

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA INC.,
Petitioner

v.

CHARGE FUSION TECHNOLOGIES LLC,
Patent Owner

Inter Partes Review Case No. IPR2025-00032
U.S. Patent No. 11,563,338

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 11,563,338**

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	THE '338 PATENT.....	1
A.	PRIORITY.....	1
B.	LEVEL OF SKILL	2
III.	REQUIREMENTS UNDER 37 C.F.R. § 42.104	2
A.	GROUND FOR STANDING (37 C.F.R. § 42.104(A))	2
B.	IDENTIFICATION OF CHALLENGE (37 C.F.R. § 42.104(B))	2
C.	CLAIM CONSTRUCTION (37 C.F.R. § 42.104(B)(3))	3
IV.	THE PRIOR ART IS ANALOGOUS TO THE '338 PATENT.....	4
A.	FERRO	4
B.	OYOBE	5
C.	DONNELLY	5
D.	LETENDRE.....	6
E.	GALVEZ-RAMOS	7
F.	ZEIGLER.....	7
G.	KNOCKEART.....	8
H.	SUTARDJA	8
V.	GROUND 1: OBVIOUSNESS OF CLAIMS 1-4, 6-7, 9-13, 15-16, 18-22, 24-25, AND 27	9
A.	CLAIM 1	9
1.	<i>1[Pre]: “An electrical charging system, comprising”</i>	<i>9</i>
2.	<i>1[a]: “a vehicle sensor”</i>	<i>10</i>
a)	Ferro’s Teachings	10
b)	Oyobe’s Teachings	11
c)	Motivation to Combine	11
3.	<i>1[b]: “a communication device”</i>	<i>12</i>
a)	Communications Unit 210	13
b)	Communications Fabric 202	14
4.	<i>1[c]: “a processor in communication with the vehicle sensor and the communication device”</i>	<i>15</i>
5.	<i>1[d]: “a memory in communication with the processor, the memory storing instructions that when executed by the processor cause the processor to”</i>	<i>17</i>

6.	1[e]: “receive, from the vehicle sensor, information indicative of a presence of an electric vehicle in a parking space”	19
7.	1[f]: “receive, from the communication device, information indicative of one or more charging preferences corresponding to a desired charging of the electric vehicle, wherein the one or more charging preferences are defined by an operator of the electric vehicle”	20
8.	1[g]: “determine, based at least on the one or more charging preferences and at least one current value of a dynamic attribute of an electric charge provider, a charging schedule for the electric vehicle”	25
9.	1[h]: “wherein at least one of the one or more charging preferences is defined by user input received via a graphical user interface and adapted to display a vehicle charge indicator element comprising a first portion indicative of an amount of charge residing in a battery of the electric vehicle and a second portion indicative of an uncharged capacity of the battery of the electric vehicle and wherein the vehicle charge indicator element further comprises a slider by which an amount of charge may be specified”	30
	a) Charging Preferences Defined by User Input.....	30
	b) GUI Receiving User Input.....	31
	c) Vehicle Charge Indicator.....	33
	d) Slider for Specifying an Amount of Charge.....	38
10.	1[i]: “charge, in accordance with the charging schedule, the electric vehicle”	41
11.	1[j]: “receive a selection of a mode of operation of the electric vehicle that is defined by a stored temperature at which a temperature control system of the electric vehicle is to be set to maintain the interior temperature of the electric vehicle while the electric vehicle remains in a parked state”	44
	a) Zeigler’s Teachings	44
	b) Combining Zeigler’s HVAC System into Ferro’s Vehicle	46
	c) Modifying Ferro’s Processor to Control the HVAC System Per Claims 1[j]-1[l].....	47

12.	<i>1[k]: “display via the graphical user interface an indication of a status of the selected mode of operation of the electric vehicle”</i>	49
	a) Zeigler’s Teachings	49
	b) Motivation to Combine	50
13.	<i>1[l]: “wherein the selected mode of operation comprises maintaining the interior temperature of the electric vehicle suitable for a pet located within the electric vehicle”</i>	51
	a) Zeigler’s Teachings	51
	b) Galvez-Ramos’s Teachings	51
	c) Motivation to Combine	51
14.	<i>1[m]: “operate the temperature control system of the electric vehicle in accordance with the selected mode of operation for a duration of time”</i>	52
	a) Zeigler’s Teachings	52
	b) Galvez-Ramos’s Teachings	52
	c) Motivation to Combine	53
15.	<i>1[n]: “determine that an amount of charge residing in a battery of the electric vehicle has reached a predefined threshold; and</i>	54
	<i>send an alert to an operator of the electric vehicle indicative of the charge residing in the battery having reached the predefined threshold.</i>	54
	a) Ferro’s Teachings	54
	b) Donnelly’s Teachings	56
	c) Motivation to Combine	58
B.	CLAIM 2	59
C.	CLAIM 3	61
D.	CLAIM 4	61
E.	CLAIM 6	63
	1. 6[a]	63
	2. 6[b]	64
F.	CLAIM 7	65
G.	CLAIM 9	65
H.	CLAIM 10	65
	1. 10[Pre]	65
	2. 10[a]	65
	3. 10[b]	65
	4. 10[c]	66

5.	10[d]	66
6.	10[e]	66
7.	10[f]	66
8.	10[g]	66
9.	10[h]	66
10.	10[i]	66
11.	10[j]	66
I.	CLAIM 11	66
J.	CLAIM 12	67
K.	CLAIM 13	67
L.	CLAIM 15	67
M.	CLAIM 16	67
N.	CLAIM 18	67
O.	CLAIM 19	67
1.	19[Pre]	67
2.	19[a]	67
3.	19[b]	67
4.	19[c]	67
5.	19[d]	67
6.	19[e]	68
7.	19[f]	68
8.	19[g]	68
9.	19[h]	68
10.	19[i]	68
11.	19[j]-[k]	68
12.	19[l]	71
13.	19[m]	71
14.	19[n]	71
15.	19[o]	71
16.	19[p]	71
17.	19[q]	71
P.	CLAIM 20	72
Q.	CLAIM 21	72
R.	CLAIM 22	72
S.	CLAIM 24	72
T.	CLAIM 25	72
U.	CLAIM 27	72

VI. GROUND 2: OBVIOUSNESS OF CLAIMS 5, 8, 14, 17, 23, AND 26.....72

A.	CLAIMS 5, 14, 23.....	72
B.	CLAIMS 8, 17, 26.....	73
VII.	GROUND 3: OBVIOUSNESS OF CLAIMS 28-29	73
A.	CLAIM 28	73
1.	28[Pre]	73
2.	28[a]	74
3.	28[b]	74
4.	28[c]	74
5.	28[d]	74
a)	Ferro’s Teachings	74
b)	Sutardja’s Teachings	74
6.	28[e]	75
7.	28[f]-28[j]	76
a)	Sutardja’s Teachings	76
b)	Motivation to Combine	81
B.	CLAIM 29	82
VIII.	§ 325(D) DISCRETION.....	82
A.	PART ONE OF <i>ADVANCED BIONICS</i>	82
B.	PART TWO OF <i>ADVANCED BIONICS</i>	84
IX.	§ 314(A) DISCRETION.....	84
X.	CONCLUSION.....	85
XI.	MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(A)(1)	86
A.	REAL PARTY-IN-INTEREST	86
B.	RELATED MATTERS	86
C.	LEAD AND BACK-UP COUNSEL	86
D.	37 C.F.R. § 42.8(B)(4) – SERVICE INFORMATION	87

TABLE OF AUTHORITIES

Cases:

<i>Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential)</i>	82, 84
<i>Align Technology, Inc. v. Dental Monitoring SAS, IPR2023-01369, Paper 10, (PTAB March 5, 2024)</i>	83-84
<i>Becton, Dickinson & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to Section III.C.5, first paragraph)</i>	82
<i>Caterpillar Inc. v. Wirtgen America, Inc., IPR2022-01278, Paper 12, (PTAB Feb. 7, 2023)</i>	84
<i>Hamilton Technologies LLC v. Fleur Tehrani, IPR2020-01199, Paper 6, (PTAB Jan. 6, 2021)</i>	84
<i>Hulu, LLC v. Sound View Innovations, No. IPR2018-01039, 2019 WL 7000067, (P.T.A.B. Dec. 20, 2019)</i>	6
<i>In re Gorman, 933 F.2d 982, (Fed. Cir. 1991)</i>	1
<i>Solaredge Technologies LTD. v. SMA Solar Technology AG, IPR2020-00021, Paper 8, (PTAB Apr. 10, 2020)</i>	84

Statutes:

<i>35 U.S.C. § 102(b)</i>	5, 6, 7, 8
<i>35 U.S.C. § 102(e)</i>	4, 7
<i>35 U.S.C. § 103</i>	2
<i>35 U.S.C. § 314(a)</i>	84
<i>35 U.S.C. § 325(d)</i>	82

Regulations:

<i>37 C.F.R. § 42.6(e)</i>	102
<i>37 C.F.R. §42.8</i>	101
<i>37 C.F.R. § 42.8(a)(1)</i>	86
<i>37 C.F.R. § 42.8(b)(1)</i>	86
<i>37 C.F.R. § 42.8(b)(3)</i>	86
<i>37 C.F.R. § 42.8(b)(4)</i>	86-87
<i>37 C.F.R. §42.24</i>	101

37 C.F.R. § 42.104	2
37 C.F.R. § 42.104(a)	2
37 C.F.R. § 42.104(b)	2
37 C.F.R. § 42.104(b)(3).....	3
37 C.F.R. § 42.105	102
37 C.F.R. § 42.105(b)	102

MPEP

MPEP 2114(II).....	51
--------------------	----

I. INTRODUCTION

Petitioner Tesla Inc. requests *inter partes* review (“IPR”) of Claims 1-29 (the “Challenged Claims”) of USPN 11,563,338 (“the ’338 Patent”). The Challenged Claims encompass various features for managing a vehicle’s battery charging—well-known techniques prior to the ’338 Patent.

Because the Challenged Claims recite numerous features, Petitioner’s Grounds rely on combinations of multiple references. “The criterion [for obviousness], however, is not the number of references, but what they would have meant to a person of ordinary skill[.]” *In re Gorman*, 933 F.2d 982, 986 (Fed. Cir. 1991). The Challenged Claims are plainly obvious and should be canceled.

II. THE ’338 PATENT

A. Priority

The ’338 Patent claims priority to Provisional Application 61/134,646 (“’646 Provisional,” Ex. 1023). Each of the ’338 Patent’s independent claims recites a slider. The Board determined the claimed slider in USPN 10,998,753 (a ’338 Patent family member) was not supported by the ’646 Provisional. IPR2022-01217, Paper 11, 8-10. The same finding applies here; all claims of the ’338 Patent are only entitled to a priority date of the earliest non-provisional application, July 13, 2009. *Dec.*¹, 48-49 (Ex. 1003).

¹ References to *Dec.* are to paragraphs of Ex. 1003, Declaration of Scott Andrews.

B. Level of Skill

A POSITA at the time of the '338 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 power management. *Dec.*, 30-32. 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. *Id.*

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

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

Petitioner certifies the '338 Patent is eligible for IPR.

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

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

Proposed Grounds of Unpatentability	Exhibits
<u>Ground 1:</u> Claims 1-4, 6-7, 9-13, 15-16, 18-22, 24-25, and 27 Are Obvious Under § 103 Over Ferro in View of Oyobe, Donnelly, Letendre, Zeigler, and Galvez-Ramos	1004-1009
<u>Ground 2:</u> Claims 5, 8, 14, 17, 23, and 26 Are Obvious Under § 103 Over Ferro in View of Oyobe, Donnelly, Letendre, Zeigler, Galvez-Ramos, and Knockeart	1004-1010
<u>Ground 3:</u> Claims 28-29 Are Obvious Under § 103 Over Ferro in View of Donnelly, Letendre, and Sutardja	1004, 1006-1007, 1011

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

“dynamic attribute of an electric charge provider” (Claims 1[g], 10[c], 19[g]): The term “dynamic attribute” is not in the ’338 Patent Specification. The closest disclosure is the processor communicating with a power supplying entity “to determine time-of-day rates for purchasing electrical energy” and using such rates to determine a cost-effective charging schedule. ’338 *Patent* (Ex. 1001), 8:31-39, 10:54-62. Therefore, the claim term is a changing or otherwise fluctuating cost (or price) of electricity for purchase from an electric charge provider.

“determine...a charging schedule” (Claims 1[g], 10[c], 19[h]): Petitioner submits the term should not be construed under § 112(6). *Cf.* IPR2023-00062, Papers 13, 25 (challenging related USPN 9,853,488, which includes a similar “charging schedule” limitation where § 112(6) issues were not raised by the Parties or the Board). The presumption of no application under § 112(6) is not overcome, at least because the term recites an algorithmic step (i.e., structure) for how to “determine” a “charging schedule” based “at least on the one or more charging preferences” and “one current value of a dynamic attribute.” ’338 *Patent*, Claim 1[g]. To the extent the Board or PO construes as means-plus-function, the structure is a processor executing computer program instructions for performing the disclosed algorithm of “utiliz[ing] such rate information in combination with the identification and/or preference information.” ’338 *Patent*, 10:58-62, 17:41-44. The function is the

claimed function. The support at least includes '338 Patent, 8:34-39, 10:44-47, 10:54–11:3, 16:64–17:10, 17:41-44.

IV. THE PRIOR ART IS ANALOGOUS TO THE '338 PATENT

A. Ferro

USPGPub 2009/0313034 to Ferro (Ex. 1004) was filed June 16, 2008, qualifying as prior art under § 102(e). *Ferro*, [0022].

Ferro is directed to generating a dynamic energy transaction plan to manage electric vehicle charging. *Ferro*, Abstract, [0002], [0055], FIGs. 5-8. A “computer readable medium” includes “program code for carrying out operations.” *Ferro*, [0026]-[0030]. The energy transaction plan that “manages every aspect of charging electric vehicle” is configured via an “input/output device located on-board the electric vehicle to create the preferences.” *Ferro*, [0093], [0139]. Ferro updates the transaction plan in view of dynamic attributes of the charge provider, such as the price of the electricity from a power grid. *Ferro*, [0037].

Ferro is analogous to the claimed invention of the '338 Patent because Ferro is from a same field of endeavor (hereinafter “Field”): managing vehicle systems, including EV charging. *Dec.*, 90-92.

Ferro is reasonably pertinent to a problem with which the inventors of the '338 Patent were involved (hereinafter “Reasonably Pertinent”): user-friendly charging schedule generation. *Id.*

B. Oyobe

EP No. 1,920,968 to Oyobe (Ex. 1005) was neither cited nor considered during prosecution of the '338 Patent. Oyobe was filed August 30, 2006, and published May 14, 2008, qualifying as prior art under § 102(b).

Oyobe describes an electric vehicle battery charging system comprising a vehicle sensor that “detects whether or not hybrid vehicle 100B is parked at the location where charging equipment is installed.” *Oyobe*, [0007]-[0009], [0141]-[0143], FIG. 16.

Field: managing vehicle systems, including EV charging. *Dec.*, 97-98.

Reasonably Pertinent: facilitating user-friendly EV charging. *Id.*

C. Donnelly

USPN 7,124,691 to Donnelly (Ex. 1006) was neither cited nor considered during prosecution of the '338 Patent. Donnelly published October 24, 2006, qualifying as prior art under § 102(b).

Donnelly teaches a hybrid vehicle having a charging system and a touch screen GUI. *Donnelly*, 21:47-58, 26:6-8, 1:36-38, 6:64-7:1, 8:22-27.

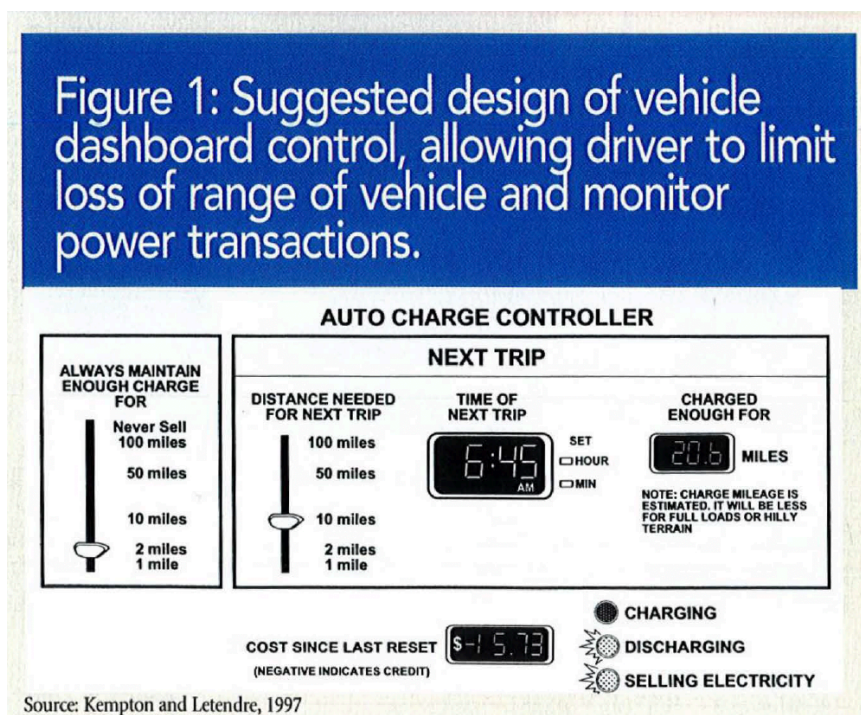
Field: managing vehicle systems, including EV controls interfaces. *Dec.*, 103-104.

Reasonably Pertinent: presenting user-friendly EV controls interfaces. *Id.*

D. Letendre

Letendre was neither cited nor considered during prosecution of the '338 Patent. *The V2G Concept, A New Model for Power* by Letendre et al. (Ex. 1007), published February 15, 2002, qualifying as prior art under § 102(b). Strong indicia confirm that Letendre is a printed publication, including copyright, ISSN, evidence of public availability from multiple libraries, and evidence showing that Letendre was cited in the prior art. *Munford Dec.* (Ex. 1086); *Hulu, LLC v. Sound View Innovations*, No. IPR2018-01039, 2019 WL 7000067, *5 (P.T.A.B. Dec. 20, 2019).

Letendre teaches a user interface comprising a slider by which a user specifies parameters managing the charge of an electric vehicle's battery. *Letendre*, 18-20.



Field: managing vehicle systems, including EV controls interfaces. *Dec.*, 108-109.

Reasonably Pertinent: presenting user-friendly EV controls interfaces, including inputting of user-selected charge preferences. *Id.*

E. Galvez-Ramos

USPGPub 2009/0130965 to Galvez-Ramos (Ex. 1008) was filed November 17, 2007, and published May 21, 2009, qualifying as prior art under § 102(b)/(e).

Galvez-Ramos discloses a Climate Control System for Parked Automobiles improving safety to “any stranded passenger left behind such as babies, small children and pets.” *Galvez-Ramos*, [0005].

Field: managing vehicle systems, including HVAC systems and their power supply. *Cf. Galvez-Ramos*, [0005]-[0008], with '338 Patent, 13:46-67, 15:62–16:5, FIG. 6; *Dec.*, 113-114.

Reasonably Pertinent: managing vehicle’s HVAC system to maintain a vehicle temperature appropriate for a pet and/or passenger left in a vehicle. *Id.*

F. Zeigler

USPN 6,889,762 to Zeigler (Ex. 1009) was neither cited nor considered during prosecution of the '338 Patent. Zeigler issued May 10, 2005, qualifying as prior art under § 102(b).

Zeigler describes a vehicle HVAC system operable in a parked vehicle.

Zeigler, 1:63–2:6, 10:12-16.

Field: managing vehicle systems, including HVAC systems and their power supply. *Dec.*, 121-122.

Reasonably Pertinent: managing vehicle's HVAC system to maintain a set vehicle temperature. *Id.*

G. Knockeart

USPN 6,622,083 to Knockeart (Ex. 1010) was neither cited nor considered during prosecution of the '338 Patent. Knockeart issued September 16, 2003, qualifying as prior art under § 102(b).

Knockeart describes a system for utilizing a user's device (e.g., phone) to provide a vehicle's GUI. *Knockeart*, Abstract, 4:49-67.

Field: managing vehicle systems, including communication of a user's personal device with the vehicle's information system. *Dec.*, 125-126.

Reasonably Pertinent: facilitating user-friendly communication with the vehicle's information system. *Id.*

H. Sutardja

USPGPub 2008/0136371 to Sutardja (Ex. 1011) was neither cited nor considered during prosecution of the '338 Patent. Sutardja issued June 12, 2008, qualifying as prior art under § 102(b).

Sutardja describes a system and method for charging a vehicle's battery according to a set of charging parameters. *Sutardja*, Abstract, [0008].

Field: managing vehicle systems, including EV charging. *Dec.*, 133-134.

Reasonably Pertinent: user-friendly charging schedule generation. *Id.*

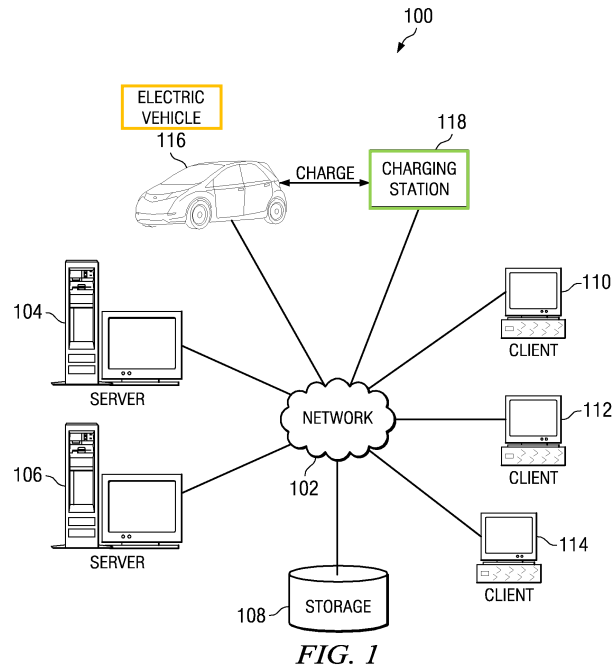
V. GROUND 1: OBVIOUSNESS OF CLAIMS 1-4, 6-7, 9-13, 15-16, 18-22, 24-25, AND 27

A. Claim 1

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

Ferro teaches an *electrical charging system*² “for generating a dynamic energy transaction plan to manage an electric vehicle charging transaction.” *Ferro*, Abstract, [0025] (“the invention may be embodied as a system.”). A “data processing system 200” of FIG. 2 implements the “energy transaction infrastructure” of FIG. 3 for charging electric vehicle 116 via charging station 118, which collectively comprise an *electrical charging system*. *Dec.*, 143-144; *Ferro*, [0008], [0039], [0064], [0052], [0034], [0028]; *Dec.*, 135-142 (explaining interrelation between Ferro’s figures and teachings).

² Claim terms italicized.



Ferro, FIG. 1.³

2. *1[a]: “a vehicle sensor”*

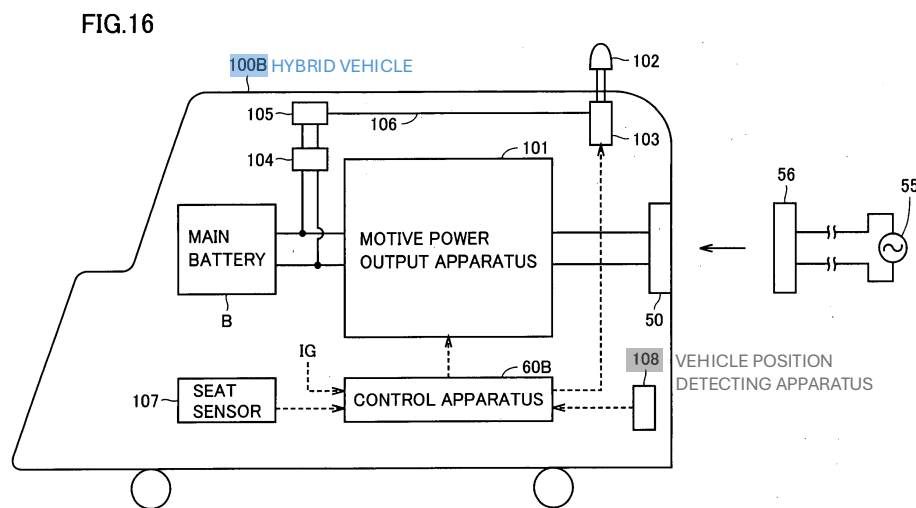
a) **Ferro’s Teachings**

Ferro teaches an electric vehicle arriving at a charging station and indicating “an intention to charge.” *Ferro*, [0109]. The vehicle and charging station connect and receive/transmit charging data via a network. *Ferro*, [0037]. A user specifies, that “any time the electric vehicle is parked at a charging station that is at a specified location, the electric vehicle is...to be fully charged,” indicating Ferro contemplates detecting a vehicle at a charging station. *Ferro*, [0121]; *Dec.*, 146.

³ All annotations to figures and bolded quotations are added.

b) Oyobe's Teachings

Oyobe teaches a *vehicle sensor*, namely in-vehicle detecting apparatus 108 that detects when a hybrid vehicle “is parked at the location where charging equipment is installed” by, e.g., communicating with a “radio apparatus” located at the charging equipment. *Oyobe*, [0142]-[0143].



Oyobe, FIG. 16.

Like the '388 Patent's wireless interrogation vehicle sensor example, Oyobe's wireless interrogation via detecting apparatus 108 teaches a *vehicle sensor*. *Dec.*, 149.

c) Motivation to Combine

A POSITA would have found it obvious and been motivated to incorporate Oyobe's detecting apparatus 108 into Ferro's electric vehicle 116/400 to detect when the vehicle is parked at a charging station, per Oyobe. *Dec.*, 150. The modification

combines prior art elements (wireless interrogation, EV charging stations) according to known methods to yield predictable results of enabling “an intention to charge” without an operator leaving the vehicle. *Ferro*, [0109]. Ferro’s charging station charges the vehicle through “wireless” charging, allowing a user to remain in-vehicle while charging. *Ferro*, [0036]; *Dec.*, 151. Providing Oyobe’s wireless detecting to detect the vehicle parked at the charging station advantageously allows a user to instruct charging without exiting the vehicle and physically interacting with a charging station. *Dec.*, 151-152.

The modification would have had a reasonable expectation of success (hereinafter “REOS”). Oyobe teaches the charging station including a radio apparatus wirelessly communicating with the vehicle. *Oyobe*, [0142]. Therefore, the combination entails Ferro’s charging station including a similar radio apparatus wirelessly communicating with the modified electric vehicle including the detector. Given Ferro teaches the charging station already communicating via a network and wireless communication was well known, the combination is straightforward and simple to implement. *Ferro*, [0037], FIG. 4 (network interface 432); *Dec.*, 153-154.

3. 1[b]: “a communication device”

Ferro teaches a *communication device*, namely communications unit 210 and communications fabric 202, where unit 210 and fabric 202 are components of data

processing system 200 implemented “on-board an electric vehicle.” *Ferro*, [0040], [0042], [0039], [0049].

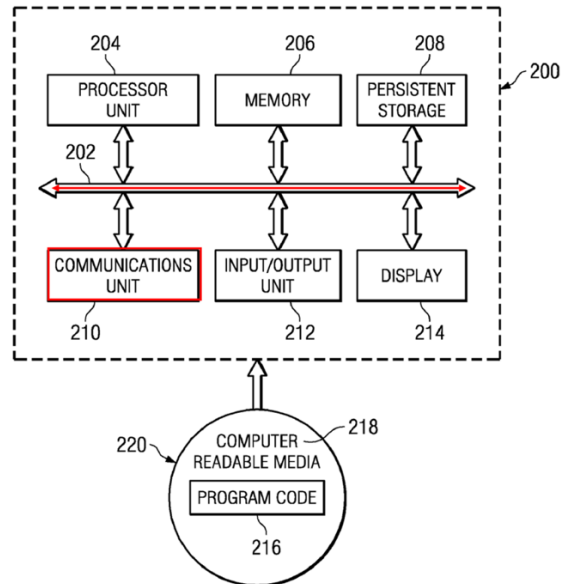


FIG. 2

Ferro, FIG. 2.

a) Communications Unit 210

“Communications unit 210...provides for communications with other data processing systems or devices,” and may be a network interface card providing communications via physical and/or wireless links. *Ferro*, [0042].

“Network interface 432 is any type of network access software known or available for allowing electric vehicle 400 to access a network.” *Ferro*, [0106]. Figure 4 illustrates “a dynamic energy transaction planner [402] on-board an electric vehicle” 400. *Ferro*, [0076]. Planner 402 is a software component controlling a charging transaction for the electric vehicle, such as planner 310. *Id.*

Because (1) communications unit 210 may be a network interface card; (2) FIG. 4 illustrates a planner 402/310 implemented on-board the vehicle; and (3) network interface 432 provides network communication for the vehicle, a POSITA would have understood or found obvious an exemplary network interface card of communications unit 210 is network interface 432. *Ferro*, [0042], [0106]; *Dec.*, 156-159.

b) Communications Fabric 202

Communications fabric 202 provides communications between components of the data processing system 200 and may be a bus system “comprised of one or more buses.” *Ferro*, [0040], [0049].

“Integration and service bus 324 is an internal communication system within the electric vehicle,” including a data bus or USB. *Ferro*, [0064]. Figure 3 shows “an energy transaction infrastructure,” where components are “implemented on a data processing system associated with an electric vehicle.” *Ferro*, [0052], [0028], [0064].

Because (1) communications fabric 202 is a bus system for facilitating communications amongst components of data processing system 200; (2) service bus 324 is an internal communication system within the vehicle; and (3) the components of FIG. 3 are implemented on system 200, a POSITA would have

understood that an exemplary bus of communications fabric 202 is service bus 324.

Ferro, [0049], [0054], [0039]; *Dec.*, 160-162.

4. *1[c]: “a processor in communication with the vehicle sensor and the communication device”*

Ferro teaches a *processor* unit 204:

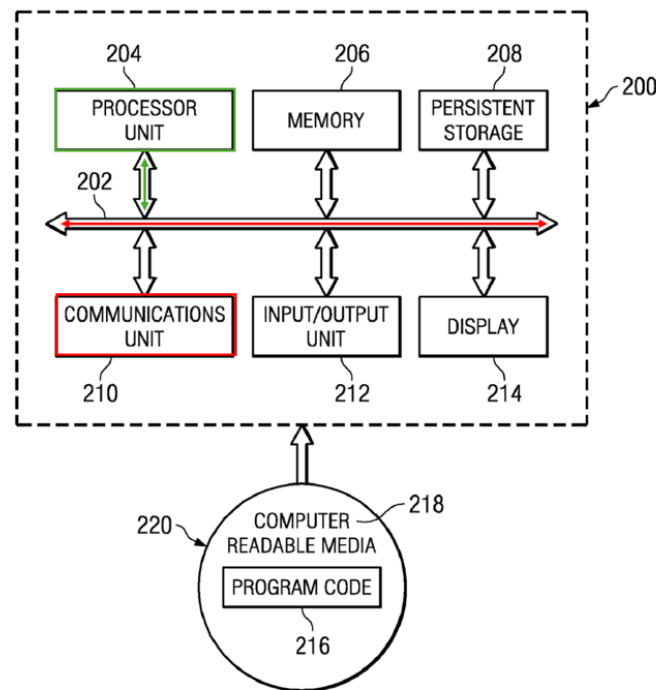


FIG. 2

Ferro, [0040], [0161], FIG. 2. Data processing system 200 includes processor unit 204, which “serves to execute instructions for software that may be loaded into memory 206.” *Id.*

Ferro’s *processor* (processor unit 204) is *in communication with...the communication device* (communications fabric 202 and unit 210). Communications fabric 202, which is a bus system, provides communication between the processor

204 and other data processing system components (e.g., memory). *Ferro*, [0040], [0049], [0161]; Claim 1[b]⁴; *Dec.*, 163-164.

Processor 204 executes software instructions, and communications unit 210 provides wired/wireless communications. Therefore, processor 204 instructs communications unit to perform wired/wireless communication per executed software instructions. *Ferro*, [0072], FIG. 3; Claim 1[b]; *Dec.*, 165-166 (processor 204 instructs communications with remote servers to transmit/receive information during energy transaction plan generation).

Per Claim 1[a], the Ferro-Oyobe system includes a *vehicle sensor*. It would have been obvious to further modify Ferro such that Ferro's processor 204 is *in communication with the vehicle sensor*, i.e., detecting apparatus 108. *Dec.*, 167. Oyobe teaches detecting apparatus 108 outputting a signal to control apparatus 60B in the car, along with communicating with a charging station. *Oyobe*, [0142]-[0143], FIG. 16. Thus, Oyobe teaches detecting apparatus 108 communicating with an in-vehicle processor. *Dec.*, 168.

Similarly, it would have been obvious for Ferro's processor 204 to be *in communication with Oyobe's detecting apparatus 108* to communicate to processor 204 that "the vehicle is parked at the location where charging equipment is installed." *Oyobe*, [0142]; *Dec.*, 169. Communication between the detecting

⁴ All citations to a claim are to the section in this Petition mapping the claim.

apparatus 108 and Ferro's processor 204 would have been desirable so the "dynamic energy transaction plan" generating process begins "when electric vehicle 400 arrives at charging station 403...." *Ferro*, [0109]; *Dec.*, 170. There would have been a REOS, because detecting apparatus 108 already includes necessary hardware and software to send signals to an in-vehicle control and the charging station. *Dec.*, 171-172.

5. *1[d]: "a memory in communication with the processor, the memory storing instructions that when executed by the processor cause the processor to"*

Ferro teaches *a memory*: collective memory 206 and persistent storage 208. Ferro's data processing system 200 includes memories 206, 208. *Ferro*, [0039]-[0041]. **"Instructions for the operating system and applications or programs are located on persistent storage 208. These instructions may be loaded into memory 206 for execution by processor unit 204.** The processes of the different embodiments may be performed by processor unit 204 using computer implemented instructions," located in memory 206. *Ferro*, [0044], [0040], [0161]; Claim 1[c] (mapping processor 204 as *processor*); *Dec.*, 173-176.

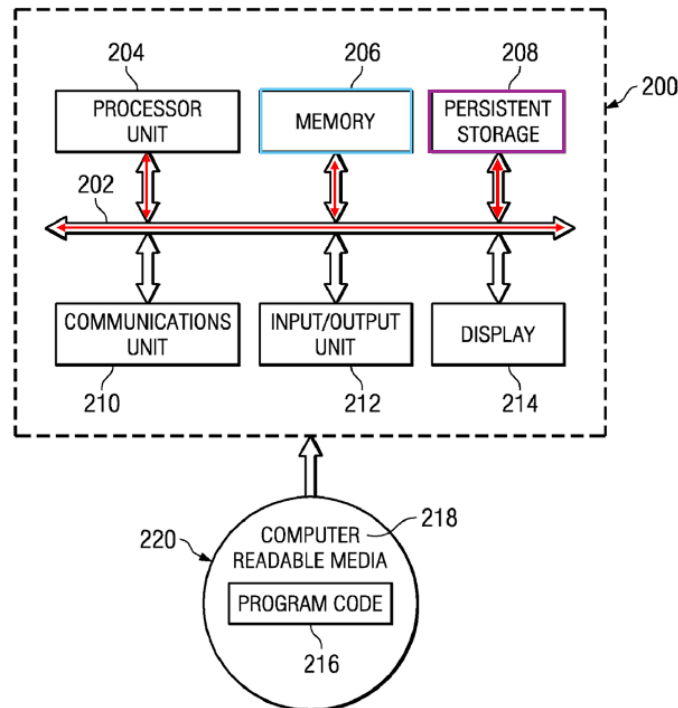


FIG. 2

Ferro, FIG. 2 (illustrating processor communicating with memory 206 and storage 208 via fabric 202).

Ferro teaches system 200 is a computing device in-vehicle that implements “program code or instructions” for energy transaction planning system embodiments. *Ferro*, [0039]. Because (1) instructions are loaded into memory 206 and persistent storage 208; and (2) processes are performed by processor 204 using such instructions, a POSITA would have understood memory 206 and persistent storage 208 are *in communication with* the processor 204 and *stor[e] instructions*, that, when *executed by the processor cause the processor to* operate the energy transaction plan system. *Ferro*, [0044], [0076]; *Dec.*, 174-177.

Storage device 426 in FIG. 4 is an example of memory 206 and persistent storage 208 (i.e., *memory*). *Dec.*, 173, 175; *Ferro*, [0100], FIG. 4.

6. 1[e]: “receive, from the vehicle sensor, information indicative of a presence of an electric vehicle in a parking space”

Ferro-Oyobe renders obvious Claim 1[e]. Oyobe teaches a vehicle processor (control apparatus 60B) receiving a signal from detecting apparatus 108 (*vehicle sensor*, per Claim 1[a]) when detecting apparatus 108 “detects that the vehicle is parked at the location where charging equipment is installed.” *Oyobe*, [0143]-[0144] (“Control apparatus 60B also receives a detection signal from vehicle position detecting apparatus 108.”). Therefore, Oyobe teaches a processor receiving a signal from a *vehicle sensor*. *Dec.*, 178.

In Ferro-Oyobe, Ferro’s processor unit 204 (*processor*) receives, from Oyobe’s detecting apparatus 108 (*vehicle sensor*), a signal (*information indicative of*) indicating the apparatus 108 “detect[ed] that the vehicle is parked at the location where charging equipment is installed” (*presence of an electric vehicle*). *Oyobe*, [0143]; *Dec.*, 179. The combinations’ motivations for Claims 1[a], 1[c] are incorporated.

A POSITA would have understood Oyobe teaches or renders obvious the vehicle is *in a parking space*. Charging equipment is commonly installed proximate a parking space so the vehicle may park proximate the charging station. *Dec.*, 180. Indeed, any space proximate the charging station is a *parking space*, at least because

a location designated for parking a car accessing the charging station is a parking space. *Dec.*, 181. Because charging locations were positioned proximate parking spaces, a POSITA would have understood Oyobe's teaching of detecting the vehicle **parked** at the location where charging equipment is **installed**, at least implicitly teaches *a presence of an electric vehicle in a parking space*. *Dec.*, 180-181.

7. ***1[f]: “receive, from the communication device, information indicative of one or more charging preferences corresponding to a desired charging of the electric vehicle, wherein the one or more charging preferences are defined by an operator of the electric vehicle”***

Ferro teaches *charging preferences* 406/500. Ferro, [0082]-[0084], [0118]-[0120], [0122]-[0123].

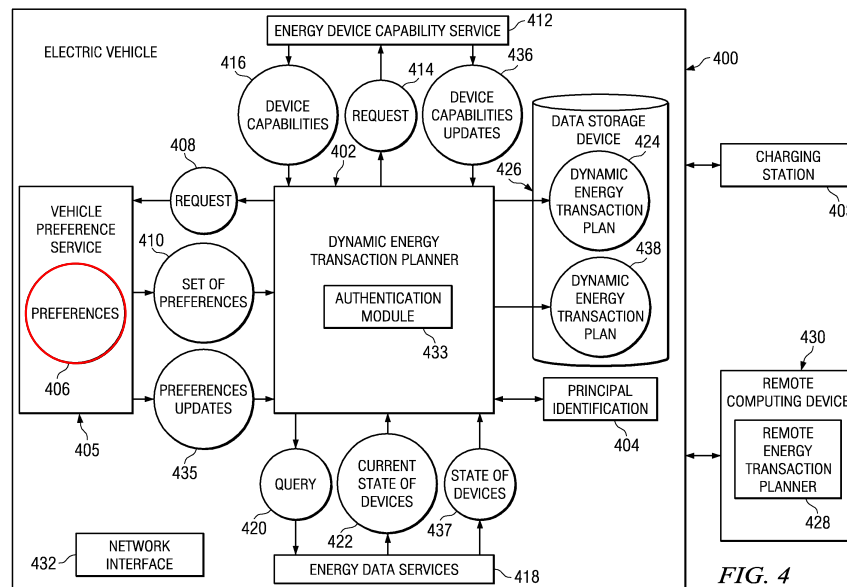
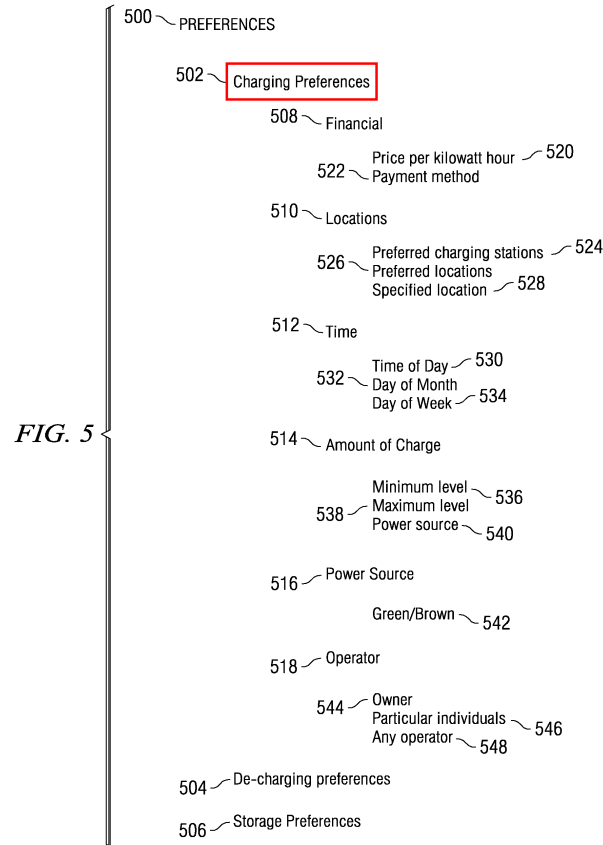


FIG. 4



Ferro, FIGs. 4-5. “Preferences 406 are” selected by principals and used by a dynamic energy transaction planner 402 “to create a charging transaction plan to control the charging, de-charging, or storing of electric power associated with electric vehicle 400.” *Ferro*, [0084]. “Preferences 500 are types of preferences that may be included within preferences for one or more users, such as preferences 406 in FIG. 4.” *Ferro*, [0118].

Ferro teaches preference types including a price 520 “the user is willing to pay to charge the electric vehicle,” a time 512 of day to charge the vehicle, and minimum/maximum levels of charge 536/538. *Ferro*, [0120], [0122]-[0123]. *Cf.*

'338 Patent, 10:22-27, 62-64. "Preferences 500 may be charging preferences 502 for governing energy transaction to charge" the electric vehicle. *Ferro*, [0118]. Because Ferro's charging preferences 406/500 are choices for controlling the electric vehicle charging transaction, the charging preferences *correspond[] to a desired charging of the electric vehicle*. *Ferro*, [0084]; *Dec.*, 182-184.

Ferro teaches processor 204 *receive[s]...information indicative of one or more charging preferences*. Ferro discloses vehicle preference service 405 and energy preference service 302, both responsible for maintaining, generating, and storing charging preferences. *Ferro*, [0054], [0082]-[0083], [0090]; *Dec.*, 186 (explaining service 405 is in-vehicle, whereas service 302 is remote). Ferro teaches dynamic energy transaction planner 402 implemented by system 200 receiving preferences. *Ferro*, [0090]-[0091]. "Dynamic energy transaction planner 402 requests preferences of interest for a particular charging transaction by sending request 408 to vehicle preference service 405 and/or one or more energy preference services located remotely from electric vehicle 400." *Ferro*, [0090], [0092], [0105].

Ferro teaches the planner 310/402 requesting and receiving preferences from the preferences service 405/302:

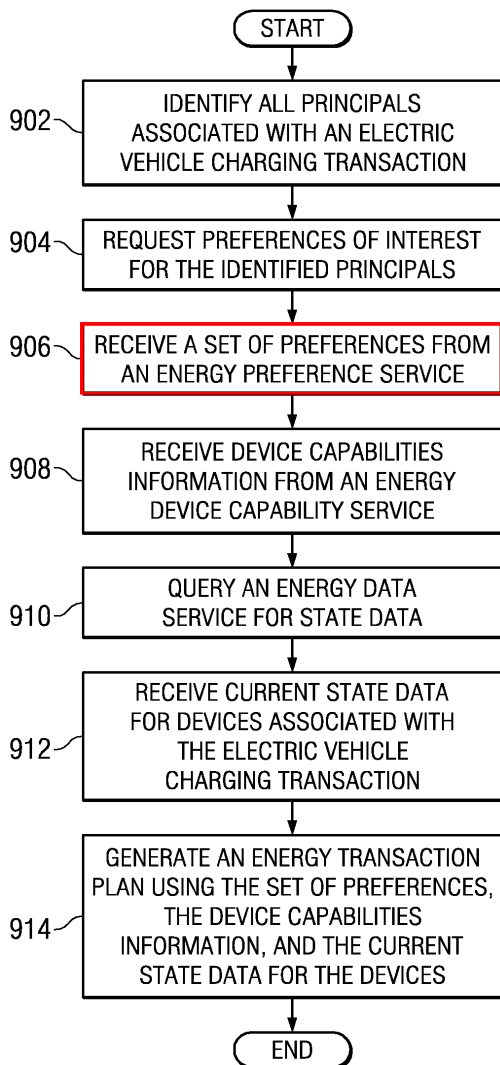


FIG. 9

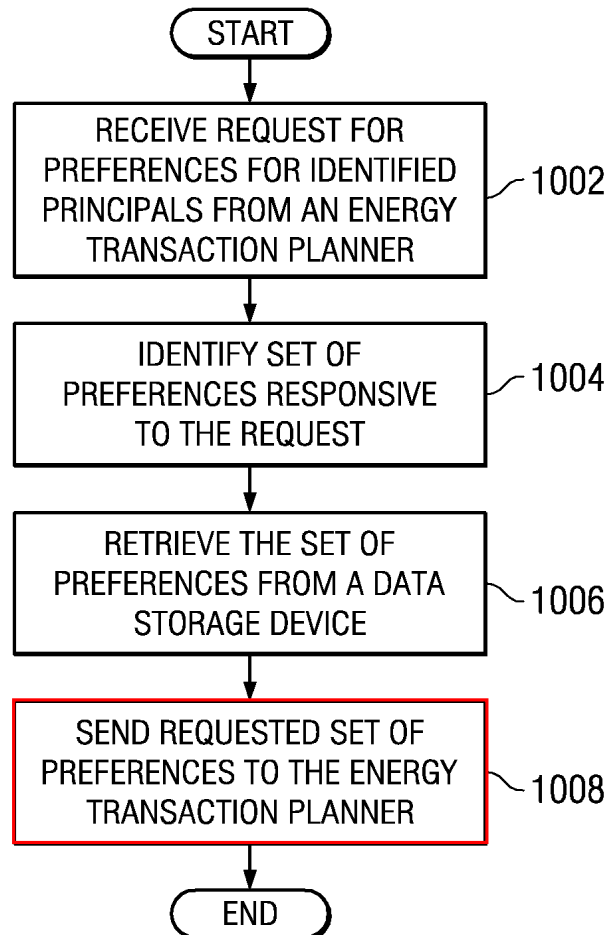


FIG. 10

Ferro, FIGs. 9-10 (Steps 904-906, 1006-1008), [0143]-[0145], [0110].

Per Claim 1[d], processor 204 executes computer instructions in memory 206. *Ferro*, [0044]. Planner 310/402 is implemented on system 200 including processor 204. *Ferro*, [0064], [0076]; 1[Pre]. Therefore, processor 204, executing energy

transaction planner 310/402, requests and receives the charging preferences. *Dec.*, 187-188.

Processor 204 receives charging preferences *from the communication device*:

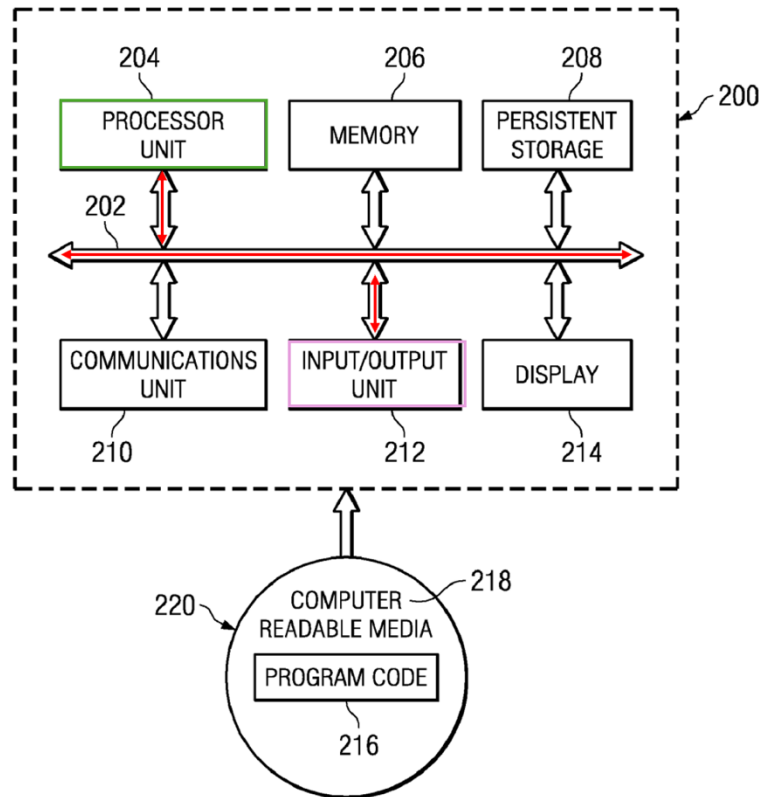


FIG. 2

Ferro, FIG. 2 (processor 204 communicating with input/output unit 212). Per 1[b], the *communication device* includes components that enable wired/wireless and on-board/remote communications with processor 204, such as communications unit 210 and communications fabric 202. *Dec.*, 189. *Ferro* teaches sending the preferences to planner 402, software executed by processor 204, over a USB or “other wired or wireless connection within electric vehicle,” from a mobile computer, and/or via an

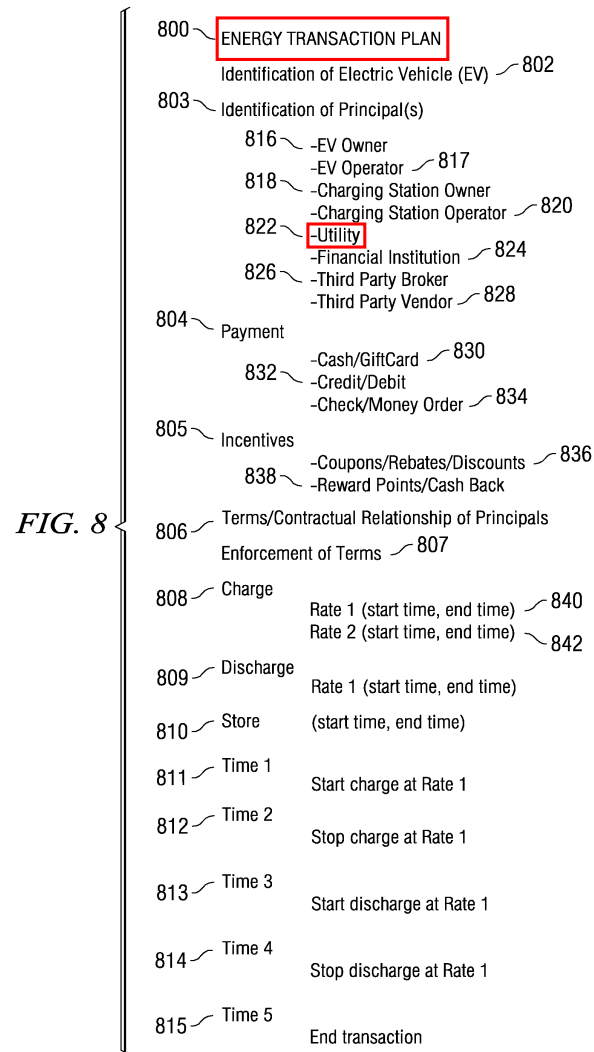
“input/output device located on-board the electric vehicle.” *Ferro*, [0091]-[0093], [0054]. Because processor 204 receives charging preferences in-vehicle from vehicle preference service 405 or remotely from energy preference service 302 and communications with processor 204 are enabled via the *communication device*, per Claim 1[b], Ferro’s charging preferences are received by the processor 204 *from the communication device*. *Dec.*, 190-192.

Ferro teaches a “principal” creates or selects preferences using an “input/output device located on-board the electric vehicle.” *Ferro*, [0093], [0084]. Principals include “the **vehicle operator**.” *Ferro*, [0080]. Thus, the *charging preferences are defined by an operator of the electric vehicle*. *Dec.*, 185.

8. ***1[g]: “determine, based at least on the one or more charging preferences and at least one current value of a dynamic attribute of an electric charge provider, a charging schedule for the electric vehicle”***

Dynamic attribute is a changing or otherwise fluctuating cost (or price) of electricity for purchase from an electric charge provider. Section III.C. Ferro teaches Claim 1[g]; namely generating an energy transaction plan (*charging schedule*) based on *charging preferences* (Claim 1[f]) and a current value (*current value*) of a fluctuating electricity cost received from an electric charge provider (*dynamic attribute*).

Ferro teaches energy transaction plan 800, “such as energy transaction plan 424 in Fig. 4,” manages a charging transaction. *Ferro*, [0136].



Ferro, FIG. 8 (fields for plan 800, including charging times and “utility 822 of the owner; operator; or charging station” (*see* [0137])).

Figure 9 illustrates steps for generating dynamic energy transaction plan 800/424:

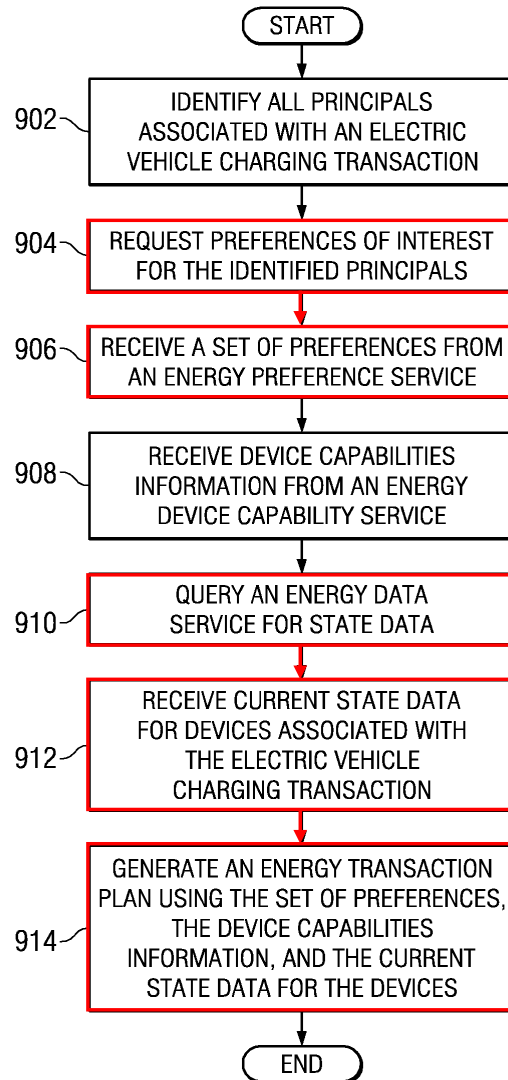


FIG. 9

Ferro, FIG. 9, [0142]. Charging preferences are obtained and received from the energy preference service (Steps 904-906). *Ferro*, [0143]; Claim 1[f]. The planner then queries energy data service (Step 910) and receives current state data (Step 912). *Id.*; *Dec.*, 200 (citing [0101], opining “state data” includes the cost of energy at a given time). “The dynamic energy transaction planner **generates** a first set of terms for a dynamic energy transaction plan **using the set of preferences**, the device

capabilities information, **and the current state data** from the device (step 914)....”
Ferro, [0143]. Because processor 204 of system 200 executes planner 402 (Claim 1(d)) and the planner generates the plan based on the user-chosen charging preferences and the current cost of electricity, the *processor determine[s]...the charging schedule*. *Dec.* 196, 205.

The energy transaction plan is a *charging schedule* because it provides start and end times for charging: “Energy transaction plan 800 may include...a series of time fields indicating the electric flow direction at each time mark.” *Ferro*, [0136]-[0138], [0139] (“The time intervals 811-815 optionally indicate start and end times for charging...”); *Dec.*, 197-198.

Regarding the *current value of a dynamic attribute*, planner 402 receives information from “energy data services,” including “present and projected energy rates” to use in transaction plan creation. *Ferro*, [0112]-[0113]. The electric vehicle sends/receives data, including “the price of electricity received from a power grid.” *Ferro*, [0037]-[0036]. *Ferro*’s planner 402 “optimize[s] the cost of the return trip home given **the current prices of gas and electricity**,” indicating processor 204 receives the current cost/price of electricity to optimize the return trip during transaction plan creation. *Ferro*, [0088]; *Dec.*, 201-202. *Ferro* teaches planner 402 monitoring the “price of electricity” and using the price to modify the transaction plan to charge the vehicle at a time “when the price of electricity is low.” *Ferro*,

[0115]. Ferro teaches obtaining a current price of electricity (at Step 910, state data) to use in charging schedule generation. *Ferro*, FIG. 9, [0143], [0101]; *Dec.*, 200, 203. Thus, Ferro teaches the price of electricity changes or fluctuates and the generated transaction plan (*charging schedule*) uses the current value of the fluctuating cost/price of electricity (*dynamic attribute*) from a charge provider. *Dec.*, 204.

Ferro teaches the *dynamic attribute* (current price is of an electric charge provider. “A utility is an electric energy provider. An electric energy provider typically provides electric power to a charging station via an electric power grid.” *Ferro*, [0066], [0132]. Because the electricity price is received from the power grid, and the electric energy provider provides the power via the grid, the current electricity price is a dynamic attribute of an electric charge provider. *Dec.*, 206-207; *Ferro*, [0052], [0066], FIG. 8 (RN 822), [0058], FIG. 3.

Thus, Ferro teaches Claim 1[g] because the energy transaction plan (*charging schedule*) is determined based on user-defined charging preferences and the current cost of electricity (*dynamic attribute*) provided by an electric energy provider to enable cost-effective charging. *Dec.*, 208.

Ferro also teaches *determine...a charging schedule* should the Board or PO contend § 112(6) is invoked. The structure for performing the *determin[ing]* is a processor performing the described algorithm, per Section III.C. Because Ferro’s

processor 204 executes the planner 402 to perform the function of determining the charging schedule, Ferro teaches *determine...a charging schedule* under § 112(6). Dec. 209.

9. ***1[h]: “wherein at least one of the one or more charging preferences is defined by user input received via a graphical user interface and adapted to display a vehicle charge indicator element comprising a first portion indicative of an amount of charge residing in a battery of the electric vehicle and a second portion indicative of an uncharged capacity of the battery of the electric vehicle and wherein the vehicle charge indicator element further comprises a slider by which an amount of charge may be specified”***

The modified Ferro in view of Donnelly and Letendre renders obvious Claim 1[h]. As discussed below, (1) Ferro’s collective display 214 and input/output unit 212 is modified to be a touchscreen presenting a graphical user interface (“GUI”) having the claimed vehicle charge indicator with first and second portions, per Donnelly; and (2) the Ferro-Oyobe-Donnelly GUI is modified to include a slider for inputting desired charge, per Letendre.

a) Charging Preferences Defined by User Input

Ferro teaches charging preferences are entered by the vehicle operator via in-vehicle input/output device. *Ferro*, [0093], [0084]. Ferro teaches input/output devices include “keyboards, displays, pointing devices, etc.” *Ferro*, [0162], [0043]. Therefore, Ferro teaches *at least one of the one or more charging preferences is defined by user input*. Dec., 211.

b) GUI Receiving User Input

(1) Donnelly's Teachings

Donnelly teaches a GUI implemented via a display receiving touch screen commands for a hybrid vehicle (e.g., trains, cars, trucks). *Donnelly*, 21:47-58, 26:6-8, 1:36-38; *cf.* '338 *Patent*, 3:30-36 (describing trains as electric vehicles); *Dec.*, 212-213. Donnelly thus teaches *user input received via a graphical user interface* via touch screen commands received at the GUI on Donnelly's touchscreen display. *Dec.*, 214.

(2) Motivation to Combine

A POSITA would have found it obvious and been motivated to modify Ferro's display 214 and I/O unit 212 with a touchscreen display presenting a GUI to receive charging preferences and other commands/information input by the user, per Donnelly. *Dec.*, 215. Ferro already teaches input/output unit 212 and display 214 communicating with processor 204 via communications fabric 202. *Ferro*, [0040], [0043], [0161]-[0162].

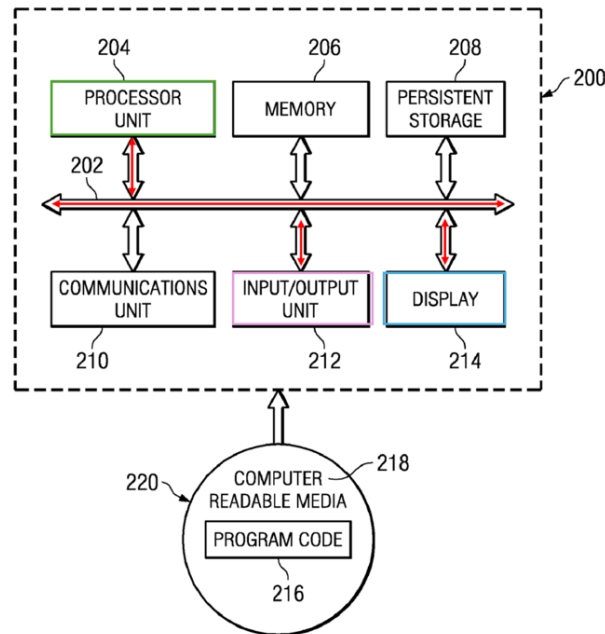


FIG. 2

Ferro, FIG. 2 (annotated). *Ferro* also teaches user charging preferences input via I/O unit 212. Claim 1[f]; *Ferro*, [0093], [0084].

GUIs were standard for Human-Computer Interaction long before the '338 Patent. *Dec.*, 216. It was well-known GUIs were favorable for facilitating user input because GUIs make “an application easy, practical, and efficient to use” and “allow the user to concentrate on the task at hand.” *Id.* (citing *Jansen* (Ex. 1038)). Thus, a POSITA would have understood it would have been advantageous to allow the user to enter *Ferro*’s charging preferences via a GUI presented on a touchscreen because users would have already been accustomed to interacting with GUIs for data entry tasks. *Id.* A POSITA would have been motivated to implement Donnelly’s known touchscreen display presenting a GUI for *Ferro*’s I/O unit 214 and display 212 that

otherwise allow the user to enter charging preferences (*Ferro*, [0093]) to yield the predictable result of allowing the user to efficiently enter desired charging preferences in a familiar and user-friendly manner. *Dec.*, 217. Given the ubiquity of GUIs and familiarity of users entering information via GUIs, there would have been a REOS in the modification. *Dec.*, 217.

Touchscreen displays, in cars, were ubiquitous as of the '338 Patent. *Dec.*, 218. Touchscreen displays offered benefits of both the display and input/output device in a single hardware component (input/output GUI implemented in the touch screen), forgoing a separate keyboard for inputting commands and providing a streamlined aesthetic. *Dec.*, 219-220. The modification is merely implementation of Donnelly's known device (touchscreens display GUIs) improving similar devices (non-touchscreen displays) in a similar way (avoiding use of separate I/O devices, such as a keyboard). *Id.* The modification would have had a REOS given GUI touchscreen displays ubiquity in vehicles, and a POSITA would have readily known how to program for receipt of inputs via a GUI on a touchscreen display. *Dec.*, 221.

c) Vehicle Charge Indicator

(1) Ferro's Teachings

Ferro teaches a user-selectable "[a]mount of charge 514 preference" including a maximum and/or minimum level of charge. *Ferro*, [0123], FIG. 5. Ferro also teaches planner 402 using information from energy data services 418 to create the

transaction plan, such as “the present charge state of the batteries on electric vehicle 400.” *Ferro*, [0112]-[0113]; *Dec.*, 222. As mapped below, Donnelly teaches displaying a charged/uncharged capacity of the battery.

Regarding *caus[ing] the processor* to perform the functionality of Claim 1[h], because (1) the energy transaction planner 310/402 is implemented on a data processing system; and (2) processor 204 of system 200 executes instructions/software implementing the energy transaction plan, a POSITA would have understood it would have been obvious processor 204 receives information relating to a charged/uncharged battery capacity when combined with Donnelly, as discussed below. *Ferro*, [0076], [0064], [0039]-[0040], [0044]; *Dec.*, 223.

(2) Donnelly’s Teachings

Donnelly’s GUI is *adapted to display a vehicle charge indicator*, namely a GUI displaying a bar graph depicting the battery state of charge. *Donnelly*, 21:47-58, 23:16-20, 23:31-33, FIG. 28. Donnelly’s Battery Status Screen “displays details about the electrical state of the energy storage unit (e.g., battery)” and includes a “Battery State of Charge 28004, which depicts, in a **bar graph** format, the state of charge” of the battery. *Donnelly*, 23:16-33. Figure 28 illustrates “displayed fields”:

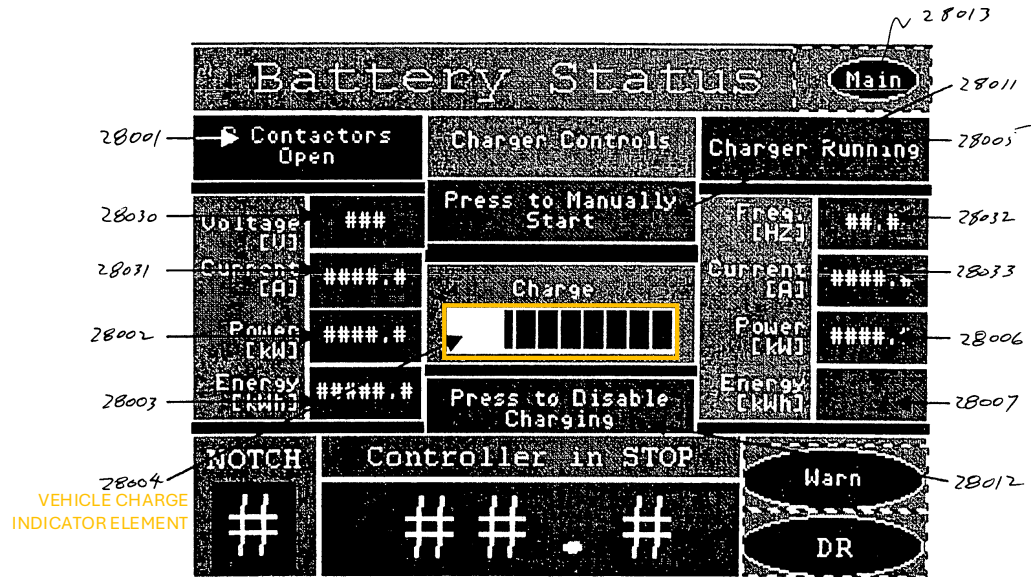


FIG. 28

Donnelly, FIG. 28, 23:19-20.

The “Battery State of Charge 28004” bar graph satisfies a *vehicle charge indicator element* because it is an element on the GUI (is a displayed field on the GUI) and indicates state of charge of “the energy storage unit” for the vehicle. *Donnelly*, 23:31-33; *cf.* ’338 *Patent*, FIG. 7 (RN 714), 14:59-61 (identifying “vehicle charge indicator” is 714, a bar graph); *Dec.*, 224-226.

Donnelly expressly discloses an exemplary “energy storage unit” is a battery, and the header for Fig. 28 is “Battery Status.” *Donnelly*, 23:16-19, FIG. 28. Therefore, field 28004 discloses the state of charge for a *battery*. *Dec.*, 227.

The bar graph of field 28004 illustrates two portions: (1) the filled-in portion comprising dark-colored rectangles; and (2) the unfilled portion comprising white

space. A POSITA would have reasonably understood or found obvious that because the bar graph of field 28004 depicts the “state of charge,” one of the portions indicates *an amount of charge residing in a battery of the electric vehicle*, and the other of the portions indicates *an uncharged capacity of the battery of the electric vehicle*. *Dec.*, 228-231.

Additionally, variable levels of a fillable object are commonly depicted via portions of a bar graph “filled in” versus “not filled in.” *Dec.*, 232. Because (1) field 28004 is a bar graph depicting the state of charge; (2) visual indicators representing an amount of a filled object were well known; and (3) Claim 1[h] does not recite any visual characteristics of the first and second portion, other than the information being indicated within the *vehicle charge indicator*, a POSITA would have found obvious one portion of the Donnelly bar graph represents the charged amount of the battery (e.g., dark portion), and the other, visually-contrasting portion represents the uncharged capacity of the battery (e.g., white portion). *Dec.*, 233-234.

(3) Motivation to Combine

A POSITA would have found it obvious and been motivated to modify Ferro-Oyobe-Donnelly’s touchscreen that presents a GUI (*see* Section V.A.9.b) to display both the current uncharged and charged capacity of the battery in a bar graph (*vehicle charge indicator element*), per Donnelly. *Dec.*, 235.

The modification would have simply required combining prior art elements (a GUI and GUI displaying a battery charge/uncharged level bar graph, per Donnelly) according to known methods to yield predictable results of a well-recognized, visual element (bar graph) for quickly viewing the charge level. *Dec.*, 238. Per Section V.A.9.c.1, Ferro already teaches processor 204 receiving information of the charge state of the battery. *Ferro*, [0112]. Donnelly teaches displaying both charge/uncharged levels via the bar graph. Therefore, the combination is simply displaying the charge/uncharged levels (taught by Donnelly) in a bar graph on a GUI (where Ferro is already modified to include a touchscreen display presenting a GUI, per Section V.A.9.b).

A POSITA would have been motivated to enable a user to view the current charge level before choosing charging preferences. *Dec.* 236-237. The user would appreciate viewing this information, helping them decide the amount of charge to specify, and allowing a better estimation of charging transaction cost. *Id.*

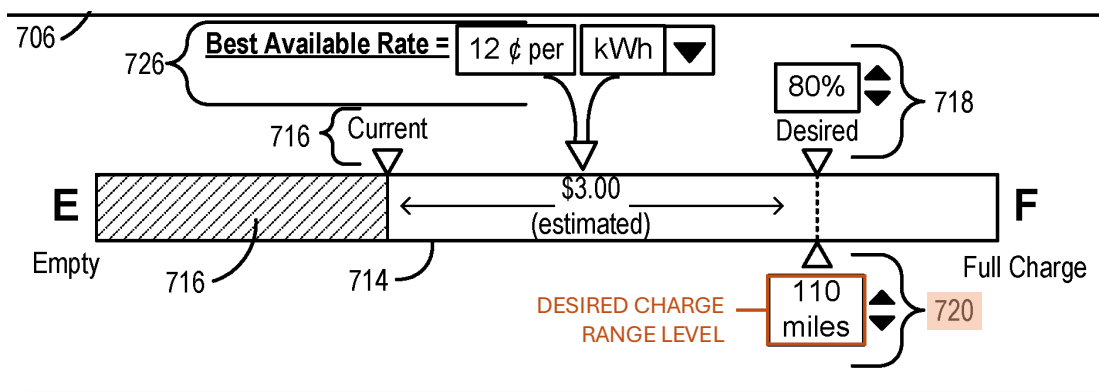
The modification would have had a REOS, as the modified Ferro includes a touchscreen display presenting a GUI (per Donnelly) and Ferro already teaches receiving information on the charge state of the battery. *Dec.*, 239. The display communicates with processor 204 (*Ferro*, [0040], [0162]), users enter charging preferences through the display ([0093]), and the processor 204 receives information about the battery charge level ([0112]). Thus, the modification only requires (1)

programming processor 204 to generate a GUI on the touchscreen that displays the bar graphic showing battery uncharged/charged amounts; and (2) programming processor 204 to use current battery charge information when generating the bar graphic. *Dec.*, 239.

d) Slider for Specifying an Amount of Charge

(1) '338 Patent's Slider

The '338 Patent describes “a desired charging level” may be “based on a desired distance of travel.”



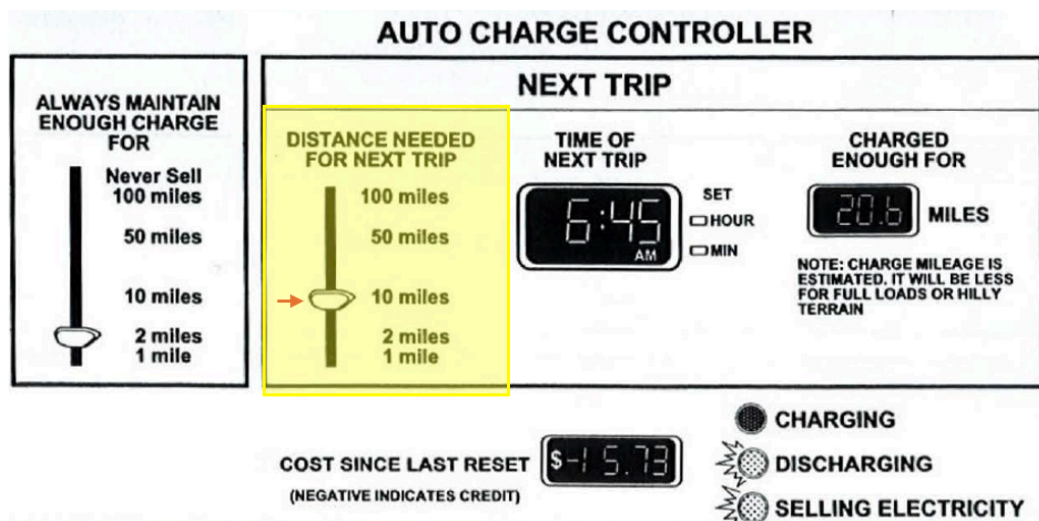
'338 Patent, FIG. 7 (excerpt) (720, desired charge level for a set range of 110 miles), 19:49-57, 15:1-11 (setting “desired charge range level 720 to match the desired distance”); *Dec.*, 240.

(2) Ferro's Teachings

Ferro teaches *an amount of charge may be specified* via user-input charging preferences including a minimum amount of charge and/or maximum amount of charge. *Ferro*, [0123]; *Dec.*, 241; Section V.A.9.c.1.

(3) Letendre's Teachings

Letendre teaches *a slider by which an amount of charge may be specified*, namely an “auto charge controller” “control panel” including a movable slider to “set [] the length of the expected next trip” (here, 10 miles) (the specified *amount of charge*):



Letendre, 18 and 20, 19 (“a control that the driver sets according to driving needs”); *Dec.*, 242-244 (citing *Kempton* (Ex. 1073), identified in *Letendre*, 19, as the above figure source, and which refers to the control as a “slider”).

Letendre’s control may be “physical, on the dash, or on a Webpage.” *Letendre*, 19-20. A POSITA would have understood or found obvious a selectable control (e.g., Letendre’s slider) on a Webpage is a selectable element on a GUI. *Dec.*, 245. Because the control is user-selectable on a Webpage displaying graphical elements, the control is a graphical element on a GUI. *Id.*

Letendre thus discloses a slider like that in the '338 Patent, namely a selectable control to indicate a desired level of charge (e.g., an *amount of charge* based on miles needed for travel). *Dec.*, 246.

(4) **Motivation to Combine**

A POSITA would be motivated and found it obvious to modify Ferro-Oyobe-Donnelly to include Letendre's graphical slider on the charge level bar graphic presented on the GUI, where the operator moves the slider to specify a desired charge. *Dec.*, 247. In the combination, (1) the Ferro display and I/O unit is already implemented using a touchscreen presenting a GUI (Section V.A.9.b); (2) the touchscreen already presents a GUI displaying the bar graph depicting the state of charge (Section V.A.9.c); and (3) the displayed bar graph is further modified to include a selectable slider to select Ferro's minimum and/or maximum charge amount preference, or Letendre's desired charged mileage. *Id.*

Letendre expressly motivates the combination, stating "it is essential that the driver be able to limit any draw down so travel is not affected." *Letendre*, 19. Letendre discusses "a control the driver sets according to driving needs" and provides the exemplary slider display discussed above. *Id.* Given Ferro teaches both vehicle battery charging/discharging and an on-board I/O device for managing preferences, a POSITA would have been expressly motivated to include an on-board GUI with a slider for indicating a desired charge level (maximum/minimum charge

level or set mileage), as such is “essential...so travel is not affected.” *Letendre*, 19; *Ferro*, [0093]; *Dec.*, 248.

The modification would have merely required applying a known technique (a slider adjusting a charge setting on a vehicle) to a known device (vehicle GUI showing a charge bar graphic) ready for improvement to yield the predictable results of easily allowing a user to choose a desired level of charge. *Dec.* 249. A POSITA would have appreciated simply sliding their finger across the GUI on the touchscreen to indicate the amount of charge preference, rather than repeatedly pressing the screen to enter a percentage charge. *Id.* Sliders on GUIs were known to make inputting information easier, and thus a POSITA would have been motivated to include a slider on the bar graph to allow a user to easily indicate the amount of charge. *Id.*

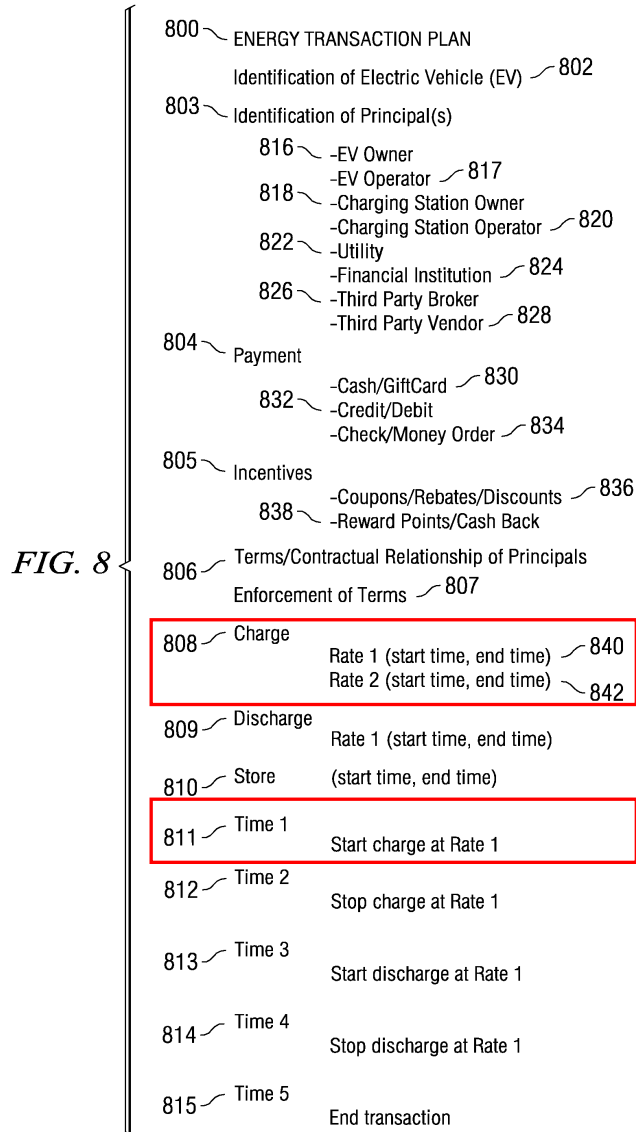
The modification would have had a REOS, given the modified Ferro system already includes a touchscreen with a GUI for inputting charging preferences, and these preferences include a user-indicated “amount of charge,” (i.e., minimum and maximum). *Ferro*, [0123]; Section V.A.9.b. GUI slider graphics allowing for parameter adjustment were well-known. *Dec.*, 250.

10. 1[i]: “charge, in accordance with the charging schedule, the electric vehicle”

Ferro teaches *charge...the electric vehicle*. Ferro’s vehicle 116 “receives electricity” from “an electric grid at a charging station 118,” so charge flows from

“charging station 118 into electric vehicle to charge electric vehicle 116.” *Ferro*, [0035]-[0036]. Ferro teaches “the process for generating dynamic energy transaction plan 424 begins when electric vehicle arrives at charging station 403 and indicates an intention to charge...” *Ferro*, [0109]. In response, planner 402 uses the preferences and electricity price to create transaction plan 424. *Ferro*, [0110], [0113]; Claim 1[g]. Planner 402 then submits the transaction plan to an “energy transaction execution engine for implementation once the vehicle is connected” at the charging outlet “at charging station.” *Ferro*, [0113]. “The charging phase begins when energy transaction engine 316” “initiates the request to begin charging the electric vehicle.” *Ferro*, [0060]. “During the charging phase, electricity flows to...the electric vehicle.” *Ferro*, [0051]. Because the vehicle’s battery is charged during the charging phase, Ferro teaches *charg[ing]* the electric vehicle. *Dec.*, 251.

Ferro also teaches the *charge is in accordance with the charging schedule*. Transaction plan 424 includes “charge 808” field that “orders the flow direction of electricity from the charging station into the electric vehicle **during one or more specified time intervals.**” *Ferro*, [0136], [0138]-[0139].



Ferro, FIG. 8. Therefore, transaction plan 424 executed by execution engine 316 includes the schedule, i.e., the intervals 811-815, for charging. *Dec.*, 252-253.

Ferro teaches the memory stores the instructions to cause the processor to *charge* the vehicle. Per Claim 1[d], processor 204 executes all instructions/software for carrying out the dynamic energy transaction plan system. *Ferro*, [0039]. A POSITA would have understood or found obvious execution of the instructions

causes processor 204 to *charge...the electric vehicle* by causing execution engine 316 to initiate the request to begin charging. *Ferro*, [0060], [0073]; *Dec.*, 254-255.

11. *1[j]: “receive a selection of a mode of operation of the electric vehicle that is defined by a stored temperature at which a temperature control system of the electric vehicle is to be set to maintain the interior temperature of the electric vehicle while the electric vehicle remains in a parked state”*

a) **Zeigler’s Teachings**

The modified *Ferro* system combined with *Zeigler* renders obvious Claim 1[j].

Zeigler teaches an HVAC system operating when a vehicle is in an off, no-idle condition. *Zeigler*, 5:65–6:1, 2:37-52, 10:12-16. Power generation management controller 30 controls HVAC system 10 to utilize battery power when the “vehicle is parked and the engine is turned off.” *Zeigler*, 6:1-14, 7:23-47, 5:37-40, 9:43-61, FIGs. 1-2, 5. Controller 30 monitors the exterior and interior temperature to “determine a compressor capacity to achieve and **maintain the interior set point temperature.**” *Zeigler*, 8:21-27. “System status display and control inputs may be provided between the controller 30 and the operator via a user input/output display 78 within the passenger compartment.... Control parameters from the user will typically include the desired operating mode of the HVAC system including off, heat, and cool **modes of operation.**” *Zeigler*, 9:3-15, 9:38-42 (operating mode reported to display 78). Controller 30 processes “user input to determine the

operational mode of the HVAC system” and “to maintain the interior cab temperature” at the set temperature. *Zeigler*, 9:42-61.

Thus, Zeigler teaches:

- *receiv[ing] a selection of a mode of operation of the electric vehicle* (“desired operating mode” or “operational mode”; *Zeigler*, 9:3-15, 9:43-45) via I/O display 78;
- The mode of operation is *defined by a stored temperature* (user inputs “operational mode” and controller operates compressor to “maintain the cab temperature” at the set point; *Zeigler*, 9:42-61, 8:21-27, 9:13-15);
- *at which a temperature control system of the [] vehicle* (HVAC system 10);
- *is to be set to maintain the interior temperature of the []vehicle while the []vehicle remains in a parked state* (HVAC system implementing the selected operational mode to maintain the set point when the engine is in an off (no idle, parked state) condition; *Zeigler*, 9:42-61, 7:42-47, 8:21-27).

Dec., 257-262.

A POSITA would have understood or found obvious the set temperature is *stored*, as controller 30 monitors the actual interior temperature to maintain the set temperature. *Dec.*, 262; *Zeigler*, 8:23-27, 9:59-60.

b) Combining Zeigler's HVAC System into Ferro's Vehicle

A POSITA would have found it obvious and been motivated to utilize an electric-powered HVAC when the car is parked, per Zeigler, in Ferro's electric vehicle. *Dec.*, 263.

A POSITA would have found obvious Ferro's vehicle contains an HVAC system, as vehicles were well-known to include such for heating/cooling the vehicle's interior. *Dec.*, 263. Should PO argue it would not have been obvious for Ferro's vehicle to include an HVAC system, it would alternatively have been obvious to add an HVAC system, such as Zeigler's, to Ferro's electric vehicle. *Id.* Zeigler teaches its system can be "integrated in a vehicle's HVAC system" or, alternatively, installed in "addition to the currently existing HVAC system that is operable only during engine on operation." *Zeigler*, 10:12-24. In the proposed modification, the electric-powered HVAC system for use when the car is parked is either integrated as an OEM for the Ferro electric vehicle or installed after-market, per Zeigler. *Dec.*, 264.

Zeigler expressly motivates the combination, noting the "need" for an HVAC system "able to provide conditioning of the interior of the vehicle, not only during periods of engine operation, but also during engine off or no-idle conditions." *Zeigler*, 2:17-21, 1:63-2:6; *Dec.*, 267. The modification requires applying Zeigler's known technique (using an HVAC system during parked no-idle conditions) to a

known device (Ferro's electric vehicle), ready for improvement to yield predictable results of making passengers in a parked vehicle more comfortable. *Dec.*, 265.

The modification would have had a REOS, requiring only (1) programming the GUI of the modified Ferro system to include the user-selectable HVAC operational mode; (2) causing the touchscreen to communicate the mode selection to the processor 204; (3) programming the processor 204 to implement the HVAC mode, which maintains a stored interior temperature (Section V.A.11.b); and (4) include and connect any HVAC components to the processor 204 that are necessary for maintaining the temperature while the car is parked and turned off, such that the processor 204 instructs operation in the selected HVAC mode. *Dec.*, 263, 265-266.

c) Modifying Ferro's Processor to Control the HVAC System Per Claims 1[j]-1[l]

In the combination, Ferro's processor 204 (*processor*) is modified to receive the selected mode of operation (Claim 1[j]), display the status of the selected mode (Claim 1[k]), and operate the HVAC system (Claim 1[l]), per Zeigler. *Dec.*, 268. Zeigler teaches controller 30 "utilize[s] electric power from the electric power battery storage system 34 to drive the compressor" to cool/heat when the engine is off. *Zeigler*, 7:19-47, 6:1-14. Controller also monitors the available battery power and disables the HVAC system, should the battery power fall below a predetermined set point, to maintain sufficient battery power "that may be needed for other functions of the vehicle." *Zeigler*, 7:51-64, 8:14-20.

A POSITA would have found it obvious to modify Ferro's processor 204 to control the HVAC system, given Zeigler's teaching of controller 30 controlling the HVAC system and monitoring battery power usage. *Dec.*, 269-270. Ferro's on-board processor 204 already receives the "existing amount of charge in the electric vehicle," indicating the processor also monitors battery power. *Ferro*, [0057], [0101] ("the state information may describe the current level of charge..."); *Dec.*, 270. Therefore, modifying Ferro's processor to further control the HVAC system based on battery usage, per Zeigler, would have advantageously utilized the Ferro processor to perform functionality consistent with monitoring and maintaining battery charge levels already performed by the processor. *Dec.*, 274-275.

There would have been a REOS in the modification, at least because Ferro teaches processor 204 may be a set of processors, a multi-processor core, and other configurations of processing systems, indicating to a POSITA that Ferro contemplates the processor performing multiple functions. *Ferro*, [0040]; *Dec.*, 272. Ferro's processor is also already configured to receive battery information, indicating to a POSITA that it was known to communicatively connect the Ferro data processing system with a battery information source. *Dec.*, 271. Therefore, any modification to Ferro only requires coupling the processor with the battery driving the HVAC system and storing executable program instructions for performing Zeigler's HVAC control. *Dec.*, 272-273. Given Ferro teaches storing "[i]nstructions

for the operating system and applications or programs,” and Zeigler teaches intelligent controller 30 operating the HVAC system and monitoring “the availability of power sources on the vehicle,” a POSITA would have expected success in modifying Ferro’s processor to perform Zeigler’s functionality. *Ferro*, [0044]; *Zeigler*, 6:5-8; *Dec.*, 272-273.

12. 1[k]: “display via the graphical user interface an indication of a status of the selected mode of operation of the electric vehicle”

The modified Ferro system combined with Zeigler renders obvious Claim 1[k].

a) Zeigler’s Teachings

Zeigler teaches displaying the selected mode of operation of the electric vehicle on the “user input/out display 78.” *Zeigler*, 9:3-15, 9:24-28 (teaching “mode selection” “displayed on the user I/O display 78”), 9:38-42 (disclosing “operating mode” as a parameter “reported to the display 78”).

In the combination, Ferro modified to include a GUI (per Donnelly; Claim 1[h]) further displays the mode of operation, per Zeigler. *Dec.*, 277. A POSITA would have understood Zeigler’s “mode selection” and “operating mode” on I/O display modified to display on the Donnelly GUI teaches or renders obvious *display...an indication of a status of the selected mode of operation. Zeigler*, 9:40; *Dec.*, 278. Additionally, Zeigler’s I/O display 78 provides both inputting and

outputting information, indicating that “mode selection” and “operating mode” are output on the display, i.e., displayed.

Additionally, displaying modes of operation selectable by a user on a GUI, and then an indication of the particular mode once selected, would have been obvious. *Dec.*, 279. Displays commonly display an indication of the selected mode, e.g., an HVAC system displays when the A/C is selected. *Id.*

b) Motivation to Combine

A POSITA would have found it obvious and been motivated to display the mode of selection on Ferro’s display (modified with Donnelly’s GUI), per Zeigler. Such a modification comprises a known technique (displaying a mode of operation of a vehicle’s HVAC system) improving similar devices (Ferro’s modified touchscreen) in the same way, such that a parked vehicle’s passenger may view the mode. *Dec.*, 280. A POSITA would have been motivated to display an indication of the selected mode on the GUI to provide a user with confirmation their selected mode choice was being implemented. For example, a driver may confirm the HVAC mode is on before leaving a passenger in the parked vehicle, providing peace-of-mind the passenger will stay comfortable while they are away. *Id.*

The modification would have had a REOS because only additionally programming the Ferro processor 204 to cause the GUI (per Donnelly) to display the selected HVAC mode of operation on the touchscreen is needed. *Dec.*, 281.

13. 1[l]: “wherein the selected mode of operation comprises maintaining the interior temperature of the electric vehicle suitable for a pet located within the electric vehicle”

a) Zeigler’s Teachings

Zeigler teaches selecting an operational mode *maintaining the interior temperature of the electric vehicle suitable for a vehicle occupant*. Claim 1[j]; *Zeigler*, 1:63–2:21. The claimed suitability for a *pet* is a claimed result or use that should not be given patentable weight, especially as suitability for a pet does not distinguish the structural limitations of the claimed system. MPEP 2114(II). Regardless, it would have been obvious for Zeigler’s selected mode of operation to also maintain a suitable temperature for a pet. *Dec.*, 282.

b) Galvez-Ramos’s Teachings

Additionally or alternatively, Galvez-Ramos expressly teaches maintaining an interior temperature suitable for a *pet*. Galvez-Ramos teaches a climate control system for parked automobiles when the engine is turned off to maintain a suitable temperature for persons and **pets**. *Galvez-Ramos*, [0036]-[0037], [0012], [0026], [0029], [0043]-[0044], Abstract, Claim 1; *Dec.*, 283.

c) Motivation to Combine

Section V.A.12 provides an MTC for Zeigler and Section V.A.14.c provides an MTC for Galvez-Ramos.

14. 1[m]: “operate the temperature control system of the electric vehicle in accordance with the selected mode of operation for a duration of time”

The modified Ferro system combined with Zeigler and Galvez-Ramos renders obvious Claim 1[m]. In the combination, Ferro’s electric vehicle is modified to include the Zeigler HVAC system (Claim 1[j]) and further modified to operate *for a duration of time*, per Galvez-Ramos.

a) Zeigler’s Teachings

Zeigler teaches when the user selects a “cooling mode of operation,” the controller operates the HVAC system (by modulating speed/capacity of a compressor) “to maintain the cab temperature” at the set point temperature. *Zeigler*, 9:43-61; Claims 1[j]-1[k]; *Dec.*, 286. Therefore, Zeigler teaches *operate the temperature control system of the [] vehicle in accordance with the selected mode of operation*, e.g., operating the HVAC system to cool the vehicle interior when the “cooling mode of operation” is selected.

Section V.A.12 provides an MTC for the modified Ferro processor 204 controlling the Zeigler HVAC system. Thus, the *processor* performs the *operat[ing]*. *Dec.*, 287.

b) Galvez-Ramos’s Teachings

Galvez-Ramos teaches a temperature relay TS2 set to close when the temperature is approximately 85°F. *Galvez-Ramos*, [0026]. “Timer button switch

‘T2’, will close when pushed by the driver and will remain in this position **for 60 minutes** after the circuit has been closed by Relay TS2 (7).” *Galvez-Ramos*, [0029]. Cool air is circulated until “**the preset time of 1 hr** (or similar value) has been met.” *Galvez-Ramos*, [0042]-[0044]. *Galvez-Ramos* thus teaches operating a temperature control system in a selected mode *for a duration of time*, e.g., the preset time of 1 hour. *Dec.*, 288.

c) Motivation to Combine

A POSITA would have found it obvious and been motivated to modify Ferro (modified to include Zeigler’s HVAC system) to operate to maintain the temperature suitable for a pet (in addition to Zeigler’s teaching of suitability for a person) and for a duration of time, such as 1 hour, per *Galvez-Ramos*. *Dec.*, 289. Such modification uses a known technique (using A/C for a preset time duration) to improve similar devices (vehicle HVAC systems implemented when the car is off) in the same way by providing a set operating duration to ensure the battery is not depleted. *Dec.*, 289.

The modification would have had a REOS, only requiring (1) including a clock/timer connected to the Ferro processor 204; and (2) programming the processor to operate the HVAC system for the preset time duration. *Dec.*, 290.

15. *1[n]: “determine that an amount of charge residing in a battery of the electric vehicle has reached a predefined threshold; and send an alert to an operator of the electric vehicle indicative of the charge residing in the battery having reached the predefined threshold.*

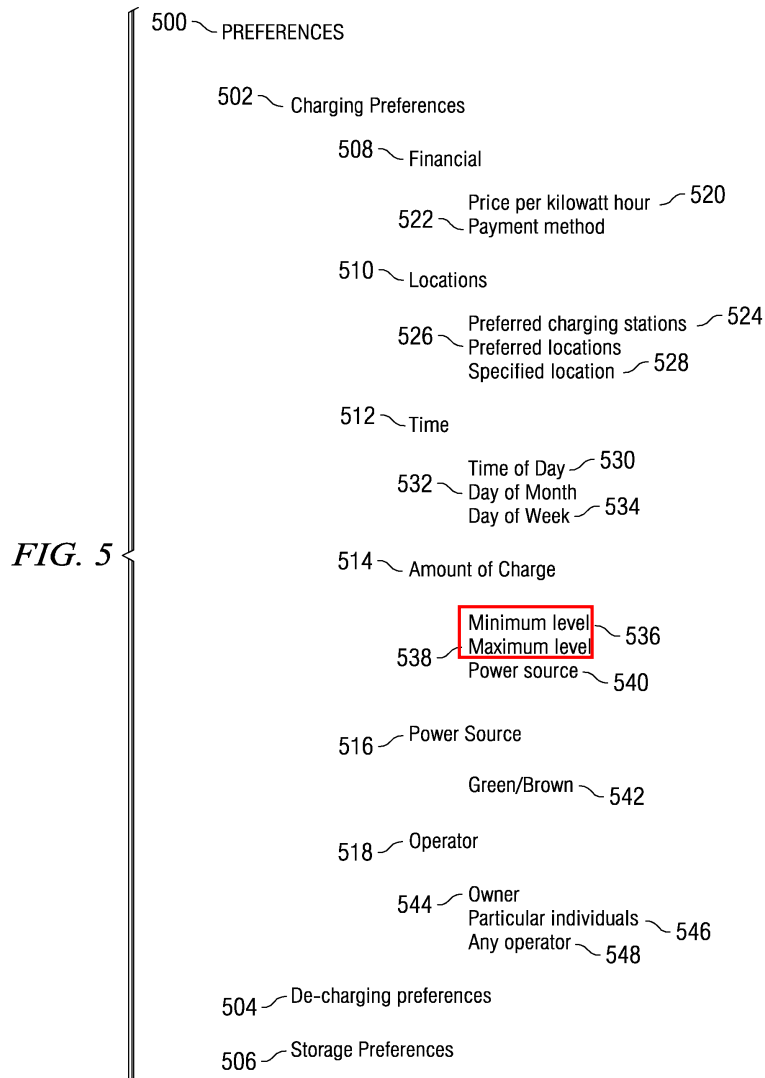
The modified Ferro system combined with Donnelly renders obvious Claim 1[n].

The modified Ferro system displays an amount of charge residing in a battery of the electric vehicle. Section V.A.9.c.

a) Ferro’s Teachings

Ferro teaches processor 204 querying energy data services 418 to gather information including “the current level of charge on one or more batteries on electric vehicle 400.” *Ferro*, [0101], [0112]. Ferro therefore teaches *determine [] an amount of charge residing in a battery of the electric vehicle. Dec., 292.*

Ferro also teaches an operator entering “amount of charge” preferences, including a “minimum level” and “maximum level” of charge. *Ferro*, [0123], [0084].



Ferro, FIG. 5.

Ferro’s dynamic energy transaction plan 424 is created “based on set of preferences 410...and/or current state of devices 422.” *Ferro*, [0102]. The plan 424 “manages every aspect of charging electric vehicle.” *Ferro*, [0103]. Because the dynamic energy transaction plan is generated by processor 204 based on the preferences, such as maximum and minimum, and governs charging, Ferro at least

indicates processor 204 monitoring the battery charge as it approaches the minimum or maximum charge levels. *Dec.*, 293-294.

b) Donnelly's Teachings

Donnelly teaches setting “upper and lower set points that define the operational range of the energy storage unit.” *Donnelly*, 13:57-62. Donnelly teaches a “logic controller” that “[m]easure[s] battery volts or the state of charge of the battery or both 210002 to determine if charging generator needs to be on or off” and **“indicate[s] a warning 21031 when the battery voltage or state of charge or both are below the lower set point.”** *Donnelly*, 18:50-67. Donnelly's display screens include a Battery Status Screen displaying battery voltage 28030, Battery Monitor Screen (FIG. 29), and Warnings Screen (FIG. 34) that “displays minor alarms” including “a low voltage warning field 34007 indicating a low voltage on the energy storage unit.” *Donnelly*, 23:16-26, 23:66-67, 25:4-16, FIGs. 28-29, 34; *Dec.*, 295-296.

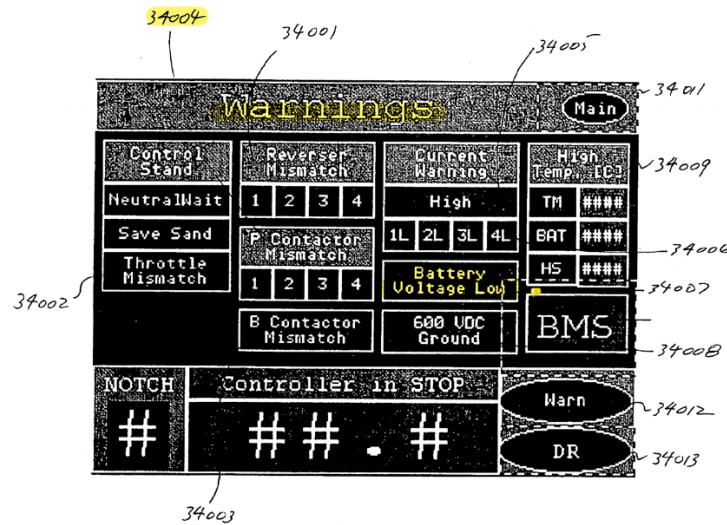


FIG. 34

Donnelly, FIG. 34. Because Donnelly teaches indicating a warning when the voltage or state of charge is below the lower set point, and further illustrates a Warnings Screen with a warning indication of “Battery Voltage Low,” a POSITA would have understood from Donnelly’s collective teachings the warning displayed on the Warnings Screen of Fig. 34 is the same warning discussed at Donnelly, 18:65-67 of the voltage/state of charge below the set point. *Dec.*, 297.

Donnelly thus teaches Claim 1[n], namely determining the battery voltage or state of charge (*amount of charge residing in a battery*) is “below the lower set point” (*has reached a predefined threshold*), and sending a “warning” via the display (*send an alert to an operator*) indicating the battery voltage is low (*indicative of the charge residing in the battery having reached the predetermined threshold*). Donnelly, 18:65-67, 25:15-16, FIG. 34; *Dec.*, 298.

c) Motivation to Combine

A POSITA would have found it obvious and been motivated to modify Ferro to include Donnelly's low-voltage warning responsive to determining the battery voltage/state of charge is below a lower set point. *Dec.*, 299.

In the combination, Ferro's processor 204 (*processor*) is modified to determine the battery charge has reached a preset point and send an alert. *Id.* A POSITA would have found it obvious to modify Ferro's processor 204 to determine the battery charge, as already taught in Ferro, has reached a *predefined threshold*, per Donnelly, especially given Ferro's plan 424 already monitors the charge approaching minimum/maximum charge levels. Section V.A.15.a; *Dec.*, 300. Ferro, as modified with Donnelly's GUI, already displays graphical elements on the GUI, so sending a warning via the communication unit 210 and/or fabric 202 for GUI display would have entailed simple programming. *Id.*

Such modification would merely require using known techniques (determining when battery charge has reached a set point and alerting a user) to improve similar devices (vehicles powered by batteries) in the same way by determining and notifying a user when the battery charge is low. *Dec.*, 301. It would have been advantageous to receive a warning when the battery charge level reached a set point so the user can ensure enough charge remains for vehicle motive power and the batteries do not lower to damaging or dangerous levels. *Id.* Notifying of a

low charge level allows the user to not consciously monitor the battery level, making the transaction system more user-friendly, and allows the user time to find a battery charging station, like a low fuel tank notification for a gas-powered vehicle. *Dec.*, 302.

There would have been a REOS in the combination for the above reasons. Additionally, processors were known to monitor battery levels and notify when charge reaches a certain lower threshold. *Dec.*, 303. Ferro's processor already receives the current charge and identifies minimum charge levels, so minimal additional operations need be performed, such as comparing the charge level to the set minimum level or set point and indicating a warning on the Ferro GUI (as modified by Donnelly, per Claim 1[h]). *Dec.*, 304.

B. Claim 2

In the combination of Claim 1, the system includes an on-vehicle GUI. Claim 1[h].

Ferro teaches data processing system (*electrical charging system*) connects to remote devices (e.g., computer) via a network, such as the Internet. *Ferro*, [0106], [0042], [0027]; *Dec.*, 307. Ferro also teaches a principal (user) inputting preferences for managing charging, where the preferences are transferred from a remote preference service or in-vehicle preferences service to the on-board planner via a

wireless and/or wired connection. *Ferro*, [0093], [0091], [0064], [0083]. Therefore, Ferro contemplates transferring/receiving data via a wireless network. *Dec.*, 308.

Letendre teaches “charge controller,” including the slider, being “on a Web page.” *Letendre*, 19-20.

A POSITA would have found it obvious to *display a web page* via the on-board GUI, per Letendre. *Dec.*, 310. Vehicles including an on-board display capable of displaying webpages were known well prior to the '338 Patent, and vehicles displaying a webpage-based GUI was also known. *Dec.*, 310, 312. Ferro already includes the hardware and software for communicating with a remote server or computer via a wireless network, including the Internet. Therefore, the combination simply entails communicating the web-page based GUI from a remote server to the touchscreen via Ferro’s Internet connection. *Dec.*, 311.

A POSITA would have been motivated to make the modification so various principals of the charging transaction, both at the vehicle and remote, would have access to the same web-based GUI. *Ferro*, [0091], [0083], [0093]; *Dec.*, 312. Therefore, having the GUI web-based at a remote server would have standardized the preference interface for remote users and users in the vehicle. *Id.*

There would have been a REOS, given the system already contains communications unit 210 for wirelessly connecting with remote devices, is connected to the Internet via network 102, and the ubiquity of web-based GUI

interfaces displayed on-board vehicle displays as of the '338 Patent. *Ferro*, [0038], [0042]; *Dec.*, 313. Thus, a POSITA would simply have had to program the processor to access the web page via network 102 to display the GUI. *Id.*

C. Claim 3

The modified Ferro includes a touchscreen display presenting a GUI. *See* Section V.A.9.b. Because the Ferro display (implemented with Donnelly's touchscreen display presenting the GUI) is on-board the vehicle, the GUI *forms a part of the electric vehicle*. *Dec.*, 315.

D. Claim 4

The '338 Patent describes exemplary “vehicle diagnostics” include “alarm conditions” and “maintenance reminders.” *'338 Patent*, 15:59-61.

Donnelly teaches a GUI that displays a Warnings Screen 25006. *Donnelly*, 21:39–22:1, FIG. 34. Warnings Screen displays a warning that is a maintenance notification, such as “high temperature” or high/low current indicating an unacceptable current on a motor. *Donnelly*, 25:12-21.

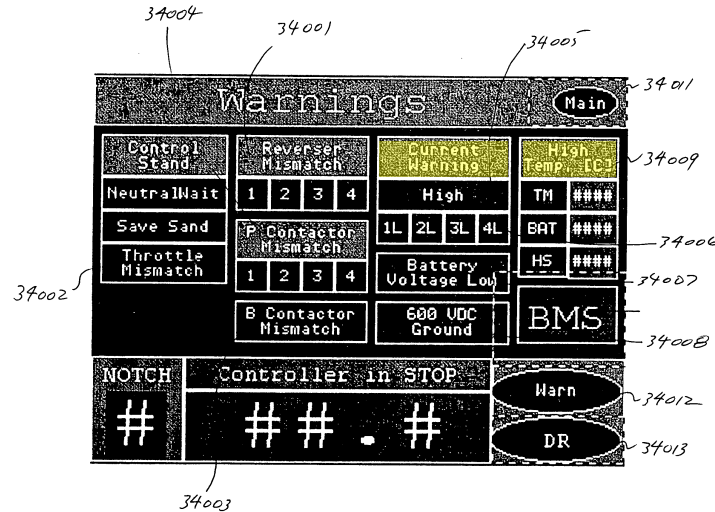


FIG. 34

Donnelly, FIG. 34. Donnelly teaches Warnings Screen displays “minor alarms that have been detected.” *Donnelly*, 25:4-5. A POSITA would have understood or found obvious that a minor alarm indicating a dangerous condition, such as high temperature of the battery or high/low current, is a *maintenance notification*. *Dec.*, 317-318.

A POSITA would have found it obvious and been motivated to modify the GUI of the charge transaction system to receive a maintenance notification, per Donnelly. *Dec.*, 319. A POSITA would have appreciated the GUI presenting a warning so the user could correct any issues to maintain the vehicle and its components (e.g., battery) properly. *Dec.*, 319-320 (opining displaying battery information on a single display presenting a GUI would have been user-friendly). There would have been a REOS, given the data processing system already receives information regarding the battery, such as low voltage (*see* Claim 1(n)), and the

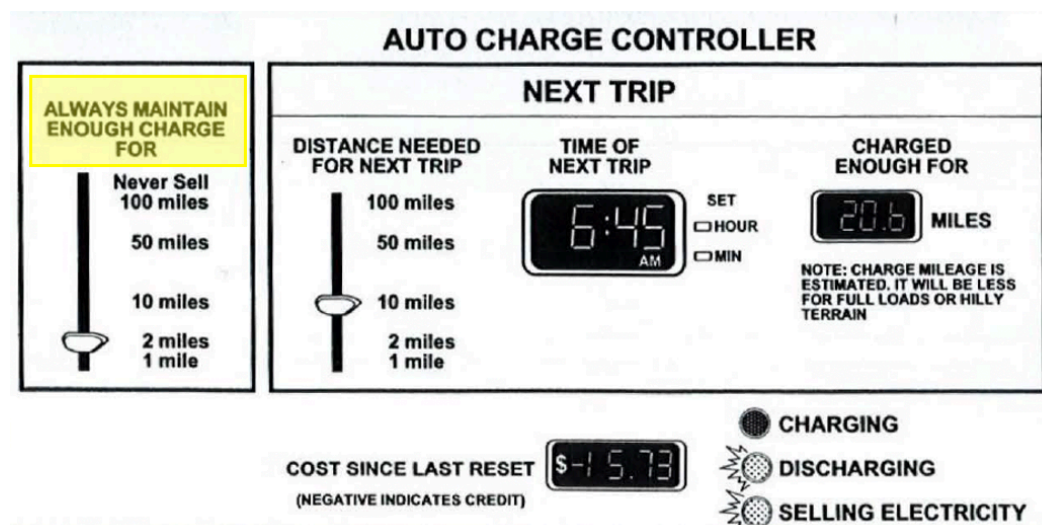
modified Ferro already includes a display presenting a GUI with information on the battery. *See* Claim 1[h]’s Mapping; *Dec.*, 321. Thus, the modification would simply require the processor 204 receiving additional information regarding battery health, such as temperature of the battery, or operating current levels as taught by Donnelly, and displaying such information on the GUI. *Id.*

E. Claim 6

1. 6[a]

The charging schedule is developed by the dynamic energy transaction planner 402 using charging preferences. Claim 1[f].

Letendre teaches a minimum distance (in miles) the vehicle battery should “always maintain enough charge” to travel:



Letendre, 18.

A POSITA would have understood or found obvious the “always maintain” slider entry is a type of *factor of safety*, as a battery level for a certain distance is

always maintained for reserve travel. *Dec.*, 324-326 (comparing '338 *Patent*, 15:41-44, 19:52-57, with Ferro's "always maintain" entry).

A POSITA would have found it obvious and been motivated to modify the Ferro data processing system to include an "always maintain" charge entry based on distance for the express benefit taught in Letendre that "[i]t is essential that the driver be able to limit any draw down so travel is not affected." *Letendre*, 18; *Dec.*, 327-329. A POSITA would have appreciated allowing a user to enter a mileage distance, in addition to a "minimum" charge level in Ferro's charging preferences, as users more readily know their travel distance. *Dec.* 328. The modification would have had a REOS, given Ferro already teaches basing the transaction plan on a vehicle operator's charging preferences. Claim 1[g]. Thus, the combination simply requires programming processor 204 to receive a factor of safety input (e.g., "always maintain" mileage input) from the user as a charging preference for the transaction plan. *Dec.* 330.

2. 6[b]

See Claim 1[i], 1[e]. Ferro teaches execution engine initiating charging and transaction plan "order[ing] the flow direction of electricity from the charging station into the electric vehicle." *Ferro*, [0060], [0138], [0113]. Further, "[e]lectric vehicle 116 and charging station 118 send and receive data associated with the charging of electric vehicle...." *Ferro*, [0037]. Therefore, a POSITA would have

understood or found obvious that processor 204, which is executing the data transaction plan (*Ferro*, [0044]), *transmit[s] a control signal* to the charging station (*parking space charge device*) to initiate charging. *Dec.*, 331-334.

F. Claim 7

The modified *Ferro* contains an “always maintain” mileage input as a charging preference; thus, the *one or more charging preferences comprise the factor of safety*. Claim 6[a].

G. Claim 9

Ferro’s charging station 118 is configured to transfer electric energy to electric vehicle 116 “via **wireless** energy transfer” (*wireless charging device*), and thus the system *conducts charging of the electric vehicle through a wireless charging device*. *Ferro*, [0036]; *Dec.*, 336.

H. Claim 10

1. 10[Pre]

Ferro teaches an *electrical charging method*. *Ferro*, Abstract, [0012]. See Claim 1[Pre].

2. 10[a]

Claims 1[a], 1[e].

3. 10[b]

Claims 1[b], 1[f].

4. 10[c]

Claims 1[c]-1[d], 1[g].

5. 10[d]

Claims 1[c]-1[d], 1[i].

6. 10[e]

Claim 1[h].

7. 10[f]

Claims 1[h], 1[j]. The modification of the Ferro system with Zeigler includes the GUI *receiving* the HVAC operational mode. *Dec.* 343.

8. 10[g]

Claims 1[h], 1[k].

9. 10[h]

Claims 1[h], 1[l].

10. 10[i]

Claims 1[c]-1[d], 1[m].

11. 10[j]

Claims 1[b]-1[d], 1[n]. The mapping for Claim 1[n] addresses the alert sent *via the communication device*.

I. Claim 11

Claim 2.

J. Claim 12

Claim 3.

K. Claim 13

Claim 4.

L. Claim 15

Claim 6.

M. Claim 16

Claim 7.

N. Claim 18

Claim 9.

O. Claim 19

1. 19[Pre]

Claim 1[Pre].

2. 19[a]

Claim 1[a].

3. 19[b]

Claim 1[b].

4. 19[c]

Claim 1[c].

5. 19[d]

Claim 1[d].

6. 19[e]

Claim 1[e].

7. 19[f]

Claim 1[f].

8. 19[g]

See Claim 1[g], which maps *at least one current value of a dynamic attribute of an electric charge provider*, namely a current price of electricity charged by an electric energy provider, such as a utility company providing power from a power grid. *Ferro*, [0037], [0066]. The current price of electricity at a given time is a *first value* of the dynamic attribute and is *determine[d]* by *Ferro*'s processor 204. *Dec.*, 362-363; Claim 19[j]-[k].

9. 19[h]

Claim 1[g].

10. 19[i]

Claim 1[i].

11. 19[j]-[k]

Ferro teaches continuously updating the cost of electricity to *retrieve a second value of the at least one dynamic attribute*, namely an updated current price of electricity. Specifically, *Ferro* teaches planner 402 “receives set of current state of devices updates 437” and “[i]n response to one or more updated...changes in device state” (i.e., changes in electricity cost) “...modifies dynamic energy transaction plan

424 to create updated dynamic energy transaction plan 438.” *Ferro*, [0114], [0073]-[0076].

Ferro provides an example of a user parking their car for two weeks at an airport. *Ferro*, [0115]. During this time, planner 402 “monitors the price of electricity and charges electric vehicle 400 when the price of electricity falls below a low price threshold.” *Id.* When the price of electricity is high, the planner 402 discharges electricity back to the power grid “for a profit.” *Id.* *Ferro* teaches the planner 402 “continuously sends requests for updates to the” energy data services or, alternatively, the services “send the updates in response to an update or change occurring.” *Ferro*, [0116]-[0117].

Ferro thus teaches Claim 19[j] because *Ferro* continuously updates the price of electricity by processor 204 retrieving (either by requesting or being sent) updated price information (i.e., *retrieve a second value*). *Dec.*, 366-367.

Ferro also teaches Claim 19[k] because *Ferro* regenerates the transaction plan instructing when and at what price to charge the vehicle based on the updated current electricity price. *Ferro* teaches modifying plan 424 to create updated plan 438. *Ferro*, [0114]. “FIG. 12 is a flow chart illustrating a process for generating an updated dynamic energy transaction plan”:

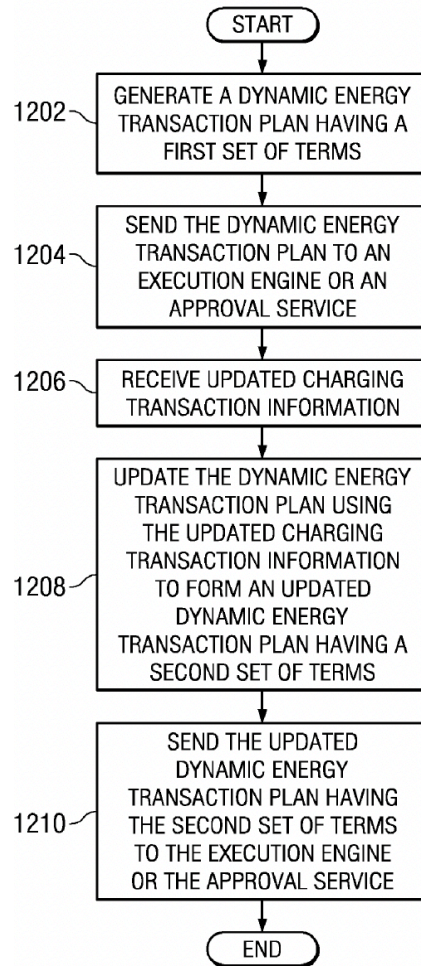


FIG. 12

Ferro, [0148], FIG. 12.

Ferro teaches generating a plan “having a first set of terms” based on charging preferences, device capabilities, and/or current state of device information. *Ferro*, [0149]. The plan with the first set of terms is sent to the execution engine 316 for execution. *Id.* As discussed for Claim 1[i], execution engine initiates the charging, i.e., *charge[s] the vehicle in accordance with the charging schedule*, recited in Claim 19[i]. *Ferro*, [0060].

The planner “monitor[s] for updates or changes to the charging transaction information.” *Ferro*, [0149]. Once updates are received, including updated device state information (e.g., electricity price), the planner updates the plan to “include[] a second set of terms.” *Ferro*, [0150]-[0151]. The plan with the second set of terms is then sent “to an execution engine.” *Ferro*, [0150].

Because *Ferro* teaches updating the transaction plan with the updated cost of electricity and then executing the updated plan, i.e., charging the vehicle according to the updated plan, *Ferro* teaches Claim 19[k]. *Dec.* 368-369.

12. 19[l]

Claim 1[h].

13. 19[m]

Claim 1[j].

14. 19[n]

Claim 1[k].

15. 19[o]

Claim 1[l].

16. 19[p]

Claim 1[m].

17. 19[q]

Claim 1[n].

P. Claim 20

Claim 2.

Q. Claim 21

Claim 3.

R. Claim 22

Claim 4.

S. Claim 24

Claim 6.

T. Claim 25

Claim 7.

U. Claim 27

Claim 9.

VI. GROUND 2: OBVIOUSNESS OF CLAIMS 5, 8, 14, 17, 23, AND 26

A. Claims 5, 14, 23

The modified Ferro includes a touchscreen display presenting a GUI. Claim 1[h]. Knockart teaches a removable personal device communicating with an in-vehicle system and providing a touchscreen display. *Knockart*, 2:46, Abstract, 4:32-67, FIGs. 1, 3-6 (FIGs. 5-6 disclosing communication with onboard computer), 13:57-60. The removable device may communicate with the vehicle system via “wireless communication.” *Knockart*, 7:1-9. The removable personal device may be a “cellular telephone” or a PDA (e.g., PALM PDA). *Knockart*, 12:38-41, 6:39-

48; *Dec.*, 383-384 (explaining PDAs often included telephone capabilities and thus were considered *smartphones*).

A POSITA would have been motivated and found it obvious to adapt the GUI to be displayed on a removable smartphone. *Dec.*, 385. A POSITA would have appreciated displaying the GUI on a removable device would allow the user to view charging information when they are away from the vehicle. *Ferro*, [0032]-[0033], [0037], [0064]; *Dec.* 386. There would have been a REOS, as the phone already includes a touchscreen that receives “manual input.” *Knockeart*, 2:46-50, 4:57-59, *Dec.*, 387. The modification simply requires programming the processor of modified *Ferro* to display the GUI on the graphical touchscreen of *Knockeart*’s phone, through wireless communication, which is within a POSITA’s expertise. *Dec.*, 388.

B. Claims 8, 17, 26

The GUI in the modified system is adapted to display an alert. *See* Claim 1[n]. Given the same GUI is adapted to be displayed on *Knockeart*’s smartphone, the *alert* is *sent to a smartphone*. *See* Claim 5. The same motivations and modifications for Claims 1[n], 5 apply here. *Dec.* 389.

VII. GROUND 3: OBVIOUSNESS OF CLAIMS 28-29

A. Claim 28

1. 28[Pre]

Claim 1[Pre].

2. 28[a]

Claim 1[b].

3. 28[b]

Claim 1[c].

4. 28[c]

Claim 1[d].

5. 28[d]

a) Ferro's Teachings

Ferro's charging preferences include "a time to cease charging," e.g., indicating the vehicle battery "be fully charged by 7:00 p.m." (*time by which an [EV] is to be charged to a predetermined amount*). Ferro, [0115], [0084]; Claim 1[f]. Preferences also include "the price per kilowatt hour the user is willing to pay" (*cost of providing electrical charge to the [EV]*). Ferro, [0088], [0054]; Dec., 394-369.

See Claim 1[f] (mapping information indicative of charging preferences *receive[d], from the communication device and processor* receiving the information).

b) Sutardja's Teachings

Sutardja also teaches Claim 28[d], namely user-input charging preferences ("parameters") regarding charge completion time, cost of electricity, and charging priority. Sutardja, [0235]-[0237]; Dec., 397-398. "For example in the default charging parameters, users may indicate that the utility company may choose the

time to charge the batteries when the cost is lowest.” *Sutardja*, [0235], [0236] (discussing user and utility company negotiating costs), [0016], [0232].

Sutardja provides a specific example of inputting charging parameters of “a full charge daily between 9pm and 6 am.” *Sutardja*, [0262]. If the user changes the time of full-charge completion, e.g., to 5 pm, *Sutardja* teaches informing the user of an extra cost for supplying power at the requested time. *Sutardja*, [0264], [0236], [0264] (discussing user requesting charging at times (e.g., by 5 pm) other than the default charging parameters), [0270] (teaching a full charge as an exemplary “predetermined level”); *Dec.*, 399 (opining *Sutardja*’s full charge daily by 6 am and change to 5 pm is understood or obvious that the charge by 5 pm is for a full charge).

Sutardja’s user-inputted charging parameter of a full charge by 5 pm satisfies *a time by which an [EV] is to be charged to a predetermined amount*. *Sutardja*’s user-inputted charging parameter of a charge when the cost is lowest satisfies *an indication that charging of the [EV] be based, at least in part, on a cost of providing electrical charge to the [EV]*. *Dec.*, 400; see Section VII.A.7.B (MTC).

6. 28[e]

See Claim 1[h]. For Claim 28[e], it would have been obvious to (1) modify Ferro’s input/output device and display with a touchscreen presenting a GUI displaying a bar graph of the charged/uncharged capacity of the battery, per Donnelly; and (2) further modify the displayed bar graph to include a slider per

Letendre. The mappings and motivations provided for Claim 1[h] are incorporated herein.

In the modification, Ferro's preferences (including the time, predetermined amount of charge, and price) are all input via the GUI touchscreen. *Dec.* 402. Sutardja also teaches the user inputting the charging parameters via user interface module 108. *Sutardja*, FIG. 3A, [0243], [0262]. Given the similarities between Ferro and Sutardja as to the types of charging preferences, it would have been obvious for Sutardja's charging parameters to similarly be input at the GUI of the modified Ferro, as discussed in Section VII.A.7.

7. 28[f]-28[j]

a) Sutardja's Teachings

Sutardja teaches informing the user of "any extra cost the user may incur if the utility company 23 supplies power at the requested time [5 pm]..." *Sutardja*, [0264]; *Dec.*, 408. Users may use the user interface modules to generate default and/or custom charging parameters," including "charge completion time." *Sutardja*, [0235]. The "charging parameters may include costs the users may pay if batteries are charged at higher than normal priority..." *Id.* Sutardja teaches "users and utility companies may create alternate charging parameters by interactively negotiating costs and/or alternate times for charging the batteries. For example, utility companies may offer discounts to users when the users are willing to accept

receiving power at other times.” *Id.* Therefore, Sutardja teaches receiving updated values for the charging parameters (e.g., alternate cost and/or time) and determining charging can occur per the alternate charging parameters. *Dec.*, 412-418.

The user’s changed charging completion time (e.g., 5 pm) affects the costs/schedule: “For example, the utility company 23 may inform the user of any extra costs the user may incur if the utility company 23 supplies power at the requested time or a discount the user may receive if the user accepts power at a different time.” *Sutardja*, [0264]. “Thus, the alternate charging parameters may include alternate charging times, additional cost, discounts, etc.” *Id.* The user may then “respond interactively. That is, the user may accept, decline, or negotiate the additional cost and/or alternate charging times suggested by the utility company....” *Id.*, [0265].

Because Sutardja’s system determines that the user’s requested full charge by 5 pm will incur additional cost beyond the default cost, Sutardja teaches Claim 28[f]. *Dec.*, 408-409. That is, the Sutardja system determines that charging satisfying both charging parameters (full charge by 5 pm at default cost or a cost that is less than an extra cost) cannot be accomplished. *Sutardja*, [0265], FIG. 8A, Steps 208, 214.

Because the Sutardja system informs the user (i.e., issues an alert) that the charging in accordance with the two charging preferences (full charge by 5 pm at default cost or a cost that is less than an extra cost) cannot be completed (i.e.,

informing of an alternate schedule or of an extra cost), Sutardja teaches Claim 28[g]. *Dec.*, 410-411; *Sutardja*, FIG. 8A, Steps 210, 216.

Sutardja's system also receives an updated value from a user for at least one charging parameter, per Claim 28[h]. *Dec.*, 412-414. Sutardja teaches receiving negotiated "additional cost and/or alternate charging times." *Sutardja*, [0265], [0233], [0236] (discussing user/utility company interactively negotiating costs and charging times), FIG. 8A, Step 212. The user interactively negotiating the additional cost and/or alternate charging times and "interacting with the utility company 23 using the user interface module 108" to provide such negotiated cost and/or times teaches or renders obvious Claim 28[h]. *Dec.*, 414. Either of the alternate cost (extra cost) or alternate time received from the user satisfies Claim 28[h]'s *updated value*. The updated time or new cost is received *in response to the issuance of the alert*, at least because Sutardja teaches the user negotiates with the utility company as to "additional cost and/or alternative charging times" and the system is receiving the user's updated value in response to the system informing the user the requested initial charge cannot be completed. *Sutardja*, [0265]; *Dec.*, 415.

Finally, Sutardja teaches Claims 28[i]-[j] because the user negotiates the additional cost and/or alternate charging time, and in response, the system determines the negotiated, alternate cost and/or time is acceptable (Claim 28[i]) and charges the battery according to the alternate parameters (Claim 28[j]). *Sutardja*,

[0265]. The Sutardja system's acceptance of the user's negotiated, updated cost and/or charging time satisfies the claimed *determin[ing]*, based on the alternate parameters, that the vehicle can now be charged. *Dec.*, 416-417. Sutardja teaches the control module controlling charging of the battery based on the alternate charging parameters, further indicating the system determining charging according to the alternate parameters (i.e., *updated value*) can now be performed. *Sutardja*, [0267]; *Dec.*, 418. Therefore, acceptance of the alternate parameters satisfies Claim 28[i], and charging of the battery "according to the...alternate charging parameters" satisfies Claim 28[j]. *Dec.*, 419.

Sutardja provides another example of its negotiating and approval of alternate charging parameters in FIG. 8A, [0275]-[0278].

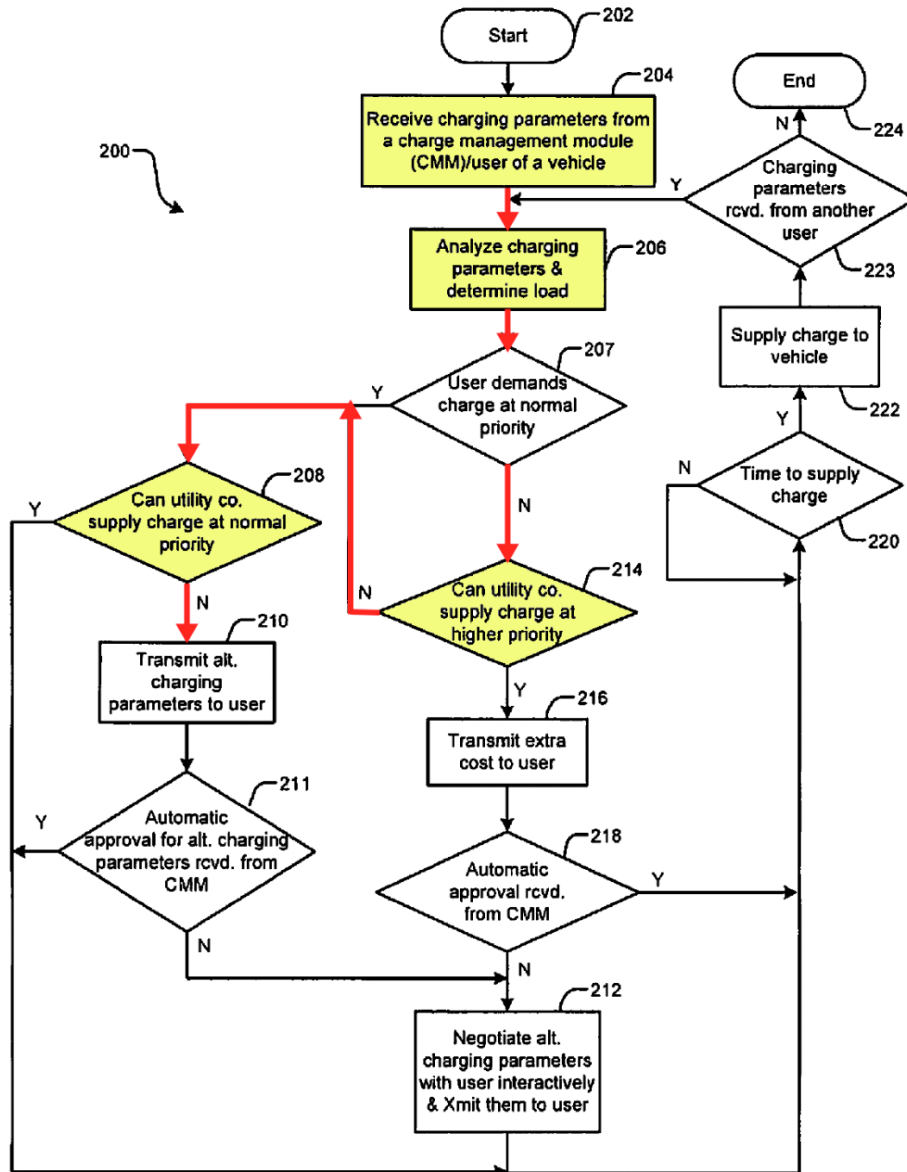


FIG. 8A

Sutardja, FIG. 8A, [0275] (receiving charging parameters (Step 204)), [0276] (analyzing charging parameters and user demand of charging at normal priority (Steps 206-207)), [0277] (determining whether charging can be met at the requested priority (Steps 208, 214)), [0277]-[0278] (determining charging cannot be met and

issuing alert to user with alternate charging parameters (Steps 216, 208, 210)), [0278] (negotiating alternate charging parameters and receiving user acceptance (Step 212)), and [0278] (charging in accordance with the alternate parameters (Step 222)). *Dec.*, 405-407.

In the combination, it would have been obvious for the Ferro processor to perform the steps, at least because the Ferro processor already generates charging plans based on received charging parameters and revises the charging plan based on updated charging preferences. Claims 1[c], 1[g], 1[h], 19[g]-[k]; *Ferro*, [0040], [0136]-[0137], FIG. 9, Step 914, [0119]; *Dec.*, 421.

b) Motivation to Combine

A POSITA would have found it obvious and been motivated to utilize Sutardja's process of determining if the vehicle can be charged according to alternate charging parameters in Ferro's electric vehicle charging system and method. *Dec.*, 421-425. The modification combines prior art elements (Ferro's and Sutardja's respective charge schedule determination steps) according to known methods to yield predictable results of determining if charging can be accomplished via previously-input charging parameters of completion charge time and cost, and determining alternate charging parameters that are acceptable to both the user and the utility company, thereby avoiding undesirable surprise failure to complete charging as requested. *Id.* A POSITA would have recognized a user would want to

know ASAP that charging preferences were unacceptable, enabling the user to adjust plans if necessary. *Id.*

There would have been a REOS, at least because Ferro already includes the necessary hardware and software to calculate charging schedules and thus, to determine that a viable charging schedule cannot be calculated. *See* Claim 1[g]; *Dec.*, 426.

B. Claim 29

See Claim 9.

VIII. § 325(D) DISCRETION

The Board should not discretionarily deny institution under § 325(d) because the prior art and arguments do not meet either part of the *Advanced Bionics* framework, given the *Becton-Dickinson* factors weighting.

A. Part One of *Advanced Bionics*

Ferro was listed on the face of the '338 Patent as a “References Cited” but was never applied by Examiner. '338 *Patent*, (56); '412 *File History* (Ex. 1002). The Examiner applied Galvez-Ramos in a “Pre-interview communication,” which was later “vacated” by the Director. (Ex. 1002, 77-78, 230). Donnelly, Letendre, Zeigler, and Oyobe were never considered by the Examiner. *See, generally*, Ex. 1002.

Examiner issued an Examiner’s amendment adding the *first portion*, *second portion*, and *slider* limitations to all independent claims in the Notice of Allowance. Ex. 1002, 231-244. Examiner stated previously considered art neither anticipated

nor rendered obvious the claims. (Ex. 1002, 245). Petitioner combines Ferro-Oyobe with Donnelly and Letendre for teaching these limitations in all grounds. Donnelly and Letendre are non-cumulative and materially different from any art evaluated during examination, given Letendre discloses a web page charging control panel with sliders for indicating user charge preferences and Donnelly teaches a GUI showing a battery state-of-charge via a bar graphic. *See*, Section V.A.9. Thus, factors (a-b) weigh against denying institution.

Ferro has similarities to Hafner, applied by Examiner during prosecution. Ex. 1002, 78. However, Hafner is silent to any “dynamic” nature of the planner. *Cf. Ferro*, Abstract, *with Hafner*, Abstract. Thus, Ferro is materially different from Hafner. The Board previously confirmed Ferro’s “dynamic” planner portions being “materially different” from an essentially identical Hafner in IPR2023-00062, Paper 13, p. 19. Because the “dynamic” nature of the planner is throughout the mappings, there is little overlap with arguments made during prosecution. Donnelly, Letendre, Zeigler, and Oyobe are applied in every Petition ground, further decreasing overlap with examination arguments. Thus, factor (d) weighs against denying institution.

Part one of the framework is not met because the “**combination of prior art and arguments** [is] not the same or substantially the same as that considered” during prosecution. *Align Technology, Inc. v. Dental Monitoring SAS*, IPR2023-01369,

Paper 10, 9-10 (PTAB March 5, 2024); *Caterpillar Inc. v. Wirtgen America, Inc.*, IPR2022-01278, Paper 12, 42-43 (PTAB Feb. 7, 2023).

B. Part Two of *Advanced Bionics*

Examiner never discussed or applied Ferro in an Office Action, weighing factor (c) “strongly” against denying institution. *Solaredge Technologies LTD. v. SMA Solar Technology AG*, IPR2020-00021, Paper 8, 11-12 (PTAB Apr. 10, 2020). The Examiner briefly discussed Galvez-Ramos, contrasting with Petitioner’s detailed discussion of Galvez-Ramos’ teachings for the *pet* and *duration of time* limitations. (Ex. 1002, 78); Section V.A.13-14. Because Petitioner provides additional discussion and facts (including Dr. Andrews’ Declaration) not provided by Examiner, factor (f) weighs against denying institution. *Hamilton Technologies LLC v. Fleur Tehrani*, IPR2020-01199, Paper 6, 21 (PTAB Jan. 6, 2021) (Board finding material error because new, additional references were “not before the Examiner”). Factor (e) weighs against denying institution. Part two of the framework is not satisfied because Petitioner has demonstrated the Office materially erred.

Thus, the Board should not discretionarily deny institution.

IX. § 314(A) DISCRETION

The Board should not discretionarily deny the IPR because the co-pending litigation is presently stayed (Ex. 1088); Patent Owner’s Motion to Amend the

Complaint to add the '338 Patent has not been granted (Ex. 1087); and no trial has been set.

X. CONCLUSION

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

Respectfully submitted,

ERISE IP, P.A.

BY: /s/ Jennifer C. Bailey
Jennifer C. Bailey, Reg. No. 52,583
jennifer.bailey@eriseip.com
7015 College Boulevard, Suite 700
Overland Park, Kansas 66211
(913) 777-5600 Telephone
(913) 777-5601 Facsimile

COUNSEL FOR PETITIONER

XI. 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 Parties are currently involved in the following Litigation: *Charge Fusion Technologies, LLC v. Tesla, Inc.* Case No. 1:22-cv-00488. In this Litigation, Plaintiff, Charge Fusion Technologies, LLC's, filed a Motion for Leave to Amend Complaint on June 5, 2024, requesting to add the '338 Patent. (Ex. 1087, Doc. 79). The Court has not yet ruled on the Motion to Amend.

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).

Lead Counsel	Back-Up Counsel
Jennifer C. Bailey (Reg. No. 52,583) jennifer.bailey@eriseip.com PTAB@eriseip.com <u>Postal and Hand-Delivery Address:</u> ERISE IP, P.A. 7015 College Blvd., Suite 700 Overland Park, Kansas 66211 Telephone: (913) 777-5600 Fax: (913) 777-5601	Virginia A. Brown (Reg. No. 80,538) virginia.brown@eriseip.com Callie A. Pendergrass (Reg. No. 63,949) callie.pendergrass@eriseip.com Adam M. Sandwell (Reg. No. 72,484) adam.sandwell@eriseip.com Justin N. Grimes (Reg. No. 81,059) justin.grimes@eriseip.com PTAB@eriseip.com <u>Postal and Hand-Delivery Address:</u> ERISE IP, P.A. 7015 College Blvd., Suite 700

	Overland Park, Kansas 66211 Telephone: (913) 777-5600 Fax: (913) 777-5601
	Ashraf Fawzy (Reg. No. 67,914) Tesla, Inc. 1 Tesla Road Austin, TX 78725 Tel: 202-905-9221 afawzy@tesla.com

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. 11,563,338 for Claims 1-29

Claim Designation	Claim Language
Claim 1[Pre]	An electrical charging system, comprising:
Claim 1[a]	a vehicle sensor;
Claim 1[b]	a communication device;
Claim 1[c]	a processor in communication with the vehicle sensor and the communication device; and
Claim 1[d]	a memory in communication with the processor, the memory storing instructions that when executed by the processor cause the processor to:
Claim 1[e]	receive, from the vehicle sensor, information indicative of a presence of an electric vehicle in a parking space;
Claim 1[f]	receive, from the communication device, information indicative of one or more charging preferences corresponding to a desired charging of the electric vehicle, wherein the one or more charging preferences are defined by an operator of the electric vehicle;
Claim 1[g]	determine, based at least on the one or more charging preferences and at least one current value of a dynamic attribute of an electric charge provider, a charging schedule for the electric vehicle;
Claim 1[h]	wherein at least one of the one or more charging preferences is defined by user input received via a graphical user interface and adapted to display a vehicle charge indicator element comprising a first portion indicative of an amount of charge residing in a battery of the electric vehicle and a second portion indicative of an uncharged capacity of the battery of the electric vehicle and wherein the vehicle charge indicator element further comprises a slider by which an amount of charge may be specified;
Claim 1[i]	charge, in accordance with the charging schedule, the electric vehicle;

Claim Designation	Claim Language
Claim 1[j]	receive a selection of a mode of operation of the electric vehicle that is defined by a stored temperature at which a temperature control system of the electric vehicle is to be set to maintain the interior temperature of the electric vehicle while the electric vehicle remains in a parked state;
Claim 1[k]	display via the graphical user interface an indication of a status of the selected mode of operation of the electric vehicle,
Claim 1[l]	wherein the selected mode of operation comprises maintaining the interior temperature of the electric vehicle suitable for a pet located within the electric vehicle;
Claim 1[m]	operate the temperature control system of the electric vehicle in accordance with the selected mode of operation for a duration of time;
Claim 1[n]	determine that an amount of charge residing in a battery of the electric vehicle has reached a predefined threshold; and send an alert to an operator of the electric vehicle indicative of the charge residing in the battery having reached the predefined threshold.
Claim 2	The electrical charging system of claim 1, wherein the graphical user interface is adapted to display a web page.
Claim 3	The electrical charging system of claim 2, wherein the graphical user interface forms a part of the electric vehicle.
Claim 4	The electrical charging system of claim 1, wherein the graphical user interface is adapted to receive a maintenance notification.
Claim 5	The electrical charging system of claim 4, wherein the graphical user interface forms a part of a smartphone.
Claim 6[a]	The electrical charging system of claim 1, wherein the charging schedule for the electric vehicle is further based upon a factor of safety parameter and
Claim 6[b]	wherein the charging comprises transmitting a control signal to a parking space charge device that starts the charging.
Claim 7	The electrical charging system of claim 6, wherein the one or more charging preferences comprise the factor of safety parameter.
Claim 8	The electrical charging system of claim 1, wherein the alert is sent to a smartphone.

Claim Designation	Claim Language
Claim 9	The electrical charging system of claim 1, wherein the charging of the electric vehicle is conducted via a wireless charging device.
Claim 10[Pre]	An electrical charging method, comprising:
Claim 10[a]	receiving, from a vehicle sensor, information indicative of a presence of an electric vehicle in a parking space;
Claim 10[b]	receiving, via a communication device, information indicative of one or more charging preferences corresponding to a desired charging of the electric vehicle, wherein the one or more charging preferences are defined by an operator of the electric vehicle;
Claim 10[c]	determining, by a processor and based at least on the one or more charging preferences and at least one current value of a dynamic attribute of an electric charge provider, a charging schedule for the electric vehicle;
Claim 10[d]	charging, by the processor and in accordance with the charging schedule, the electric vehicle;
Claim 10[e]	wherein at least one of the one or more charging preferences is defined by user input received via a graphical user interface and adapted to display a vehicle charge indicator element comprising a first portion indicative of an amount of charge residing in a battery of the electric vehicle and a second portion indicative of an uncharged capacity of the battery of the electric vehicle and wherein the vehicle charge indicator element further comprises a slider by which an amount of charge may be specified;
Claim 10[f]	receiving, via the graphical user interface, a selection of a mode of operation of the electric vehicle that is defined by a stored temperature at which a temperature control system of the electric vehicle is to be set to maintain the interior temperature of the electric vehicle while the vehicle remains in a parked state;
Claim 10[g]	displaying, via the graphical user interface, an indication of a status of the selected mode of operation of the electric vehicle,
Claim 10[h]	wherein the selected mode of operation comprises maintaining the interior temperature of the electric vehicle suitable for a pet located within the electric vehicle;

Claim Designation	Claim Language
Claim 10[i]	operating, by the processor, the temperature control system of the electric vehicle in accordance with the selected mode of operation for a duration of time;
Claim 10[j]	determining, by the processor, that an amount of charge residing in a battery of the electric vehicle has reached a predefined threshold; and sending, via the communication device, an alert to an operator of the electric vehicle indicative of the charge residing in the battery having reached the predefined threshold.
Claim 11	The electrical charging method of claim 10, wherein the graphical user interface is adapted to display a web page.
Claim 12	The electrical charging method of claim 11, wherein the graphical user interface forms a part of the electric vehicle.
Claim 13	The electrical charging method of claim 10, wherein the graphical user interface is adapted to receive a maintenance notification.
Claim 14	The electrical charging method of claim 13, wherein the graphical user interface forms a part of a smartphone.
Claim 15[a]	The electrical charging method of claim 10, wherein the charging schedule for the electric vehicle is further based upon a factor of safety parameter and
Claim 15[b]	wherein the charging comprises transmitting a control signal to a parking space charge device that starts the charging.
Claim 16	The electrical charging method of claim 15, wherein the one or more charging preferences comprise the factor of safety parameter.
Claim 17	The electrical charging method of claim 10, wherein the alert is sent to a smartphone.
Claim 18	The electrical charging method of claim 10, wherein the charging of the electric vehicle is conducted via a wireless charging device.
Claim 19[Pre]	An electrical charging system, comprising:
Claim 19[a]	a vehicle sensor;
Claim 19[b]	a communication device;
Claim 19[c]	a processors in communication with the vehicle sensor and the communication device; and

Claim Designation	Claim Language
Claim 19[d]	a memory in communication with the processor, the memory storing instructions that when executed by the processor cause the processor to:
Claim 19[e]	(a) receive, from the vehicle sensor, information indicative of a presence of a vehicle in a parking space;
Claim 19[f]	(b) receive, from the communication device, information indicative of one or more charging preferences corresponding to a desired charging of the vehicle, wherein the one or more charging preferences are defined by an operator of the vehicle;
Claim 19[g]	(c) determine a first value of a dynamic attribute of an electric charge provider;
Claim 19[h]	(d) determine, based at least on the one or more charging preferences and the first value of the dynamic attribute, a charging schedule for the vehicle;
Claim 19[i]	(e) charge the vehicle in accordance with the charging schedule;
Claim 19[j]	(f) retrieve a second value of the at least one dynamic attribute; and
Claim 19[k]	(g) repeat (d) and (e), utilizing the retrieved second value of the dynamic attribute as the first value of the dynamic attribute,
Claim 19[l]	wherein at least one of the one or more charging preferences is defined by user input received via a graphical user interface and adapted to display a vehicle charge indicator element comprising a first portion indicative of an amount of charge residing in a battery of the electric vehicle and a second portion indicative of an uncharged capacity of the battery of the electric vehicle and wherein the vehicle charge indicator element further comprises a slider by which an amount of charge may be specified;
Claim 19[m]	(h) receive a selection of a mode of operation of the vehicle that is defined by a stored temperature at which a temperature control system of the vehicle is to be set to maintain the interior temperature of the vehicle while the vehicle remains in a parked state;
Claim 19[n]	(i) display via the graphical user interface an indication of a status of the selected mode of operation of the vehicle,

Claim Designation	Claim Language
Claim 19[o]	wherein the selected mode of operation comprises maintaining the interior temperature of the vehicle suitable for a pet located within the vehicle;
Claim 19[p]	(j) operate the temperature control system of the vehicle in accordance with the selected mode of operation for a duration of time;
Claim 19[q]	(k) determine that an amount of charge residing in a battery of the vehicle has reached a predefined threshold; and (l) send an alert to an operator of the electric vehicle indicative of the charge residing in the battery having reached the predefined threshold.
Claim 20	The electrical charging system of claim 19, wherein the graphical user interface is adapted to display a web page.
Claim 21	The electrical charging system of claim 20, wherein the graphical user interface forms a part of the vehicle.
Claim 22	The electrical charging system of claim 19, wherein the graphical user interface is adapted to receive a maintenance notification.
Claim 23	The electrical charging system of claim 22, wherein the graphical user interface forms a part of a smartphone.
Claim 24[a]	The electrical charging system of claim 19, wherein the charging schedule for the vehicle is further based upon a factor of safety parameter and
Claim 24[b]	wherein the charging comprises transmitting a control signal to a parking space charge device that starts the charging.
Claim 25	The electrical charging system of claim 24, wherein the one or more charging preferences comprise the factor of safety parameter.
Claim 26	The electrical charging system of claim 19, wherein the alert is sent to a smartphone.
Claim 27	The electrical charging system of claim 19, wherein the charging of the vehicle is conducted via a wireless charging device.
Claim 28[Pre]	An electrical charging system, comprising:
Claim 28[a]	a communication device;

Claim Designation	Claim Language
Claim 28[b]	a processor in communication with the communication device; and
Claim 28[c]	a memory in communication with the processor, the memory storing instructions that when executed by the processor cause the processor to:
Claim 28[d]	receive, from the communication device, information indicative of at least two charging preferences comprising a time by which an electric vehicle is to be charged to a predetermined amount and an indication that charging of the electric vehicle be based, at least in part, on a cost of providing electrical charge to the electric vehicle,
Claim 28[e]	wherein the at least two charging preferences are defined by an operator of the electric vehicle, and wherein at least the predetermined amount of charge is defined by user input received via a graphical user interface and adapted to display a vehicle charge indicator element comprising a first portion indicative of an amount of charge residing in a battery of the electric vehicle and a second portion indicative of an uncharged capacity of the battery of the electric vehicle and wherein the vehicle charge indicator element further comprises a slider by which the predetermined amount of charge may be specified;
Claim 28[f]	determine, based at least on the at least two charging preferences, that the electric vehicle cannot be charged in accordance with the at least two charging preferences;
Claim 28[g]	issue an alert that charging the electric vehicle in accordance with the at least two charging preferences is not possible;
Claim 28[h]	receive an updated value for at least one of the at least two charging preferences in response to the issuance of the alert;
Claim 28[i]	determine, based at least on the updated value for the at least one of the at least two charging preferences, that the electric vehicle can now be charged in accordance with the at least two charging preferences; and
Claim 28[j]	charge the electric vehicle in accordance with the at least two charging preferences.

Claim Designation	Claim Language
Claim 29	The electrical charging system of claim 28, wherein the charging of the electric vehicle in accordance with the at least two charging preferences is conducted utilizing a wireless charging device.

APPENDIX OF EXHIBITS

Exhibit 1001	U.S. Patent No. 11,563,338 to Ambroziak, et al. (“the ’338 Patent”)
Exhibit 1002	U.S. Patent No. 11,563,338 File History (“the ’412 File History”)
Exhibit 1003	Declaration of Scott Andrews
Exhibit 1004	U.S. Patent Application Publication No. 2009/0313034 to Ferro, et al. (“Ferro”)
Exhibit 1005	European Patent Application Publication 1920968 to Oyobe, et al. (“Oyobe”)
Exhibit 1006	U.S. Patent No. 7,124,691 to Donnelly, et al. (“Donnelly”)
Exhibit 1007	Letendre, S.E. and Kempton, W. <i>The V2G Concept: A New Model for Power?</i> Public Util. Fortn. February 2002, 140, pp. 16-26. (“Letendre”)
Exhibit 1008	U.S. Patent Application Publication No. 2009/0130965 to Galvez-Ramos (“Galvez-Ramos”)
Exhibit 1009	U.S. Patent No. 6,889,762 to Zeigler, et al. (“Zeigler”)
Exhibit 1010	U.S. Patent No. 6,622,083 to Knockeart et al. (“Knockeart”)
Exhibit 1011	U.S. Patent Publication No. 2008/0136371 to Sutardja (“Sutardja”)
Exhibit 1012	Willett Kempton and Jasna Tomić. <i>Vehicle-to-grid power fundamentals: Calculating capacity and net revenue</i> . Journal of Power Sources. 2005. 144. pp. 268–279 (“Kempton 2005 – Revenue”)
Exhibit 1013	Chan, <i>The State of the Art of Electric and Hybrid Vehicles</i> , February 2002, Vol. 90, No. 2, IEEE (“Chan”)
Exhibit 1014	<i>Electric Vehicle Battery Systems</i> , Sandeep Dhameja, Newnes, 2002 (“Sandeep”)
Exhibit 1015	U.S. Patent No. 5,573,090 to Ross (“Ross”)
Exhibit 1016	Weed, R. <i>Electric Vehicles: Copper Applications in Electrical</i> . February 1998. (“Weed”)
Exhibit 1017	<i>Rawson, Kateley, Electric Vehicle Charging Equipment Design and Health and Safety Codes</i> , SAE Intl., 1999 (“Rawson”)
Exhibit 1018	U.S. Patent No. 7,693,609 to Kressner et al. (“Kressner”)
Exhibit 1019	U.S. Patent No. 7,084,859 to Pryor (“Pryor”)
Exhibit 1020	U.S. Patent Publication No. 2008/0039980 to Pollack et al. (“Pollack”)

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

	and Ergonomics Society, 39 th Annual Meeting, 1995 (“Johnsgard”)
Exhibit 1040	Olsen Jr. et al., <i>Input/Output Linkage in a User Interface Management System</i> , ACM, Vol. 19, No. 3, 1985 (“Olsen”)
Exhibit 1041	U.S. Patent No. 6,577,928 to Obradovich (“Obradovich”)
Exhibit 1042	U.S. Patent Publication No. 2007/0015451 to McGrath, JR (“McGrath”)
Exhibit 1043	U.S. Patent No. 6,158,225 to Muto et al. (“Muto”)
Exhibit 1044	U.S. Patent No. 4,955,203 to Sundhar (“Sundhar”)
Exhibit 1045	<i>Proper Handling Helps Make the Most of Li-Ion Batteries</i> , Maxim Integrated, Application Note 663, January 24, 2001 (“Proper Handling”)
Exhibit 1046	<i>Proper Care Extends Li-Ion Battery Life</i> , Fran Hoffart, Linear Technology, April 1, 2008, https://www.electronicdesign.com/markets/mobile/article/21190344/proper-care-extends-li-ion-battery-life (“Proper Care”)
Exhibit 1047	<i>Battery Monitoring Considerations for Hybrid Vehicles and Other Battery Systems with Dynamic Duty Loads</i> , Andrew Kallfelz, Battery Power Products and Technology, Vol. 10, No. 3, June 2006 (“Kallfelz”)
Exhibit 1048	U.S. Patent Application Publication No. 2003/0004662 to Mitchell et al. (“Mitchell”)
Exhibit 1049	U.S. Patent No. 5,698,967 to Baer et al. (“Baer”)
Exhibit 1050	U.S. Patent No. 5,563,491 to Tseng (“Tseng”)
Exhibit 1051	U.S. Patent No. 6,154,005 to Hyogo et al. (“Hyogo”)
Exhibit 1052	<i>Sakamoto et al.</i> , Large Air-Gap Coupler for Inductive Charger, IEEE Transactions on Magnetics, Vol. 35, No. 5, September 1999 (“Matsuo”)
Exhibit 1053	U.K. Patent Application No. GB 2438979 to Taylor-Haw et al. (“Taylor-Haw”)
Exhibit 1054	U.S. Patent No. 5,523,666 to Hoelzl et al. (“Hoelzl”)
Exhibit 1055	<i>Understanding Your Motherboard’s Bus System</i> , James McPherson, TechRepublic, December 19, 2000 (“McPherson”)
Exhibit 1056	<i>Computer: History of Computers</i> , Gary Masters, Microsoft Encarta, 1994 (“History”)
Exhibit 1057	<i>Fukuda et al.</i> , <i>Evaluating Second Car System, an Electric Vehicle Sharing Experiment in Tama New Town District, Inagi City, Tokyo</i> , TRB Annual Meeting, 2003 (“Fukuda”)

Exhibit 1058	<i>2008 Chevrolet Tahoe, Suburban Owner Manual</i> , 2008 (“2008 Chevrolet Tahoe, Suburban Owner Manual”)
Exhibit 1059	U.S. Patent No. 8,266,075 to Ambrosio et al. (“Ambrosio”)
Exhibit 1060	<i>An Introduction to Graphical User Interfaces and Their Use by CITIS</i> , Sherrick, Susan, U.S. Dept. of Commerce, 1992 (“Sherrick”)
Exhibit 1061	U.S. Patent No. 5,555,502 to Opel (“Opel”)
Exhibit 1062	<i>All Volkswagens Built after 2008 to get touchscreen system</i> , Rory Jurnecka, MT, November 12, 2007 (“Jurnecka”)
Exhibit 1063	<i>Geneva '08 Preview: BMW ConnectedDrive Allows Unrestrcited in-car Internet</i> , Michael Harley, February 22, 2008 (“Harley”)
Exhibit 1064	<i>Chicago 2008: Ford Introduces Work Solutions in-dash computer package for F-150 [w/video]</i> , Ford, February 5, 2008, (“Ford”)
Exhibit 1065	U.S. Patent No. 8.405,618 to Colgate et al. (“Colgate”)
Exhibit 1066	<i>A Guide to Understanding Battery Specifications</i> , MIT Electric Vehicle Team, December 2008 (“Electric Vehicle Team”)
Exhibit 1067	U.S. Patent No. 7,904,219 to Lowrey et al. (“Lowrey”)
Exhibit 1068	<i>Internet Multimedia on Wheels: Connecting Cars to Cyberspace</i> , Jameel et al., IEEE, 1998 (“Jameel”)
Exhibit 1069	U.S. Patent No. 7,285,936 to Ohnuma et al. (“Ohnuma”)
Exhibit 1070	U.S. Patent No. 7,501,793 to Kadouchi et al. (“Kadouchi”)
Exhibit 1071	U.S. Patent Application Publication No. 2005/0278079 to Maguire (“Maguire”)
Exhibit 1072	<i>PowerSafe: Safety, Storage, Operating, and Maintenance Manual</i> , VRLA Battery Systems mSeries, EnerSys, March 2008 (“PowerSafe”)
Exhibit 1073	Kempton et al., <i>Electric Vehicles as a New Power Source for Electric Utilities</i> , Transpn Res., Vol. 2, No. 3, Elsevier, 1997 (“Kempton”)
Exhibit 1074	<i>Webster’s New World Telecom Dictionary</i> , Ray Horak, Wiley Publishing, 2008 (“Webster’s New World Telecom Dictionary”)
Exhibit 1075	Eick, SG. <i>Data Visualization Sliders</i> , ACM UIST, November 2004, (“Eick”)
Exhibit 1076	U.S. Patent No. 5,615,347 to Davis et al. (“Davis”)
Exhibit 1077	Patent Owner’s Preliminary Response IPR2022-01217

Exhibit 1078	U.S. Patent No. 5,654,621 to Seelig (“Seelig”)
Exhibit 1079	U.S. Patent No. 5,734,872 to Kelly (“Kelly”)
Exhibit 1080	<i>Pervasive Computing: The Smart Phone – Customizing User Interaction in Smart Phones</i> , Korpipää et al., IEEE CS, 2006 (“Pervasive Computing: the Smart Phone”)
Exhibit 1081	<i>Spotlight: The Rise of the Smart Phone</i> , Pei Zheng et al., IEEE Computer Society, Vol. 7, No. 3, March 2006 (“Zheng”)
Exhibit 1082	U.S. Patent No. 7,988,543 to Major (“Major”)
Exhibit 1083	U.S. Patent No. 5,775,406 to Ghitea, Jr. (“Ghitea”)
Exhibit 1084	U.S. Patent No. 6,323,775 to Hansson et al. (“Hansson”)
Exhibit 1085	IPR2022-00519 Declaration of Scott Andrews
Exhibit 1086	Declaration of June Ann Munford (“ <i>Munford Dec.</i> ”)
Exhibit 1087	Charge Fusion Technologies, LLC v. Tesla, Inc., 1_22-cv-00488, No. 79 Plaintiff Charge Fusion Technologies, LLC’s Motion For Leave to Amend Complaint (W.D.Tex. Jun. 5, 2024)
Exhibit 1088	Charge Fusion Technologies, LLC v. Tesla, Inc., 1_22-cv-00488, No. 74 Order to Stay (W.D.Tex. Feb. 23, 2023)
Exhibit 1089	U.S. Patent No. 9,853,488 to Fincham et al. (the ’488 Patent”)
Exhibit 1090	<i>Happy Birthday, Plam Pilot</i> , Gary Krakow, March 22, 2006, (“Krakow”)
Exhibit 1091	<i>Your Plam Treo 700p Smartphone User Guide</i> , Palm, 2006 (“PALM Treo 700P Manual”)
Exhibit 1092	U.S. Patent No. 5,596,261 to Sunyama (“Sunyama”)

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 13,896 words according to the word-processing program used to prepare this document (Microsoft Word).

Dated: October 18, 2024

ERISE IP, P.A.

BY: /s/ Jennifer C. Bailey
Jennifer C. Bailey, Reg. No. 52,583
jennifer.bailey@eriseip.com
7015 College Blvd., Suite 700
Overland Park, KS 66211
P: (913) 777-5600
F: (913) 777-5601

COUNSEL FOR PETITIONER

**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 October 18, 2024, 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 '338 Patent:

RowanTree Law Group, PLLC
90 Grove Street
Suite 205
Ridgefield, CT 06877

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

Frederick A. Tecce (Fred.tecce@altimaadvisors.com)
ALTIMA ADVISORS/ATTORNEYS, LLC
One Liberty Place – 55th Floor
1650 Market Street
Philadelphia, Pennsylvania 19103

Bradley D. Liddle (bliddle@carterarnett.com)
Michael Pomeroy (mpomeroy@carterarnett.com)
Scott W. Breedlove (sbreedlove@carterarnett.com)
CARTER ARNETT BENNETT & PEREZ PLLC
8150 N. Central Expressway
Suite 500
Dallas, Texas 75206

Respectfully submitted,

ERISE IP, P.A.

BY: /s/ Jennifer C. Bailey
Jennifer C. Bailey, Reg. No. 52,583
jennifer.bailey@eriseip.com
7015 College Blvd., Suite 700
Overland Park, KS 66211
P: (913) 777-5600
F: (913) 777-5601

COUNSEL FOR PETITIONER