chip (*receiver*) and VMS (*first controller*) are comprised in a *vehicle charger for charging a battery*. Kelty-078 teaches electric vehicle communication interface 10, including communication chip 14, is for “controlling and monitoring a battery in the electric vehicle.” EX1007-Kelty-078, Abstract, 3:26-53, FIGS. 1-2. Communication chip 14, VMS 32, and power electronics module (PEM) 34 are collectively installed in the vehicle and communicate with one another. EX1007-Kelty-078, 3:53-59, 7:44-53, FIG. 1. PEM

34 charges the batteries of energy storage system (ESS) 26 based on control from VMS 32. EX1007-Kelty-078, 7:59-64. Because Kelty-078's communication chip 14, VMS 32, PEM 34, and ESS 26 collectively work together to charge the vehicle, the *vehicle charger for charging a battery compris[es] a receiver* (Kelty-078's communication chip 14), which is *coupled to the first controller* (Kelty-078's VMS 32).

3. ***“the receiver configured to establish communication between the first controller and a second controller remote from the vehicle and the vehicle charger”***

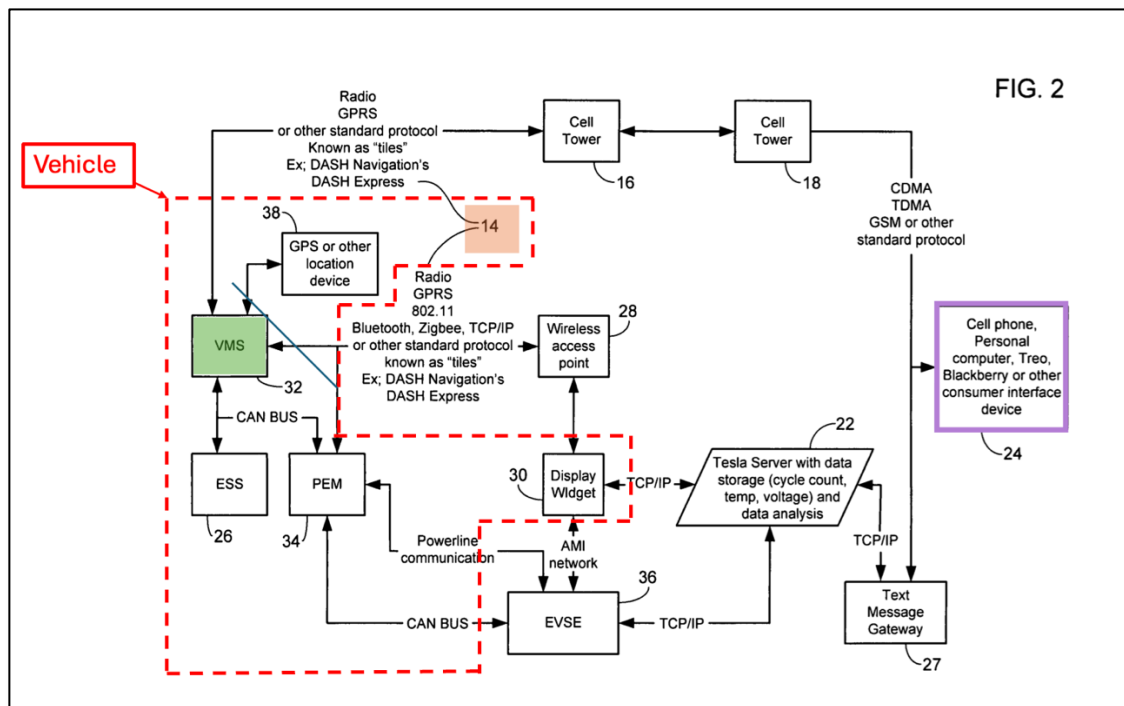
a) ***“second controller”***

The '010 Patent states the “other controller can be one or more **processors of** a personal computer, **phone**, PDA, or other processor-based device associated with a user...” EX1001, 9:8-10. Therefore, the claimed *second controller* includes at least a processor of a phone. EX1001, 9:8-10.

Kelty-078 teaches a *second controller*; namely, a processor of user interface device 24 that is a “portable device.”² EX1007-Kelty-078, 4:58-65, 5:2-5, 8:40-44.

² Mappings referencing Kelty-078's user interface device 24 and disclosed functionality should be understood as referencing the **processor** of device 24. Kelty-078's user interface device 24 is hereafter referred to as “device 24.” EX1007-Kelty-078, 4:16-39.

Kelty-078 teaches “user 20 will be capable of communicating...directly with the vehicle 12 via any user interface device 24 (step 305). Contemplated user interface devices 24 may include...mobile devices, such as **cellphones**.” EX1007-Kelty-078, 4:16-21, FIG. 3. Kelty-078 provides “Blackberry” and “Treo” as examples of device 24:

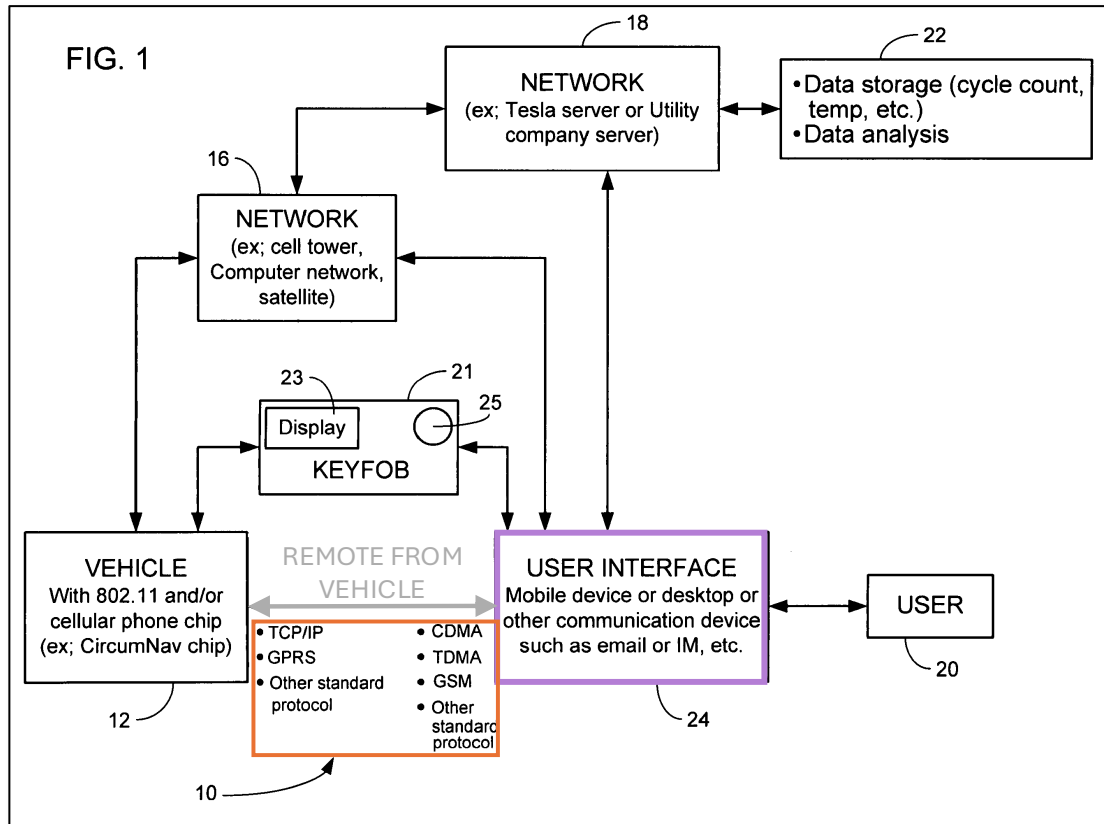


EX1007-Kelty-078, FIG. 2. EX1003-Dec., ¶198.

Kelty-078’s device 24 comprises a *controller*, e.g., a processor. EX1003-Dec., ¶199. First, Kelty-078 discloses exemplary devices 24 are the Blackberry and Treo, each of which includes a processor. EX1003-Dec., ¶199. Second, Kelty-078 repeatedly discusses functionality performed by device 24 requiring a processor, such as “**controlling** and monitoring the battery for charging the vehicle,”

communicating with networks or the vehicle via device 24, remotely powering on/off the vehicle's battery, implementing functionality "via programming by a user interface device 24," and storing location data in device 24. EX1007-Kelty-078, 4:16-39, 4:58–5:1, 5:40-44, 8:32-37, 9:3-8. Additionally, cellphones were well known to include processors. EX1003-Dec., ¶199. Because (1) the '010 Patent states "the other controller can be one or more processors of a personal computer, **phone**, PDA, or other processor-based device associated with a user..." and Kelty-078 describes cellphones as exemplary user interface devices 24; (2) Kelty-078 teaches an exemplary device 24 is a commercially-available cellphone/PDA known to have a processor; (3) Kelty-078's device 24 performs functionality requiring a processor; and (4) cellphones were well known to include processors, Kelty-078 teaches a *second controller*.

Additionally, Kelty-078 teaches "portable communication devices may be placed in a home or at another **location of the user 20**" (a location *remote from the vehicle and the vehicle charger*). EX1007-Kelty-078, 4:58-65, 5:2-5, 8:40-44, FIG. 1.



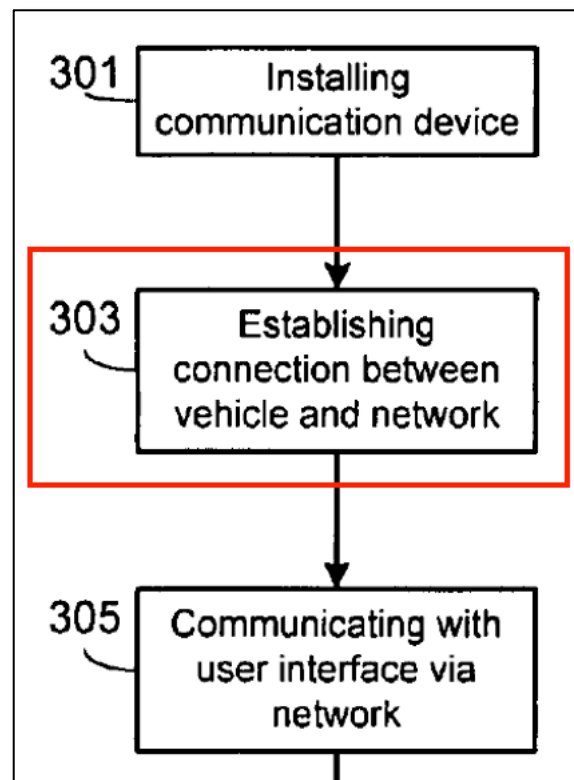
EX1007-Kelty-078, FIG. 1; EX1003-Dec., ¶200.

b) “establish communication”

Kelty-078 teaches communication chip 14 (*receiver*) *establishes communication* (via Bluetooth) *between the first controller* (VMS 32) *and the second controller* (processor of device 24), as controlled by VMS 32. Kelty-078’s VMS 32 communicates with device 24 via communication chip 14. EX1007-Kelty-078, 4:53-58 (discussing communication chip allowing for communication between device 24 and vehicle), 7:43-47 (discussing communication chip communicating with VMS using known communication protocols); 8:44-48 (discussing messages

to the user are broadcast through onboard communication chip). EX1003 -Dec., ¶201.

Kelty-078 expressly teaches communication chip 14 (*receiver*) *establish[es] communication* under control by VMS 32. Kelty-078 teaches “[e]stablishing connection between vehicle and network” and “[c]ommunicating with user interface [24] via network”:

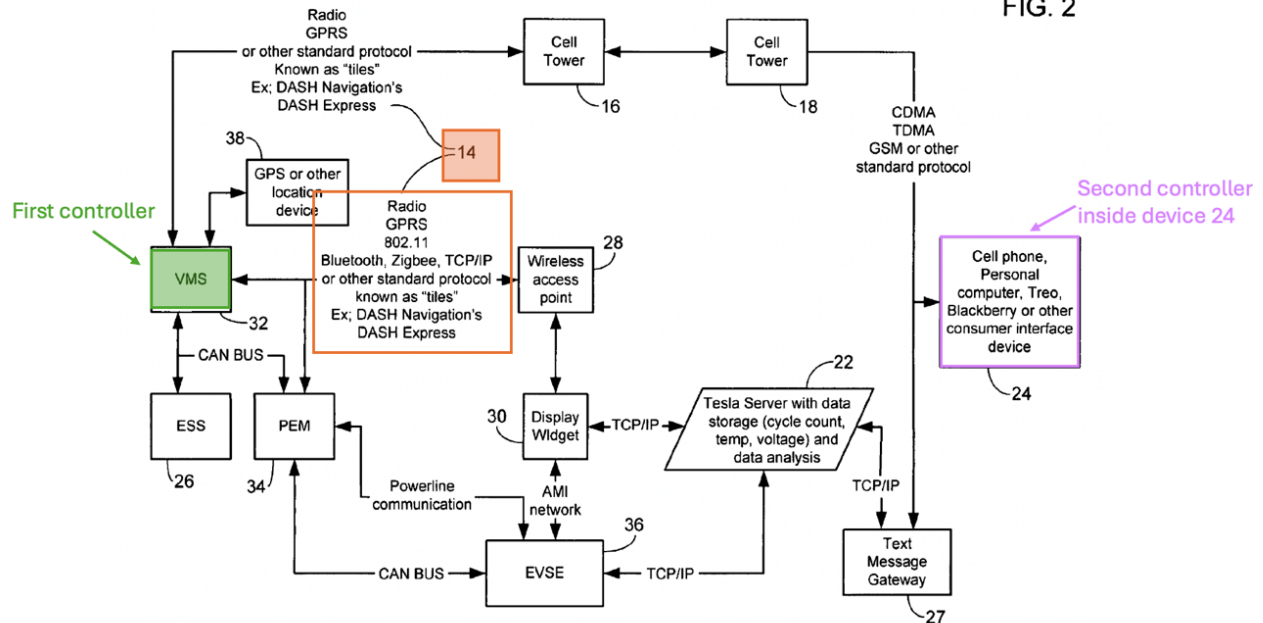


EX1007-Kelty-078, FIG. 3 (excerpt), Abstract (“establishing a connection **from** the vehicle to a network”), 2:25-30 (disclosing “establishing a connection,” including “contacting a user interface device via the network”), 9:64 (Claim 1).

Because Kelty-078 teaches (1) VMS 32, i.e., the *first controller* in the vehicle, establishes a connection with a network (FIG. 3, Step 303) via communication chip 14 (*receiver*) (2) the connection can be established **from** the vehicle; (3) VMS 32 “controls” the “various systems in the electric vehicle”; and (4) communication chip/device 14 is arranged in the vehicle and “may also be incorporated into the computer controlling the vehicle internal network,” communication chip 14 (*receiver*) *is configured to establish wireless communication* under control by VMS 32.

Regarding communication *between the first controller and the second controller*, Kelty-078 teaches “[t]he user 20 will be capable of communicating with either the first network 16, the second network 18 or directly with the vehicle 12 **via any user interface device 24** (step 305).” EX1007-Kelty-078, 4:16-19. A disclosed exemplary communication protocol includes a Bluetooth connection established through **communication chip 14**. EX1007-Kelty-078, 3:53-67, 4:24-39, FIG. 2; EX1003-Dec., ¶204.

FIG. 2



EX1007-Kelty-078, FIG. 2; EX1003-Dec., ¶204. It is well known that Bluetooth is a communication protocol that establishes wireless communication between devices. EX1003-Dec., ¶¶204-207.

Because Kelty-078 teaches vehicle wirelessly communicates with *user interface device 24* via the network and the established communication (FIG. 3, Step 305), Kelty-078 teaches the *receiver (communication chip 14)* is *configured to establish communication* under control by *VMS 32* and over Bluetooth *between the first controller (VMS 32, much like Ishii's controller 6) and a second controller remote from the vehicle and the vehicle charger, namely user interface device 24 including a processor.*

4. *Motivation to Combine*

A POSITA would have been motivated and found obvious implementing Kelty-078's communication chip 14 in Ishii's modified electric device to provide for wireless communication between the Ishii *first controller* (controller 6 and charger 8 microcomputer) and a remote user interface device, such as device 24, per Kelty-078. EX1003-Dec., ¶209.

Kelty-078 teaches an exemplary, commercially-available communication chip and further teaches “standard” wireless protocols utilized by communication chip, indicating that communication of an onboard vehicle computer with portable devices, such as cellphones, was known and common. EX1007-Kelty-078, 3:65–4:1, 7:44-51; EX1003-Dec., ¶210. Kelty-078 expressly motivates the modification, explaining there “is a need in the art for a communication interface for an electric vehicle...that will be able to control remotely the charging of the battery,” and discusses various advantages that similarly apply to the proposed combination, such as providing a communication interface (e.g., Kelty-078's communication chip 14) in the existing Ishii electric device including controller 6 for communicating wirelessly with a user's cell phone, as otherwise taught by Kelty-078. EX1007-Kelty-078, 1:35-39, 2:32-50; EX1003-Dec., ¶¶210-211. Thus, a POSITA would have been motivated to modify the modified Ishii system to remotely communicate

with a phone to allow a user to control charging remotely and to increase access to charging information. *Id.*

For example, a POSITA would have appreciated that in certain situations a user would want to receive charging information while outside the vehicle via this wireless communication. Thus, this would increase user accessibility to charging information. EX1003-Dec., ¶211. A POSITA would also have appreciated controlling the charging remotely at, e.g., a phone, to allow the user to start the charge when they are away from the vehicle. EX1007-Kelty-078, 7:35-43; EX1003-Dec., ¶212.

This modification would have been use of a known technique (Kelty-078's communication chip 14 and device 24) to improve similar device (vehicle chargers) in the same way. EX1003-Dec., ¶213.

A POSITA would have had a REOS, as Ishii already teaches controller 6 and charger 8 microcomputer being capable of receiving information from the components of the electric device. EX1004-Ishii, [0030]; EX1003-Dec., ¶214. Implementing Kelty-078's communication chip 14 to communicate with known user interface devices (e.g., cellphones), such as device 24, would require nothing more than the addition of a well-known hardware component into the electric device, especially given Kelty-078 teaches an exemplary, commercially-available communication chip and commercially-available cellphones. EX1003-Dec., ¶214;

EX1007-Kelty-078, 3:66–4:1. In addition to implementing Kelty-078’s communication chip 14 and device 24 into Ishii’s system, straightforward modifications to the programming instructions of controller 6 and charger 8 microcomputer would also be implemented and communication chip 14 would be connected to the controller 6 and charger 8 microcomputer, which are well within the POSITA’s expertise. EX1003-Dec., ¶214.

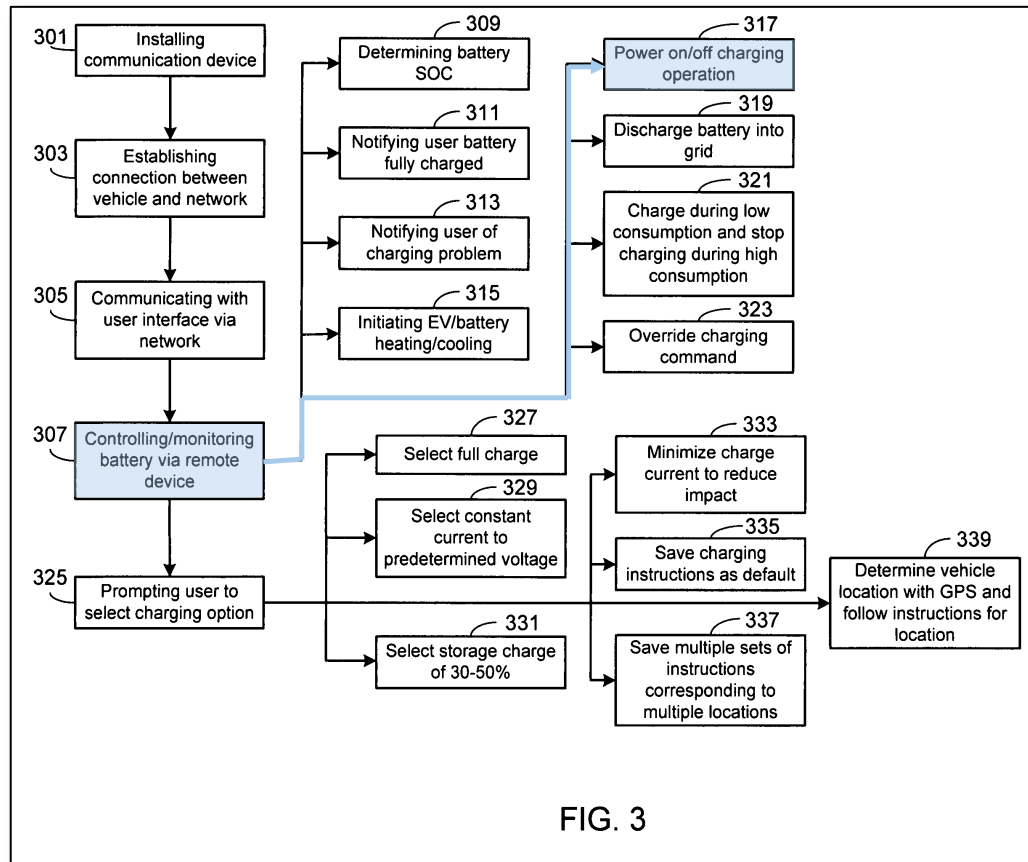
B. Claim 3

The *first controller* of the Ishii system (collective controller 6 and charger 8 microcomputer) is further modified by Kelty-078 to *control power supply to the battery of the vehicle responsive at least in part to data received from the second controller via the receiver* (control charging the vehicle battery responsive to instructions received from device 24 via communication chip 14). EX1003-Dec., ¶215.

1. Kelty-078’s Teachings

Kelty-078’s device 24 communicates with vehicle 12 through networks 16, 18 to “program and send specific instructions to the electric vehicle 12 for **controlling** and monitoring the battery system 26 arranged within the electric vehicle 12 (step 307).” EX1007-Kelty-078, 4:59-5:1. An instruction from device 24 to the vehicle includes “the user 20 capable of **powering on and off** in

predetermined cycles and at predetermined times the charging of the battery 26 from a user interface device 24 (step 317).” EX1007-Kelty-078, 5:40-44.



EX1007-Kelty-078, 6:16-21, FIG. 3 (Steps 307, 317), 7:44–8:6 (describing communication between device 24 and VMS 32 via communication chip 14 (receiver)), 7:35-43. Kelty-078’s teaching of “charging” the battery pack (7:345-38), powering on/off charging of the battery (5:40-44), or powering on/off charging operation (FIG. 3, Step 317) individually or collectively teaches *control[ing] power supply to the battery of the vehicle*. EX1003-Dec., ¶216.

Kelty-078's *control[ing] power supply* is *responsive at least in part to data received from the second controller via the receiver* because device 24 provides instruction to VMS 32 to “power on and off in predetermined cycles and at predetermined times for charging the battery 26.” EX1007-Kelty-078, 5:40-44; EX1003-Dec., ¶217. Additionally, Kelty-078's VMS 32 (*first controller*) controls the *power supply.... based on the data received*. EX1007-Kelty-078, 4:65-5:1, 5:40-44.

2. Motivation to Combine

For the same reasons discussed for Claim 2, a POSITA would have been motivated and found obvious to modify Ishii's *first controller* (controller 6 and charger 8 microcomputer) to perform Kelty-078's functionality such that the collective controller starts and stops charging the battery pack based on communications from device 24 via communication chip 14, per Kelty-078; namely, to increase user accessibility to charging control. EX1003-Dec., ¶218. Kelty-078 expressly motivates the modification, stating a benefit being “to enable the user to control certain aspects of charging of the battery.” EX1007-Kelty-078, 2:40-45; EX1003-Dec., ¶218. This modification entails the use of a known technique (starting and stopping charging of a battery from a remote device) to improve a similar device (vehicle chargers) in the same way. EX1003-Dec., ¶218.

For the same reasons discussed for Claim 2, a POSITA would have had a REOS modifying Ishii-Hayashi-Fujita's electric device per Kelty-078, given the modified Ishii already includes device 24 and communication chip 14 for wireless communication and the collective controller is already connected to battery units of the vehicle. EX1004-Ishii, [0022], [0030]; EX1003-Dec., ¶219. Thus, all that is required for the modification is simple programming to Ishii's collective controller to communicate with the battery to start/stop charging per the data received from device 24. EX1003-Dec., ¶219.

C. Claim 4

Ishii's *first controller receive[s] the at least one condition* when the user selects the charging start time when setting the time-specified charge via charger 8 under controller 6's control. Claim 1[c][1]. Additionally, Ishii's modified system includes a communication chip 14 (*the receiver*) for communicating with device 24 (*the second controller*), per Kelty-078. Claim 2. Ishii's controller 6 is further modified to receive the charging start time (*receive the at least one condition*) from device 24 via communication chip 14, per Kelty-078.

Kelty-078 teaches device 24 (*second controller*) sending a predetermined start time to VMS 32 (*first controller*). Kelty-078 teaches device 24 communicates with VMS via communication chip 14 and provides an instruction to VMS that includes "predetermined times" for "powering on" the "charging of the battery." EX1007-

Kelty-078, 4:53–5:1, 7:44-47, 5:40-44, 1:57-67; EX1003-Dec., ¶221. Kelty-078 also teaches VMS controls charging of the vehicle. EX1007-Kelty-078, 7:44-51; Claim 2. Thus, Kelty-078’s VMS 32 (*first controller*) powers on the charging of the battery at a “predetermined time” responsive to an instruction that includes the predetermined time (*receive the at least one condition*) from Kelty-078’s device 24 (*from second controller*) via Kelty-078’s communication chip 14 (*via the receiver*). EX1007-Kelty-078, 5:40-44; EX1003-Dec., ¶221.

1. Motivation to Combine

For the reasons discussed for Claims 2-3, a POSITA would have been motivated and found obvious to modify Ishii’s controller 6 to receive the charging start time from device 24 via communication chip 14, such that Ishii’s *first controller...receive[s] the at least one condition from the second controller via the receiver*. EX1003-Dec., ¶222. Allowing the user to enter a predetermined time to start charging at device 24, and Ishii’s controller 6 receiving and responsively setting the time-specified charge mode based on the user-set predetermined time allows for controlling the charging process when the user is away from the vehicle. EX1003-Dec., ¶222.

This modification would have entailed the use of a known technique (Kelty-078’s receiving the “predetermined time” from device 24 via communication chip 14) to improve a similar device (vehicle chargers) in the same way, thus leading to

a REOS given all that is required is modifying programming of controller 6 to receive the charging starting time from the remote device 24 and storing the charging start time received. EX1004-Ishii, [0047], [0049]-[0050]. EX1003-Dec., ¶223.

D. Claim 10

1. Claim 10[a]

Claim 2. The modified Ishii system *establish[es] wireless communication between the controller of the vehicle and another controller remote from the vehicle....* via communication chip 14 in electric device 1 that establishes Bluetooth (*wireless*) communication between *the controller of the vehicle* (Ishii's charger 8 microcomputer and controller 6), and Kelty-078's device 24 (*another controller remote from the vehicle....*). EX1003-DEC., ¶224.

2. Claim 10[b]

Ishii's controller 6 and charger 8 microcomputer are modified to control power supply to the vehicle battery responsive to data received from device 24 via communication chip 14, per Kelty-078. Claims 2-3. Thus, the modified Ishii system controls power to the battery based on data received from device 24 via chip 14 providing Bluetooth communication.

Regarding the *signal received by the controller of the vehicle...*, the '010 Patent gives an example of a "wireless signal" transmitted using "wireless communication." EX1001, 22:39-44, 10:38-53. Kelty-078 similarly sends signals (for example, instructions) using wireless communication (for example, Bluetooth).

Specifically, Kelty-078 teaches wirelessly communicating using Bluetooth to “send...instructions” from device 24 to VMS 32. EX1007-Kelty-078, 4:4-39, 4:53–5:18, 8:44-48, FIG. 2. Because VMS 32 receives the instruction from device 24 via communication chip 14, Kelty-078 teaches *a signal* (Kelty-078’s instructions transmitted via Bluetooth) *received by the controller of the vehicle* (VMS 32 receives instructions from device 24). EX1003-DEC., ¶226.

Regarding the *starting or stopping supply of power based on a signal received...*, the instructions received by Kelty-078’s VMS 32 from device 24 include instructions to power on and off or start/stop charging of battery 26. EX1007-Kelty-078, 4:58–5:1, 5:40-52 (disclosing user “**powering on and off...charging of the battery 26 from a user interface device 24**”), 7:29-43 (“The vehicle user 20 may also control the **starting and stopping of charging...**”), FIG. 3 (Steps 317, 319); EX1003-Dec., ¶227.

See Claims 2-3 for a MTC regarding implementing Kelty-078’s communication chip 14 in Ishii’s electric device 1 for establishing communication between Ishii’s controller 6 and charger 8 microcomputer and Kelty-078’s device 24.

A POSITA also would have found obvious and been motivated to modify Ishii’s controller 6 and charger 8 microcomputer to *start[] or stop[] supply of power to the battery based at least in part* upon a received signal to allow the user the

benefit of controlling charging remotely. EX1003-Dec., ¶229. Kelty-078 expressly teaches advantages from allowing the user to “control certain aspects of charging of the battery” across networks and via a portable device. EX1007-Kelty-078, 2:34-45. Automated charging schedules may not always match the user’s immediate needs, and providing start and stop control, per Kelty-078, would have allowed the user to override or adjust scheduled charging when circumstances changed, such as an unexpected trip, an early departure, or a change in desired charge level. EX1003-Dec., ¶229.

The combination would have been use of a known technique (start and stop charging options) to improve similar devices (Kelty-078’s device 24 combined with Ishii’s electric device 1) in the same way. EX1003-Dec., ¶230.

A POSITA would have had REOS in implementing Kelty-078’s device 24 with the taught start/stop functionality for the reasons described for Claim 2.

E. Claim 15

1. Claim 15[Pre]

Claim 1[Pre].

2. Claim 15[a]

Claim 1[a].

3. Claim 15[b]

Claim 1[b]. Ishii’s *controller* alone or as modified by Hayashi and/or Fujita is configured to perform the claimed functions. Claims 1[c]-[f], 15[c]-15[h].

4. Claim 15[c]

Claims 1[c][1]-1[c][2].

5. Claim 15[d]

Claim 1[d].

6. Claim 15[e]

Claim 1[e].

7. Claim 15[f]

The modified Ishii system includes *a receiver* (Kelty-078's communication chip 14) in electric device 1 that is *coupled to the first controller* (Ishii's controller 6 and charger 8 microcomputer). Claim 2.

Claim 15[f] recites the receiver is *electrically* coupled to the controller. The '010 Patent describes controller 44 communicating (wired or wirelessly) with a user's computer through, e.g., Bluetooth or other wireless protocols. EX1001, 10:38-60. Therefore, because Kelty-078's VMS communicates with communication chip 14 in the same manner described in the '010 Patent, e.g., via Bluetooth, Kelty-078's VMS 32 is likewise *electrically coupled* to communication chip 14. EX1003-Dec., ¶239; EX1001, 6:29-35. Additionally and/or alternatively, because VMS communicates with communication chip using wireless protocols, which were known to include sending electric signals, Kelty-078's VMS is *electrically coupled* to communication chip 14. EX1003-Dec., ¶239.

A POSITA would have found obvious implementing Kelty-078's communication chip 14 as *electrically* coupled to Ishii's controller 6 and charger 8 microcomputer for the same reasons provided for Claim 2 to allow communication between the chip and controller to occur. EX1003-Dec., ¶240; Claim 2.

8. Claim 15[g]

Claim 1[f].

9. Claim 15[h]

The modified Ishii system's *controller on-board the vehicle* (controller 6 and charger 8 microcomputer) *control[s] power supply to the battery of the vehicle responsive to data received from the second controller* (device 24, which is remote from the charger and vehicle) *via the receiver* (communication chip 14). Claim 3. The data received in the modified system includes data indicating to *start[] or stop[] supply of power to the battery*. Claim 10. Thus, controller 6 and charger 8 microcomputer of the modified Ishii system is *configured to, responsive to data received from another controller remote from the vehicle...via the receiver, to change a charging state of the vehicle charger by at least one of...starting battery charging, or stopping battery charging*. Claims 3, 10 (MTCs); EX1003-Dec., ¶242.

F. Claim 17

Claim 7.

G. Claim 18

Claim 8.

VII. GROUND 3: CLAIMS 5, 11, 19 ARE OBVIOUS OVER ISHII, HAYASHI, FUJITA, KELTY-078, SUTARDJA, AND KELTY-218

A. Claim 5

Petitioner applies the claim construction for *cost of power* as “monetary price of power.” §III.C.1.

1. *Sutardja’s Teachings and MTC*

Sutardja is directed to “systems and methods for charging batteries in vehicles.” EX1008-Sutardja, [0002]. Sutardja teaches receiving data indicative of a monetary price (cost) of power, namely a user “set[ting] charging parameters for charging the battery 14” at a user interface module 108, including “**costs the users may pay** if batteries are charged at higher than normal priority, etc.” EX1008-Sutardja, [0235] (“users may indicate that the utility company may choose the time to charge the batteries **when the cost is lowest**”), [0243], [0236], [0264]-[0265]; EX1003-Dec., ¶246. Sutardja’s cost of power is a “monetary price of power,” per the applied claim construction, because Sutardja teaches the “costs the users may pay” may be less/more. EX1003-Dec., ¶246.

Sutardja’s user interface module 108 communicates with control module 112 of charge management module 104-1 (a *first controller*) of vehicle 12. EX1008-Sutardja, [0234], [0241], [0243], [0247], FIGs. 3A-3B. When the charging parameters are input and communicated to control module 112, the batteries are supplied power “**according to the charging parameters generated by the users**”

(supply power to the battery of the vehicle based at least in part upon data indicative of a cost of power). EX1008-Sutardja, [0233].

Ishii's modified charging system uses Kelty-078's device 24 (*second controller*) to send instructions to Ishii's controller 6 for controlling battery charging operation (together with charger 8 microcomputer). Claims 3-4. Thus, the modified Ishii in combination with Sutardja teaches Claim 5 because Ishii's *first controller* (controller 6 and charger 8 microcomputer) will begin charging (*configured to supply power to the battery of the vehicle*) based on costs the users may pay, per Sutardja (*based at least in part upon data indicative of a cost of power*), that is received from Kelty-078's device 24 (akin to Sutardja's user interface module 108) via communication chip 14 (*received from the second controller via the receiver*). EX1008-Sutardja, [0233]-[0234].

A POSITA would have been motivated and found obvious to implement Sutardja's functionality of controlling charging based on a cost of power input at a user device in the modified Ishii system to allow a user to control charging based on the cost of power, thereby increasing user convenience when charging. EX1003-Dec., ¶249. Ishii expressly motivates the modification as one of Ishii's objectives is reducing charging cost: "The time-specified charge makes it possible to charge the secondary battery of the battery unit using, for example, midnight electric power, and **reduce charging cost** and use electric facilities uniformly." EX1004-Ishii,

[0117]; EX1007-Kelty-078, 2:6-11 (similar express motivation); EX1003-Dec., ¶249.

The modification is use of a known technique (receiving costs a user is willing to pay from a user interface for vehicle charging, per Sutardja) to improve similar devices (user interfaces in a charging system) in the same way by allowing a user to provide cost information to an electric vehicle as part of its charging. EX1003-Dec., ¶250.

A POSITA would have had a REOS, as the modified Ishii system already teaches controller 6 receiving information from device 24 regarding the charging of the batteries and controller 6 instructing charger 8 microcomputer to execute charging accordingly. EX1003-Dec., ¶251. Modifying Ishii's system per Sutardja would have required only straightforward programming modifications to programs executed by device 24 and Ishii's collective controllers. EX1003-Dec., ¶251. This modification would have required nothing more than ordinary skill within the POSITA's skillset. *Id.*

2. Kelty-218's Teachings and MTC

Kelty-218 provides additional specificity that a transmitted cost of power is a "monetary price of power," per the applied claim construction. Kelty-218 teaches charging an electric vehicle based on a "charging cost rate [that] is the instantaneous cost of energy transfer. Cost rate is in cost per energy transferred over time (e.g.,

\$0.06 United States Dollar per kilowatt hour).” EX1010-Kelty-218, [0024]; EX1003-Dec, ¶252. Kelty-218 teaches estimating “\$5.00 to charge an electric vehicle based on measured conditions and optionally learned conditions.” EX1010-Kelty-218, [0028]. Therefore, Kelty-218 expressly teaches a *cost of power* that is a “monetary price of power,” applying the claim construction.

A POSITA would have been motivated and found obvious to use monetary value (e.g., \$0.06, per Kelty-218) as the costs the user may pay in the Sutardja-modified Ishii system. A monetary price based in U.S. dollars per common units of energy, e.g., kilowatt per hour, is a well-recognized, commonly-understood, and well-accepted method of exchanging services (e.g., supplying power) for payment (e.g., U.S. dollars). EX1003-Dec, ¶253. The end user would have easily recognized the cost of power in terms of U.S. dollars, given the ubiquity of payment for services rendered in U.S. dollars. There would have been a REOS, at least because payment in money is well accepted. EX1003-Dec, ¶253.

Additionally, for the same reasons discussed for Claim 5’s MTC with Sutardja (§VII.A.1), utilizing Kelty-078’s device 24 to input Kelty-218’s cost of power is advantageously convenient by allowing inputting charge parameters from any location with the user’s phone. EX1003-Dec., ¶254.

B. Claim 11

The modified Ishii system teaches *a signal* received by Ishii's controller 6 from device 24 via communication chip 14 to start/stop charging, per Kelty-078. Claim 10[b]. Ishii's system is further modified to supply power to batteries 2B, 3B of battery units 2, 3 based on the cost of power input at device 24, per Sutardja and Kelty-218. Claim 5; EX1003-Dec., ¶255. Because device 24 communicates with Ishii's controller 6 through signals via chip 14 and communicates the *cost of power* to Ishii's controller 6, *the signal* for starting or stopping charging *includes data indicative of cost of power*. EX1003-Dec., ¶255.

C. Claim 19

Claims 5, 15.

VIII. GROUND 4: CLAIMS 6, 12 ARE OBVIOUS OVER ISHII, HAYASHI, FUJITA, AND SUYAMA

A. Claim 6

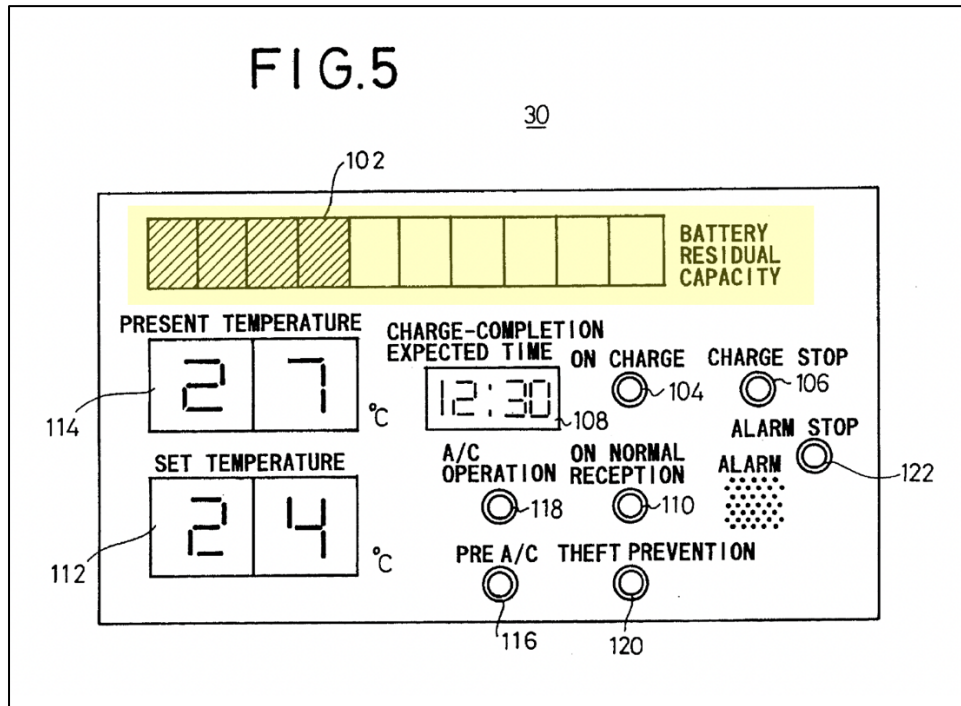
The modified Ishii in combination with Suyama teaches Claim 6.

Suyama teaches a “charge-status display system 10” for an “electric automobile or vehicle 12” and a “portable display card 14 for displaying the state of charging of the electric vehicle 12.” EX1009-Suyama, 5:48-50. “The display card 14 includes” a “display circuit 30 for displaying data outputted from the display control circuit 28.” EX1009-Suyama, 5:66–6:13, FIGs. 1, 3, 7:55-62 (disclosing display system 10 receives signals indicating the state of charging for display).



EX1009-Suyama, FIG. 1.

Suyama teaches *display...a level of charge of battery on the display*; namely, a display with a “battery residual-capacity indicator 102.” EX1009-Suyama, 7:43-45, FIG. 5,



EX1009-Suyama, FIG. 5. Suyama's indicator 102 is a "bar chart displaying charges ranging from 0% to 100%," as described in the '010 Patent, because Suyama's "battery residual-capacity indicator 102 is lighted so as to correspond to the computed residual capacity DOD" (depth-of-discharge), where DOD is commonly represented as a percentage in the art. EX1001, 12:47-51; EX1009-Suyama, 8:4-5, 9:13-15; EX1003-Dec., ¶259.

Suyama teaches the residual capacity is displayed *during an active charging session*. Suyama teaches that "display circuit 30 displays the state of charging of the main battery **while being charged**," such as displaying "the remaining capacity of the main battery 18...on the residual-capacity indicator 102 (Step S13)." EX1009-Suyama, 8:36-39.

In the combination, Ishii's controller 6 of the *controller* is *configured to* display on Ishii's onboard display 13 (*display*) Suyama's indicator 102 showing the battery level of charge, where the level of charge is displayed while the battery is being charged (*during the active charging session*). A POSITA would have been motivated and found the combination obvious to increase the information provided to the user. EX1003-Dec., ¶262. A POSITA would have appreciated that by providing an indication of the residual capacity of the battery, the user of the vehicle would be able to determine how far along the charging process is, and when the battery has reached a desired capacity. EX1003-Dec., ¶262. This would increase the convenience as the user would end charging at a time when use of the vehicle is needed, especially in fast charging circumstances where the user is needing only a limited, but fast, charging of the vehicle. EX1003-Dec., ¶262.

The combination also allows the user to quickly interpret the charging information. EX1003-Dec., ¶263. A POSITA would have appreciated that a quick-reference visual, such as Suyama's bar graph, on Ishii's display and operation unit would have allowed the user to easily receive and interpret information regarding the charge of their vehicle. EX1003-Dec., ¶263.

This modification is a simple combination of known prior art elements (Suyama's residual capacity indicator 102 and Ishii's display and operation unit 13) according to known methods (implementing Suyama's indicator 102 on display and

operation unit 13) to yield predictable results (providing a driver information about the residual capacity of the battery of the vehicle).

A POSITA would have had a REOS in modifying Ishii's display and operation unit 13 to include Suyama's residual capacity indicator 102. EX1003-Dec., ¶265. Ishii already teaches charger 8 is given "remaining capacity information from each of the memories 11 and 12 of the battery units 2 and 3" and "calculates a charging time (time required to charge) from the remaining capacity." EX1004-Ishii, [0051]. Thus, a POSITA would have recognized modifying Ishii to implement Suyama's residual capacity indicator 102 would not have required any additional programmed calculations to occur, but rather just providing another item of information on the display related to charging. EX1003-Dec., ¶265. The modification would have thus required only straightforward programming modifications to the display and operation unit 13 and programming instruction modifications to Ishii's collective controllers. EX1003-Dec., ¶265.

B. Claim 12

Claim 6.

IX. GROUND 5: CLAIM 16 IS OBVIOUS OVER ISHII, HAYASHI, FUJITA, KELTY-078, AND SUYAMA

Claims 15, 6.

X. GROUND 6: CLAIM 20 IS OBVIOUS OVER ISHII, HAYASHI, FUJITA, KELTY-078, AND IZUNO

Claim 20 is dependent on Claim 15 and introduces *a user interface*. Claim 20 is not express whether *a user interface* is associated with Claim 15's *controller* or *another controller*. Petitioner construes Claim 20's *a user interface* as a user interface associated with Claim 15[b]'s *controller onboard the vehicle*. The Ishii modified system further modified by Izuno's stop charging input during an *active charging session* renders obvious Claim 20.

Ishii's electric device 1 (*vehicle charger*) comprises *a user interface for receiving an input from a user*; namely, operation section of display and operation unit 13, which sends user inputs to Ishii's controller 6 (part of Ishii's collective *controller of the vehicle*). Claims 1[b], 7; EX1004-Ishii, [0028], [0047]-[0050]. Accordingly, Ishii's *controller is configured to receive the input from the user interface*.

Izuno teaches a "battery charging system" (*vehicle charger*) including "a vehicle system 10 installed in the user's electric vehicle" controlled via "an electronic control unit (ECU) 11" (*controller onboard the vehicle*) and contains a "communication terminal 50" having a display and audio device installed in the vehicle. EX1011-Izuno, [0012], [0014]-[0015]. Izuno teaches "when charging the battery 12," a service system server 100 "controls charging of the battery" based on "information received from the vehicle system 10 (the ECU 11)" by transmitting

“charging start/end signals to the charging station 60 in response to instructions from the user.” EX1011-Izuno, [0018], [0022] (disclosing **“depending on what the user selects—automatic charging, start charging, or stop charging—it** transmits a charging instruction to the charging station 60).

Izuno teaches vehicle system 10 performing the steps of FIG. 3, which includes step S8 where the user “selects the charging mode” using “their own communication terminal 50 **or an input device in the vehicle system 10**” (e.g., communication terminal 50 installed in vehicle system 10). EX1011-Izuno, [0023]-[0024], [0027]. If the user selects the automatic charging mode and then, **after, selects “stop charging”** via the input device, vehicle system 10 controlled via ECU 11 “transmits a charging stop” signal to server 100. EX1011-Izuno, [0027]-[0028].

Because Izuno teaches communication terminal 50 being the “user’s” remote terminal 50 or a terminal 50 in the vehicle, Izuno’s “input device” within the vehicle used to select “stop charging,” is the communication terminal 50 in the vehicle (*a user interface*) or the remote terminal. EX1011-Izuno, [0013]-[0014], [0027]; EX1003-DEC., ¶272. The “stop charging” selected by the user via communication terminal 50 in the vehicle (*user interface*) causes ECU 11 (*the controller*) to send a stop charge signal to server 100 *during an active charging session*, because server 100 receives the “stop charging” signal **after the charging station 60 “initiates charging.”** EX1011-Izuno, [0034]-[0035] (describing after receiving a “charging

stop signal,” calculating a “post-charging” battery capacity); EX1003-DEC., ¶272. Accordingly, Izuno’s charging system includes *a user interface for receiving an input from a user* (communication terminal 50 that receives user’s “stop charging” selection) and *the controller* (ECU 11) *is configured to receive the input and stop charging of the battery during the active charging session responsive to the input* (receives the “stop charging” selection and stops charging of the battery during charging by transmitting the “charging stop” signal to server 100). *Id.*

A POSITA would have found obvious and been motivated to modify the modified Ishii system’s operation unit to receive a stop charging selection from the user and controller 6 responsively stopping charging during the time-specified charge mode (*during the active charging session*), per Izuno. EX1003-Dec., ¶273. A POSITA would have been motivated to make the modification to increase user control of the charging operation, as a user would appreciate having the ability to stop charging in the event of an emergency or when the user needs to use the vehicle before charging is complete. EX1003-Dec., ¶274. The modification is simply use of a known technique (a user selecting stop charging and the controller responsively stopping vehicle charge) to improve similar devices (vehicle chargers) in the same way by increasing user control over the charging process. The modification would have had a REOS given the modified Ishii system already includes a user interface in the vehicle and a controller 6 receiving information selected by a user via the user

interface (operation unit of display and operation unit 13). Claim 7; EX1004-Ishii, [0028], [0047]-[0050]; EX1003-Dec., ¶274. Thus, all that is required is programming modifications to the controller 6 and charger microcomputer 8 and simple modification of the operation unit that would have been well within the skill of a POSITA. *Id.*

XI. CONCLUSION

Petitioner respectfully requests *inter partes* review of the Challenged Claims.

Respectfully submitted,

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COUNSEL FOR PETITIONER

XII. MANDATORY NOTICES UNDER 37 C.F.R. §42.8(A)(1)

A. Real Party-In-Interest

Petitioner is the real party-in-interest. 37 C.F.R. §42.8(b)(1).

B. Related Matters

The '010 Patent is presently the subject of a patent infringement lawsuit filed against Petitioner in the United States District Court for the Western District of Texas, Midland-Odessa Division: *CHARGELOGIC LLC v. TESLA, INC.*, Case No. 7:26-cv-00100.

C. Lead and Back-Up Counsel

Petitioners provide the following designation and service information for lead and back-up counsel. 37 C.F.R. § 42.8(b)(3) and (b)(4).

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D. 37 C.F.R. §42.8(b)(4) – Service Information

Please address all correspondence to the lead and back-up counsel as shown above. Petitioner consents to electronic service by e-mail at the e-mail addresses provided above.

CLAIM LISTING APPENDIX
U.S. Patent No. 11,909,010 for Claims 1-20

Claim Designation	Claim Language
Claim 1[Pre]	1. A vehicle charger for charging a battery of a vehicle, the vehicle charger comprising:
Claim 1[a]	a display mounted within the vehicle; and
Claim 1[b]	a controller onboard the vehicle and coupled to the display, the controller configured to
Claim 1[c][1]	begin an active charging session of the battery based on a programmed manner of charge and at least one condition,
Claim 1[c][2]	the programmed manner of charge starting charging of the battery in response to the at least one condition being met,
Claim 1[d]	calculate an amount of time required to charge the battery,
Claim 1[e]	display, during the active charging session but before starting charging of the battery according to the at least one condition, the amount of time upon the display, and
Claim 1[f]	repeatedly update the amount of time upon the display during the active charging session, including during the active charging session but before starting charging of the battery according to the at least one condition.
Claim 2	2. The vehicle charger of claim 1, wherein the controller is a first controller, the vehicle charger further comprising a receiver coupled to the first controller, the receiver configured to establish communication between the first controller and a second controller remote from the vehicle and the vehicle charger.
Claim 3	3. The vehicle charger of claim 2, wherein the first controller is further configured to control power supply to the battery of the vehicle responsive at least in part to data received from the second controller via the receiver.
Claim 4	4. The vehicle charger of claim 2, wherein the first controller is further configured to receive the at least one condition from the second controller via the receiver.
Claim 5	5. The vehicle charger of claim 2, wherein the first controller is further configured to supply power to the battery of the vehicle based at least in part upon data indicative of a cost of power received from the second controller via the receiver.

Claim Designation	Claim Language
Claim 6	6. The vehicle charger of claim 1, wherein the controller is further configured to display, during the active charging session, a level of charge of the battery on the display.
Claim 7	7. The vehicle charger of claim 1, further comprising a user interface positioned within the vehicle, wherein the at least one condition includes a time of day and wherein the controller receives the time of day via the user interface.
Claim 8	8. The vehicle charger of claim 7, wherein the user interface is defined at least in part by the display.
Claim 9[Pre]	9. A method of charging a battery of a vehicle with a vehicle charger, the method comprising:
Claim 9[a]	beginning an active charging session of the battery based on a programmed manner of charge and at least one condition, the programmed manner of charge starting charging of the battery in response to the at least one condition being met;
Claim 9[b]	calculating, via a controller of the vehicle, an amount of time required to charge the battery;
Claim 9[c]	displaying, during the active charging session but before starting charging of the battery according to the at least one condition, the amount of time upon a display mounted within the vehicle;
Claim 9[d]	supplying, under control of the controller of the vehicle, power to the battery of the vehicle to charge the battery; and
Claim 9[e]	updating the amount of time upon the display during the active charging session, repeatedly update the amount of time upon the display during the active charging session, including during the active charging session but before starting charging of the battery according to the at least one condition.
Claim 10[a]	10. The method of claim 9, further comprising: establishing wireless communication between the controller of the vehicle and another controller remote from the vehicle and the vehicle charger; and
Claim 10[b]	starting or stopping supply of power to the battery based at least in part upon a signal received by the controller of the vehicle from the controller remote from the vehicle and the vehicle charger.

Claim Designation	Claim Language
Claim 11	11. The method of claim 10, wherein the signal includes data indicative of a cost of power.
Claim 12	12. The method of claim 9, further comprising displaying on the display a level of charge of the battery.
Claim 13	13. The method of claim 9, wherein the at least one condition includes a time of day and further comprising receiving, via a user interface of the vehicle charger, the time of day.
Claim 14	14. The method of claim 13, wherein the user interface is defined at least in part by the display.
Claim 15[Pre]	15. A vehicle charger for charging a battery of a vehicle, the vehicle charger comprising:
Claim 15[a]	a display mounted within the vehicle;
Claim 15[b]	a controller onboard the vehicle and coupled to the display, the controller configured to
Claim 15[c]	begin an active charging session of the battery based on a programmed manner of charge and at least one condition, the programmed manner of charge starting charging of the battery in response to the at least one condition being met,
Claim 15[d]	calculate an amount of time required to charge the battery, and
Claim 15[e]	display, during the active charging session but before starting charging of the battery according to the at least one condition, the amount of time upon the display; and
Claim 15[f]	a receiver electrically coupled to the controller;
Claim 15[g]	wherein the controller onboard the vehicle is further configured to repeatedly update the amount of time upon the display during the active charging session, and
Claim 15[h]	wherein the controller onboard the vehicle is further configured to, responsive to data received from another controller remote from the vehicle and the vehicle charger via the receiver, to change a charging state of the vehicle charger by at least one of a group consisting of increasing a rate of charge of the battery, decreasing a rate of charge of the battery, starting battery charging, or stopping battery charging.
Claim 16	16. The vehicle charger of claim 15, wherein the controller onboard the vehicle is further configured to display a level of charge of the battery on the display during the active charging session.

Claim Designation	Claim Language
Claim 17	17. The vehicle charger of claim 15, further comprising a user interface positioned within the vehicle, wherein the at least one condition includes a time of day and wherein the controller receives the time of day via the user interface.
Claim 18	18. The vehicle charger of claim 17, wherein the user interface is defined at least in part by the display.
Claim 19	19. The vehicle charger of claim 15, wherein the controller onboard the vehicle is further configured to supply power to the battery of the vehicle based at least in part upon data indicative of a cost of power received from the controller remote from the vehicle and the vehicle charger via the receiver.
Claim 20	20. The vehicle charger of claim 15, further comprising a user interface for receiving an input from a user, wherein the controller is configured to receive the input and stop charging of the battery during the active charging session responsive to the input.

APPENDIX OF EXHIBITS

Exhibit 1001	U.S. Patent No. 11,909,010 (“the ’010 Patent”)
Exhibit 1002	U.S. Patent No. 11,909,010 File History (“the ’010 File History”)
Exhibit 1003	Declaration of Scott Andrews
Exhibit 1004	EP 1220350B1 to Ishii. (“Ishii”).
Exhibit 1005	Japanese Application Publication 2003-333706 to Hayashi et al. (“Hayashi”).
Exhibit 1006	U.S. Patent No. 5,283,513 to Fujita et al. (“Fujita”).
Exhibit 1007	U.S. Patent No. 7,698,078 to Kelty et al. (“Kelty-078”).
Exhibit 1008	U.S. Patent Application Publication No. 2008/0136371 to Sutardja. (“Sutardja”).
Exhibit 1009	U.S. Patent No. 5,596,261 to Suyama. (“Suyama”).
Exhibit 1010	U.S. Patent Application Publication No. 2009/0021218 to Kelty et al. (“Kelty-218”).
Exhibit 1011	Japanese Application Publication 2006-74868 to Izuno et al. (“Izuno”)
Exhibit 1012	<i>Specification of the Bluetooth System Master Table of Contents & Compliance Requirements: Covered Core Package version: 2.0 + EDR.</i> 4 November 2004. (“Bluetooth Specification”).
Exhibit 1013	Intentionally Left Blank
Exhibit 1014	Intentionally Left Blank
Exhibit 1015	U.S. Patent No. 8,370,020 to Bauman et al. (“Bauman”)
Exhibit 1016	U.S. Patent No. 8,433,243 to Sharma (“Sharma”)
Exhibit 1017	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”)
Exhibit 1018	Chan, <i>The State of the Art of Electric and Hybrid Vehicles</i> , February 2002, Vol. 90, No. 2, IEEE (“Chan”)
Exhibit 1019	<i>Electric Vehicle Battery Systems</i> , Sandeep Dhameja, Newnes, 2002 (“Sandeep”)
Exhibit 1020	U.S. Patent No. 5,573,090 to Ross (“Ross”).
Exhibit 1021	U.S. Patent No. 5,487,002 to Diller et al. (“Diller”)
Exhibit 1022	Nadal, M. and Barbir, F. <i>Development of a Hybrid Fuel Cell/Battery Powered Electric Vehicle.</i> International Association for Hydrogen Energy. 1996. (“Nadal”).
Exhibit 1023	U.S. Patent No. 7,084,859 to Pryor (“Pryor”)
Exhibit 1024	PCT Application Pub. No. WO 2006/124130 to Hanssen et al. (“Hanssen”)

Exhibit 1025	U.S. Patent No. 5,701,122 to Canedy. (“Canedy”).
Exhibit 1026	U.S. Patent No. 6,181,996 to Chou et al. (“Chou”)
Exhibit 1027	U.S. Patent No. 5,623,194 to Boll et al. (“Boll”)
Exhibit 1028	U.S. Patent No. 5,757,595 to Ozawa et al. (“Ozawa”)
Exhibit 1029	U.S. Patent Application Publication to Witkowski et al. (“Witkowski”)
Exhibit 1030	U.S. Patent No. 7,596,391 to Himmelstein. (“Himmelstein”)
Exhibit 1031	The Massachusetts Division of Energy Resources. <i>Installation Guide for Electric Vehicle Charging Equipment: An Introduction to EVCE</i> . September 2000. (“Massachusetts 2000”).
Exhibit 1032	U.S. Patent No. 5,467,006 to Sims (“Sims”).
Exhibit 1033	U.S. Patent No. 7,693,609 to Kressner et al. (“Kressner”)
Exhibit 1034	U.S. Patent No. 8,531,162 to Hafner et al. (“Hafner”)
Exhibit 1035	U.S. Patent No. 6,281,663 to Yagi et al. (“Yagi”)
Exhibit 1036	U.S. Patent No. 6,577,928 to Obradovich (“Obradovich”)
Exhibit 1037	PalmTreo700p User Guide. 2006. (“PalmTreo700”)
Exhibit 1038	U.S. Patent No. 6,225,944 to Hayes. (“Hayes”).
Exhibit 1039	U.S. Patent Application Publication to Aikawa et al. (“Aikawa”).
Exhibit 1040	U.S. Patent Application Publication 2004/0072584 to Kern. (“Kern”)
Exhibit 1041	U.S. Patent No. 5,548,200 to Nor (“Nor”)
Exhibit 1042	U.S. Patent No. 6,832,171 to Barsoukov et al. (“Barsoukov”)
Exhibit 1043	U.S. Patent No. 8,063,757 to Frey et al. (“Frey”)
Exhibit 1044	U.S. Patent Publication No. 2003/0230443 to Cramer et al. (“Cramer”)
Exhibit 1045	U.S. Patent No. 5,406,188 to Myslinski et al. (“Myslinski”)
Exhibit 1046	U.S. Patent No. 5,963,140 to Kawaguchi et al. (“Kawaguchi”)
Exhibit 1047	U.S. Patent Application No. 61/134646 to Ambroziak (“Ambroziak”)

CERTIFICATION OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. §42.24 that the foregoing Petition for *Inter Partes* Review, 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 13981 words according to the word-processing program used to prepare this document (Microsoft Word).

Dated: June 18, 2026

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**CERTIFICATE OF SERVICE ON PATENT OWNER
UNDER 37 C.F.R. §42.105**

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b), the undersigned certifies that on June 18, 2026, a complete and entire copy of this Petition for *Inter Partes* Review and Exhibits were provided via Federal Express to the Patent Owner by serving the correspondence address of record for the '010 Patent:

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Further, a courtesy copy of this Petition for *Inter Partes* Review was sent via email to Patent Owner's litigation counsel:

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