

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VOLKSWAGEN GROUP OF AMERICA, INC.
Petitioner

v.

MICHIGAN MOTOR TECHNOLOGIES LLC
Patent Owner

Case IPR2020-00446
Patent 6,763,804

**PETITIONER VOLKSWAGEN GROUP OF AMERICA, INC.'S
OPPOSITION TO PATENT OWNER'S MOTION TO AMEND**

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I. INTRODUCTION

Volkswagen Group of America, Inc. (“Petitioner”) opposes Patent Owner (“PO”) Michigan Motor Technologies, LLC’s Motion to Amend (“MTA”). The MTA (Paper 16) asks the Board to add Substitute Claim 21 “[t]o the extent the Board finds any of the challenged claims 1-20 of the ’804 patent unpatentable.” MTA, 1. But the Board should deny the MTA because it does not come close to meeting the procedural or the substantive requirements. The MTA fails to clearly set forth the amendment, adds new matter, and provides only cursory and unsupported analysis for written description support.

In contrast to PO’s unsupported attorney arguments, Petitioner relies on the expert testimony of Dr. Micklow (EX1034) to explain why Substitute Claim 21 lacks written description support, is indefinite, and is obvious in view of Itabashi. As the Federal Circuit and the Board have repeatedly recognized, including in a proceeding between these parties, “[a]ttorney argument is not evidence’ and cannot rebut other admitted evidence.” *Elbit Sys. of Am., LLC v. Thales Visionix, Inc.*, 881 F.3d 1034, 1043 (Fed. Cir. 2018); *see also Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009); *Volkswagen Grp. of Am., Inc. v. Mich. Motor Techs. LLC*, IPR2019-01274, Paper 47, 64-65, 69, 72-73, 79-85, 88 (Dec. 21, 2020). Consistent with this precedent, the Board should credit Dr. Micklow’s testimony over PO’s unsupported attorney arguments.

II. MMT VIOLATED AMENDMENT PROCEDURES.

The Board should deny the MTA without reaching the merits because PO's MTA violated basic procedures in the Board's Rules, precedential decisions, and guidance in the Consolidated Trial Practice Guide ("CTPG").

First, PO did not confer with the Board (or Petitioner) before filing the MTA. "Although patent owners may file a first motion to amend and need not obtain prior Board authorization, the patent owner is still required to confer with the Board before filing the motion." 37 C.F.R. § 42.121(a); *see also* CTPG, 66.

Second, PO's MTA misrepresents the proposed amendments to Substitute Claim 21. "For each proposed substitute claim, the motion *must* show clearly the changes in the proposed substitute claim with respect to the original patent claim that it is intended to replace." *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15, 8 (Feb. 25, 2019) (designated precedential) (emphasis added); *see also* CTPG, 69. But here, PO disguised the full scope of the amendments by not underlining all the new claim elements. *Compare* EX1001, claim 1, *with* MTA, 2-3 (not fully underling Elements [21.H]-[21.K]).¹ PO's strikethrough in Substitute Claim 21 is also wrong. *Compare* EX1001, claim 1, *with* MTA, 3.

Third, PO's MTA does not specify the contingency of Substitute Claim 21

¹ The Appendix lists the claim elements in relation to claim 1.

on a claim-by-claim basis. “A patent owner should adopt a claim-by-claim approach to specifying the contingency of substitution, e.g., which claim is to be substituted for which claim, and under what circumstances.” *Lectrosonics*, Paper 15 at 3. Despite this guidance, MMT asked the Board to add Substitute Claim 21 “[t]o the extent the Board finds *any of the challenged claims 1-20* of the ’804 patent unpatentable.” MTA, 1 (emphasis added). In a prior case between the parties, the Board already instructed MMT to specify its contingency on a claim-by-claim basis. *See Volkswagen Grp. of Am., Inc. v. Mich. Motor Techs. LLC*, IPR2020-00068, Paper 19, 4 (Nov. 4, 2020). Despite repeated guidance on the subject, PO continues to disregard the Board’s procedures.

As PO’s MTA further shows, PO has established a pattern of disregarding the Board’s Rules, precedent, and guidance. Such disregard for the procedural requirements for a MTA should have repercussions. One such repercussion is for the Board to *deny* the MTA. PO should also not be granted yet another chance to remedy its failings with a revised motion to amend; it has had enough opportunities to follow Board procedures. And especially here where any IPR certificate will not issue until *after the ’804 patent expires*,² additional waste of Board and party

² The ’804 patent expires on October 9, 2021 whereas an IPR certificate will issue only after “the time for appeal has expired or any appeal has terminated.” *See*

resources through further amendment proceedings is entirely unnecessary.

III. THE MTA IMPROPERLY INTRODUCES NEW MATTER.

The Board should deny the MTA because Substitute Claim 21 improperly “introduce[s] new matter.” 35 U.S.C. §§ 316(d)(3) (“An amendment . . . may not . . . introduce new matter.”). “New matter is any addition to the claims without support in the original disclosure.” *Lectronics*, Paper 15 at 7. And “the test for sufficiency [of written description support] is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*).

Here, the original disclosure does not reasonably convey to a POSA that the inventor had possession of the subject matter of Substitute Claim 21, and PO’s bare-bones chart in the MTA purporting to show support is insufficient. PO’s chart merely cites short excerpts of the original specification and is unsupported by expert testimony. *See* MTA, 4-8. The cited language does not even align with the amendments. Despite numerous differences in language between the alleged written description support and Substitute Claim 21, PO does not explain why one

35 U.S.C. § 318(b). The ’804 patent is not entitled to the patent term adjustment on the face of the ’804 patent. *See* EX1002, 0058.

supports the other. PO has not shown that Substitute Claim 21 has support for: **(1)** the “detecting” in Elements [21.B] and [21.G] (see Appendix); **(2)** Elements [21.C] and [21.H] involving a “hold open position” and a “hold close position,” respectively; **(3)** the “detect[ing]” recited in Elements [21.D] and [21.I]; and **(4)** determining whether a control effort “exceeds” a threshold for a predetermined time period, as recited in Elements [21.E] and [21.J]. *See* EX1034, ¶¶33-42.

(1) PO has not shown that the original disclosure supports “detecting” whether a control effort has exceeded a limit ([21.B] and [21.G]). EX1034, ¶¶34-35. PO cites steps 42 and 52 of Figure 2 and the related description as purportedly supporting these limitations. MTA, 5-6. But these blocks disclose *determining* if the control effort has been more positive or negative than a given limit. PO does not explain why the specification supports the amendment. It simply leaves it up to the Board to investigate whether “determining” provides § 112 support for “detecting.” Citations that amount to little more than an invitation to the Board (and to Petitioner and the public) to piece together a coherent argument are insufficient. *See Respironics, Inc. v. Zoll Medical Corp.*, IPR2013-00322, Paper 46, 24 (P.T.A.B. Sept. 17, 2014), *vacated and remanded on other grounds*, 656 F. App’x 531, 534 (Fed. Cir. 2016); *Intel Corp. v. Alacritech, Inc.*, IPR2017-01406, Paper 83, 47-49 (P.T.A.B. Nov. 26, 2018).

(2) For the claim elements “hold open position” and “hold close position,”

PO cited to excerpts about a “hold open mode” and “hold close mode.” MTA, 5, 7. PO did not cite anything in the disclosure that limits the hold open mode and hold close mode to a “position.” Nor did PO cite anything that discloses that “in the event the control effort is detected to have exceeded [a] limit for [a] predetermined time period, commanding the positioning device to change to [a] hold open position [/ hold close position].” EX1034, ¶¶36-38. Rather, the cited disclosure states that “the controller preferably determines if the control effort has been more positive than a predetermined limit for at least a predetermined time period.” MTA, 5 (quoting EX1002, 0012 (¶17). “If the predetermined threshold has been exceeded . . . [a] hold open mode is initiated” MTA, 5 (quoting EX1002, 0012-13 (¶¶17-18)). PO again leaves it up to the Board to piece together an argument for § 112.

(3) PO has not shown that the disclosure supports “detecting the control effort required to change to said first commanded hold open position” ([21.D]) or to “said second commanded hold close position” ([21.I]). EX1034, ¶¶39-40. PO cites steps 46 and 56 of Figure 2 and the related description as purportedly supporting these limitations. MTA, 5, 7. As discussed for (2), PO has not shown that “hold open” and “hold close” modes support the “hold open” and “hold closed” positions. Additionally, as PO’s chart confirms, steps 46 and 56 describe that “the controller . . . determines if it has called for the hold open [or hold close]

mode for less than a hard open [or hold close] time period,” respectively. MTA, 5, 7 (citing EX1002, 0013 (¶18), 0015 (¶23)). But these steps do not detect a control effort required to change to a hold open or hold close position. EX1034, ¶40.

(4) The disclosure also does not support determining whether a control effort “exceeds” a threshold for a time period ([21.E] and [21.J]). EX1034, ¶¶41-42. For this element, PO cites steps 46 and 56 of Figure 2, which determine whether a mode has been active for *less than* a specified time period. MTA, 6-7. As the disclosure explains, a controller in steps 46 and 56 “determines if it has called for the hold open [/ hold close] mode for *less than* a hard open [/ hard close] time period.” EX1002, 0013 (¶18), 0015 (¶23) (emphasis added). The controller does not determine whether a control effort “exceeds” a threshold let alone whether a control effort exceeds a threshold for a predetermined time period. EX1034, ¶42. PO’s amendment changes the disclosed operation from determining whether something is *less than a time period* to determining whether something *exceeds a threshold for a time period*. EX1034, ¶42. There is no written description to support this change. EX1034, ¶42.

For these reasons, PO has failed to show written description support for at least eight of the twelve claim elements in Substitute Claim 21.

IV. SUBSTITUTE CLAIM 21 IS INDEFINITE.

The Board should also deny the MTA because the ’804 patent is entirely

unclear as to the meaning of the “third predetermined time period” in Substitute Claim 21. *See* EX1034, ¶43. The recitation of a single “control effort” throughout the entire claim also creates uncertainty about claim scope. EX1034, ¶44.⁵ “A patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).⁶

The scope of Substitute Claim 21 is uncertain because it is unclear whether “a third predetermined time period” in Element [21.J] refers to the previously recited “third predetermined time period” in Elements [21.G] and [21.H]. EX1034, ¶43. Element [21.K] adds confusion about the claim scope. Element [21.K] recites “reducing said control effort when said control effort exceeds said second threshold for *said third predetermined time period*.” Given problems with antecedent basis, a POSA would have been unable to ascertain, with reasonable certainty, whether the third predetermined time period in Element [21.K] refers to

⁵ Adding more uncertainty, Substitute Claim 21 recites a “second commanded hold close position” without a “first commanded hold close position.”

⁶ *Nautilus* applies. *See* Indefiniteness Memo (Jan. 6, 2021), *available at* <https://www.uspto.gov/sites/default/files/documents/IndefinitenessMemo.pdf>.

the third predetermined time period in Element [21.G], the third predetermined time period in Element [21.J], or both. EX1034, ¶43.

It is also unclear, in view of the specification, whether the “control effort” in Element [21.K] refers to the same control effort as some or all of Elements [21.B]-[21.J]. The disclosure explains that the control effort in steps 42 and 52 is different (one is positive and one is negative). *See* EX1002, 0026 (FIG. 2). Presumably, the control effort for Elements [21.B]-[21.F] and Elements [21.G]-[21.K] should likewise be different because PO relies on steps 42 and 52 for the original disclosure, and a POSA would have appreciated that a control effort for opening the throttle is different than the control effort for closing the throttle. EX1034, ¶44. But it is unclear given the antecedent basis. EX1034, ¶44.

When this level of uncertainty exists, an indefiniteness rejection is warranted. M.P.E.P. § 2173.05(e).

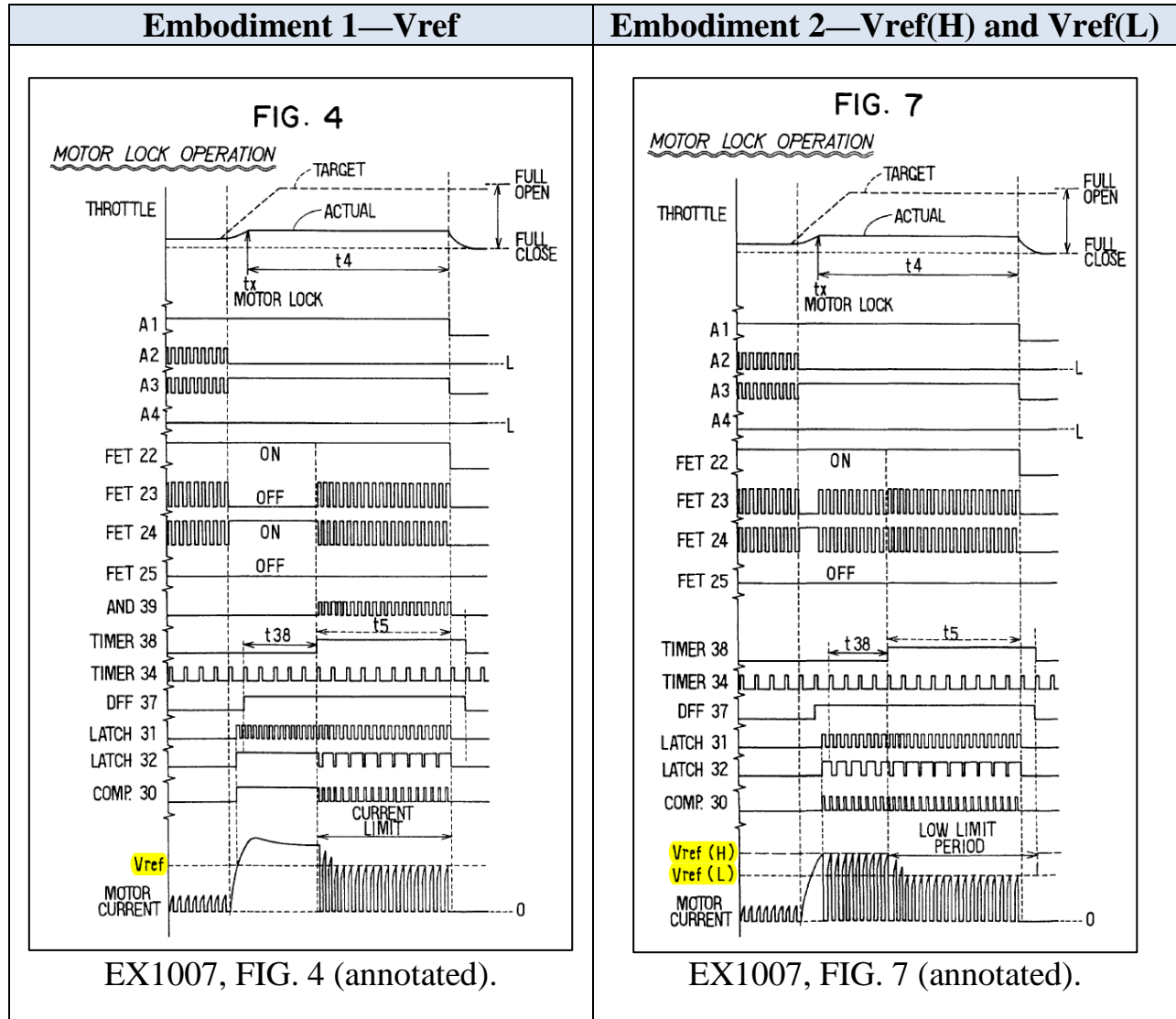
V. ITABASHI RENDERS OBVIOUS SUBSTITUTE CLAIM 21.

PO’s amendment does not overcome Itabashi. Shown below, Itabashi discloses two embodiments—one that uses V_{ref} (FIGS. 2-4) and another that uses both $V_{ref}(H)$ and $V_{ref}(L)$ (FIGS. 5-7). Each embodiment renders obvious Substitute Claim 21 because each embodiment discloses (or at least suggests) every element of the claim (the two embodiments provide two different grounds). An embodiment that discloses every element renders obvious the claim because

“anticipation is the epitome of obvious.” *Connell v. Sears, Roebuck & Co.*, 722

F.2d 1542, 1548 (Fed. Cir. 1983); *see also Realtime Data, LLC v. Iancu*, 912 F.3d

1368, 1373 (Fed. Cir. 2019) (affirming *Connell* in the IPR context).



A. [21.Pre] “A method for controlling a positioning device of an internal combustion engine”

To the extent the preamble is limiting, both of Itabashi’s embodiments disclose the preamble. EX1034, ¶¶47, 89. As Itabashi states, its “invention relates

to a motor drive control apparatus and method having a motor current limit function, which can be applied to a motor driven throttle valve control in an internal combustion engine.” EX1007, 1:13-16; *see also* EX1007, 8:16-36.

B. [21.A] “providing an electric motor for actuating the positioning device”

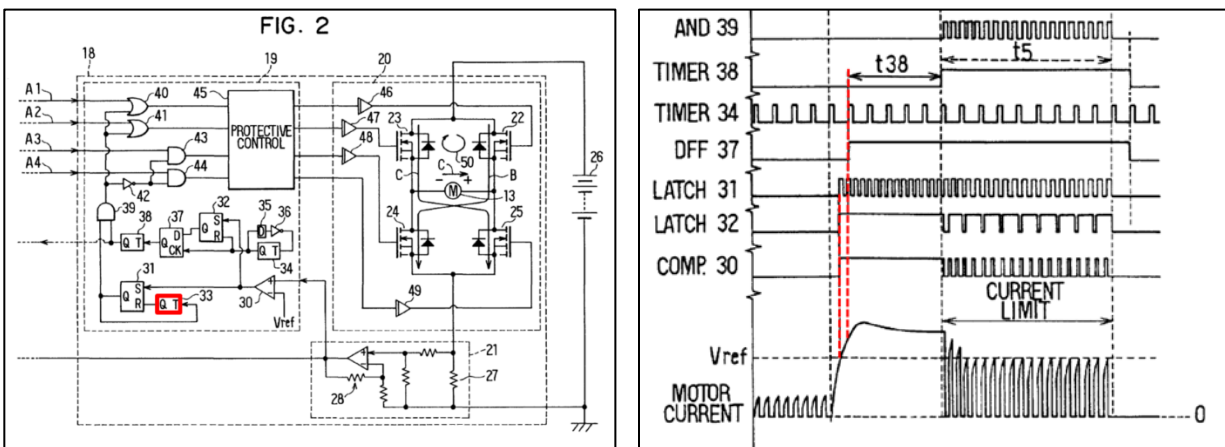
Both of Itabashi’s embodiments disclose this element. Itabashi’s systems provide “an electrically-driven direct current motor 13.” EX1007, 2:48-50; EX1034, ¶¶48, 90. Motor 13 is for actuating the positioning device of an internal combustion engine. EX1007, 2:54-56, 3:7-10, FIGS. 1, 2, 5; EX1034, ¶¶48, 90.

C. [21.B] “detecting whether a control effort required to change a position of the positioning device has exceeded a first limit for at least a first predetermined time period”

In Itabashi’s first embodiment, the drive logic circuit 19 and current detection circuit 21 detect whether a control effort required to move the throttle has exceeded a first limit (V_{ref}). EX1034, ¶¶49-51. In Itabashi, “[t]he output signal of the current detection circuit 21 . . . is applied to the drive logic circuit 19.” EX1007, 3:44-47. “In the drive logic circuit 19, a comparator 30 is provided to compare the output signal of the current detection circuit 21 with a reference signal V_{ref} , which is set to correspond to the maximum limit level of the motor current.” EX1007, 3:48-51. The drive logic circuit 19 detects that the control effort has exceeded a first limit because, as Itabashi states, “[e]ach time the motor current exceeds the limit current level, the comparator 30 produces a high level output

signal.” EX1007, 3:58-59; EX1034, ¶50. This control effort is the effort required to change a position of the throttle valve. EX1007, 3:44-47, 2:54-56; EX1034, ¶51.

Itabashi’s first embodiment detects whether the control effort has exceeded V_{ref} for at least a first predetermined time period because the output of comparator 30 is applied to a timing circuit with timer 33 (shown below left in red). See EX1007, 3:58-63, FIG. 2; EX1034, ¶¶52-53. The drive logic circuit 19 uses timer 33 to detect whether the control effort exceeds V_{ref} for predetermined time period t_{33} . See EX1007, 3:64-4:1, 4:4-18, FIG. 4; EX1034, ¶52. Shown below right, the at least one first predetermined time period t_{33} occurs between the two red dashed lines. EX1034, ¶53.

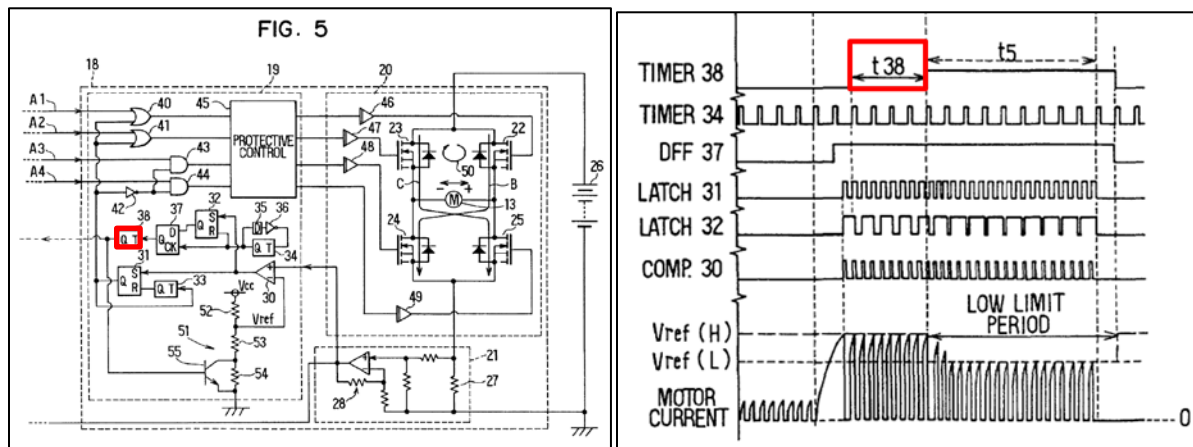


EX1007, FIG. 2 (annotated). EX1007, FIG. 4 (excerpted and annotated).

Like the first embodiment, Itabashi’s second embodiment has a drive logic circuit 19 and a current detection circuit 21 to detect that the control effort has exceeded a first limit—this time $V_{ref}(H)$. EX1007, FIG. 5; EX1034, ¶¶91-93; see

also EX1007, 8:47-51 (using $V_{ref}(H)$ and $V_{ref}(L)$ instead of a single V_{ref}).

Itabashi's second embodiment also detects whether the control effort has exceeded $V_{ref}(H)$ for at least a first predetermined time period because the timing circuit has a timer with a predetermined time period t_{38} . See EX1007, FIGS. 5, 7; EX1034, ¶¶94-95.



EX1007, FIG. 5 (annotated).

EX1007, FIG. 7 (excerpted and annotated).⁷

⁷ Although the timing diagram appears to show that the control effort only meets $V_{ref}(H)$ during t_{38} , Itabashi's comparator 30 detects whether the control effort exceeds the reference voltage. See EX1007, 3:58-59. Timer t_{38} is therefore triggered and runs when the control effort exceeds $V_{ref}(H)$ —not when the control effort meets $V_{ref}(H)$. EX1034, ¶94.

D. [21.C] “in the event the control effort is detected to have exceeded the first limit for at least the first predetermined time period, commanding the positioning device to change to a first commanded hold open position”

Itabashi's first embodiment discloses this element because in the event the control effort exceeds V_{ref} for at least the first predetermined time period (i.e., at the beginning of t_{38}), signals A1-A4 command the throttle to open and hold open. *See* EX1007, 3:4-7, FIG. 4; EX1034, ¶¶55-57. Signals A1-A4 command the throttle valve to change position because “the drive control circuit 18 drives the motor 13 to rotate the throttle valve 12 *to a target position* corresponding to the detected actual accelerator position.” EX1007, 3:7-10 (emphasis added). As Itabashi explains and shows in Figure 4, signals A1 and A3 are high, and signals A2 and A4 are low to open the throttle valve for an extended period of time. *See* EX1007, 6:34-39, 6:51-55, FIGS. 2-4; *see also* EX1034, ¶¶55-57. To the extent PO argues that the detection in Element [21.B] must *cause* the command to change, this is not a requirement of the claim. EX1034, ¶55. The claim requires only that the method commands the positioning device to move to a commanded hold open position in the event the control effort is detected to have exceeded a limit for a predetermined time period of time. That is what Itabashi discloses. EX1034, ¶55.

Itabashi's second embodiment discloses this element because in the event the control effort exceeds $V_{ref}(H)$ for at least t_{38} , signals A1-A4 command the throttle to open and hold open. *See* EX1007, 3:4-7, FIG. 7; EX1034, ¶¶97-99. As

Itabashi explains and shows in Figure 7, signals A1 and A3 are high, and signals A2 and A4 are low to open the throttle valve for an extended period of time. *See* EX1007, 6:34-39, 6:51-55, FIGS. 5-7; *see also* EX1034, ¶¶97-99.

E. [21.D] “detecting the control effort required to change to said first commanded hold open position”

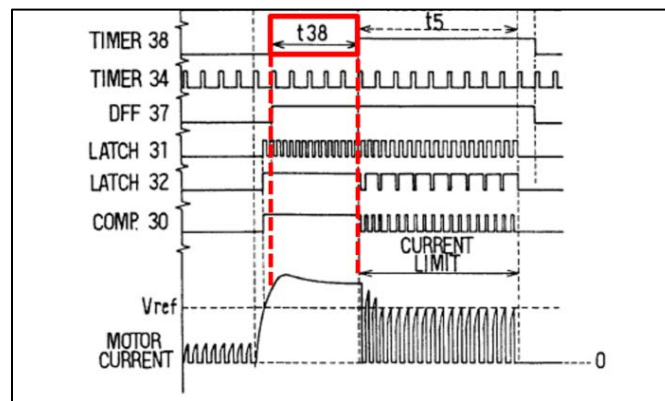
Both of Itabashi’s embodiments disclose this element because “a current detection circuit 21 . . . detects a motor current, i.e., an electric current supplied from the drive circuit 20 to the motor 13.” EX1007, 3:11-16; EX1034, ¶¶59, 101. The detected motor current is required to move the throttle to the first commanded hold open position because “the engine control circuit 15 drives the motor 13 with the motor current of 100% duty ratio during the time period t1 so that the actual throttle position approaches [and maintains] the target throttle position in a short period of time.” EX1007, 6:46-51; *see also* EX1007, 6:36-39; EX1034, ¶¶99, 101.

F. [21.E] “determining whether said control effort exceeds a first threshold for a second predetermined time period”

In Itabashi’s first embodiment, the drive logic circuit 19 and current detection circuit 21 determine whether the control effort exceeds a first threshold

(Vref).⁸ EX1034, ¶¶61-62. As explained for Element [21.B], the output of comparator 30 becomes high when the output signal of the current detection circuit 21 exceeds Vref. EX1007, 3:48-51, 3:58-59, FIG. 2. When the output of comparator 30 becomes high, the drive logic circuit 19 determines that the motor current (the control effort) exceeds Vref (a threshold). EX1034, ¶¶61-62.

Itabashi's first embodiment also determines whether the control effort has exceeded Vref for a *second* predetermined time period—t38. See EX1007, 5:8-16, FIGS. 2, 4; EX1034, ¶¶63-64. Shown below, Itabashi—after at least the first predetermined time period t33—determines whether the control effort exceeds Vref for a *second* predetermined time period—t38. EX1034, ¶¶63.



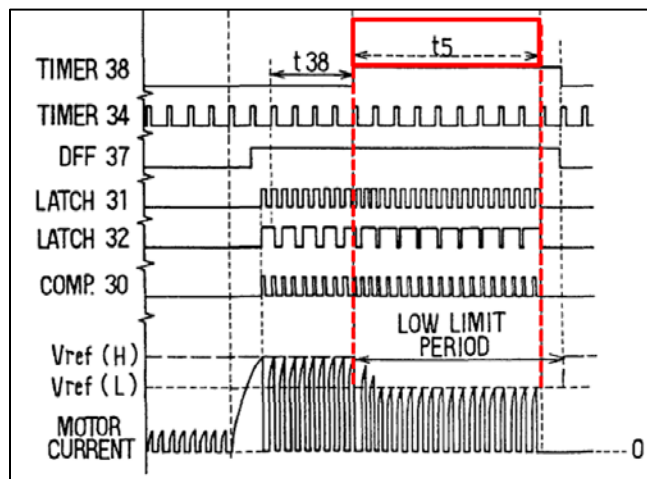
EX1007, FIG. 4 (excerpted and annotated).

⁸ Vref is not only a limit (Element [21.B]) but also a threshold. EX1034, ¶¶62. To the extent PO argues that the threshold must be different than the limit in Element [21.B], the '804 patent has no § 112 support. *Supra* Section III.

Itabashi's second embodiment also determines whether the control effort has exceeded a first threshold $V_{ref}(L)$ for a *second* predetermined time period t_5 .

EX1034, ¶¶103-05. Itabashi's second embodiment determines whether the control effort exceeds a "first threshold" less than the "first limit" in Element [21.B]

because the drive logic circuit 19 has "a reference signal switching circuit 51 . . . to switch the reference signal V_{ref} applied to the comparator 30 between a high level $V_{ref}(H)$ for the high limit level and a low level $V_{ref}(L)$ for the low current limit level." EX1007, 8:47-51. As Itabashi's timing diagram shows below, the system determines whether the control effort exceeds $V_{ref}(L)$ for a *second* predetermined time period— t_5 . See EX1007, 7:67-8:2, FIG. 7; EX1034, ¶104.

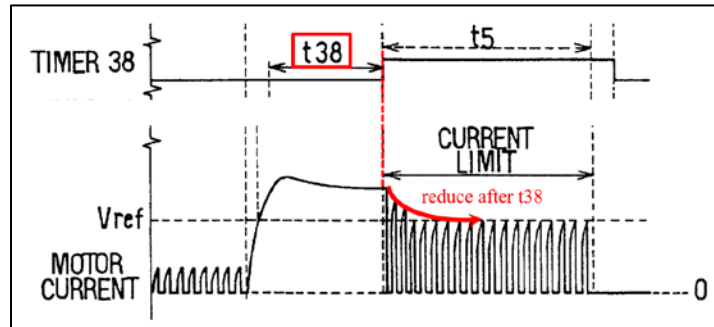


EX1007, FIG. 7 (excerpted and annotated).⁹

⁹ Although the timing diagram appears to show that the control effort only *meets* $V_{ref}(L)$ during t_5 , Itabashi's comparator 30 detects whether the control

G. [21.F] “reducing said control effort when said control effort exceeds said first threshold for said second predetermined time period”

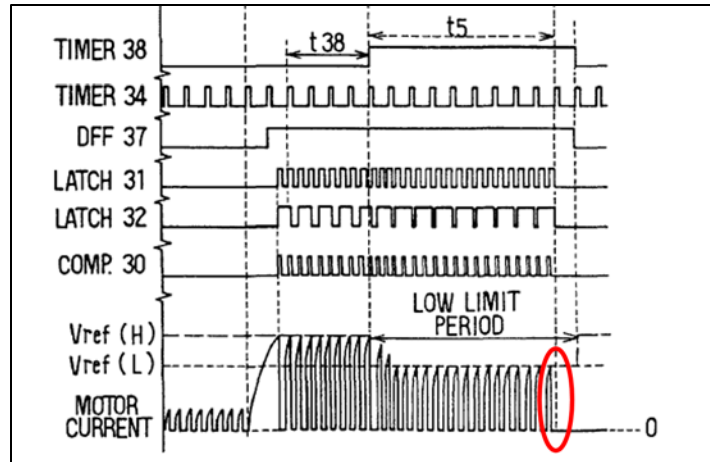
Itabashi’s first embodiment discloses this element because it reduces the control effort when the control effort exceeds V_{ref} for predetermined time period t_{38} , as the timing diagram shows below. *See* EX1007, FIG. 4; EX1034, ¶¶66-67.



EX1007, FIG. 4 (excerpted and annotated).

Itabashi’s second embodiment also discloses this element because it reduces the control effort when the control effort exceeds $V_{ref}(L)$ for predetermined time period t_5 . EX1034, ¶107. Shown below, at the end of t_5 , “the engine control circuit 15 determines it as the motor lock and changes all the drive signal levels to low.” EX1007, 7:67-8:2; *see also* EX1007, 8:3, 10:12-16.

effort *exceeds* the reference voltage $V_{ref}(L)$. *See* EX1007, 3:58-59; EX1034, ¶105. Timer t_5 is therefore triggered and runs when the control effort *exceeds* $V_{ref}(L)$ —not when the control effort *meets* $V_{ref}(L)$. EX1034, ¶105.



EX1007, FIG. 7 (excerpted and annotated).

H. [21.G] “detecting whether the control effort has exceeded a second limit for at least a third predetermined time period”

In both of Itabashi’s embodiments, the drive logic circuit 19 and the current detection circuit 21 detect whether the control effort has exceeded a second limit. EX1034, ¶¶69-74, 109-14. Like how Itabashi’s system detects whether the control effort has exceeded a first limit when commanding the throttle to *open*, the system detects whether the control effort has exceeded a second limit when commanding the throttle to *close* (V_{ref} for the first embodiment and $V_{ref}(H)$ for the second embodiment). EX1034, ¶¶69-72, 109-12.

A POSA would have understood that Itabashi’s current detection circuit also applies when *closing* the throttle because Itabashi refers to driving the motor in the reverse direction. *See, e.g.*, EX1007, 1:66-2:6, 5:21-35, 8:16-36; EX1034, ¶¶69-72, 109-12. For example, Itabashi states that “[t]he motor 13 is driven with the motor current of 100% duty ratio *in the reverse direction* (C) to brake the throttle valve

12.” EX1007, 7:57-59; *see also* EX1007, 6:66-7:3. Driving the motor in reverse direction (C) can both *slow* the opening of the throttle valve and *close* the throttle valve. *See* EX1007, 6:63-7:3; EX1034, ¶¶71, 111. Similar to how Itabashi uses its current detection circuit for reducing excessive motor current when commanding the throttle to open, a POSA would have appreciated that Itabashi’s current detection circuit reduces excessive motor current when driving the motor in the reverse direction, such as when commanding the throttle to close. *See* EX1007, 8:11-15, 10:16-20; EX1034, ¶¶72, 112. Indeed, Itabashi states that its system reduces heat generation of all MOSFETs 22-25, including the MOSFETs used to *close* the throttle. *See* EX1007, 8:28-30; EX1034, ¶¶72, 112.

When closing the throttle, both of Itabashi’s embodiments detect whether the control effort exceeds the second limit ($V_{ref} / V_{ref(H)}$) *for at least a predetermined time period*.¹⁰ EX1034, ¶¶74, 114. For Itabashi’s first embodiment, the drive logic circuit would use predetermined time period t33 before limiting the motor current. *See* EX1007, 8:16-20; EX1034, ¶74. For Itabashi’s second embodiment, the drive logic circuit would use predetermined time period t38

¹⁰ The “first predetermined time period” in Element [21.B] and the “third predetermined time period” in Element [21.G] can be the same duration. *See* EX1001, 3:28-30, 4:19-21 (both can be 300 milliseconds); EX1034, ¶74 n.2.

before limiting the motor current because Itabashi states that “the motor current is limited to a lower level, when the motor current continues to exceed the limit level for more than the predetermined period t38 during the period of the motor drive starting (or [when driving the motor in the reverse direction]).” EX1007, 8:25-28; EX1034, ¶114.

I. [21.H] “in the event the control effort is detected to have exceeded the second limit for at least the third predetermined time period, commanding the positioning device to change to a second commanded hold close position”

Both of Itabashi’s embodiments disclose this element because in the event the control effort exceeds the second limit ($V_{ref}/V_{ref}(H)$) for at least the third predetermined time period (t_{33}/t_{38}), signals A1-A4 would command the throttle valve to close and hold at its closed position. EX1034, ¶¶76-79, 116-17. In contrast to Element [21.C] where signals A1-A4 command the throttle to open, signals A1-A4 would command the throttle to close. EX1034, ¶¶77, 116. As Itabashi states, “[a]lthough the motor current supply is controlled as described above and shown in FIG. 4 when the motor locks at the time of the motor drive starting, the motor current supply is controlled in the similar manner when the motor locks [when driving the motor in the reverse direction].” EX1007, 8:11-15; *see also* EX1007, 10:16-20 (same disclosure for FIG. 7); EX1034, ¶¶77, 116. Itabashi further discloses that the “direct current motor for an engine throttle control is driven with a motor current of 100% duty ratio, *when a throttle valve is to be moved from one*

throttle position to another or when the movement of the throttle valve is to be braked.” EX1007, Abstract (emphasis added). A POSA would have understood that moving from one throttle position to another includes moving the throttle in the opening direction (from a less open to a more open position, including fully open) *and in the closing direction* (from a more open to a less open position, including fully closed). EX1034, ¶78. Accordingly, in the event the control effort is detected to have exceeded $V_{ref}/V_{ref}(H)$ for at least the third predetermined time period t_{33}/t_{38} , Itabashi’s system would command the throttle to close by turning signals A1 and A1 low and signals A2 and A4 high. EX1034, ¶¶79, 117. And because the target throttle position would remain closed for a period of time, signals A1-A4 would command the throttle valve to change to a commanded “hold close position.” EX1034, ¶¶78, 117.

J. [21.I] “detecting the control effort required to change to said second commanded hold close position”

Both of Itabashi’s embodiments disclose this element because “a current detection circuit 21 . . . detects a motor current, i.e., an electric current supplied from the drive circuit 20 to the motor 13.” EX1007, 3:11-16; *see also* EX1034, ¶¶81, 119. The detected motor current would be the current required to move the throttle to the second commanded hold close position because the engine control circuit 15 uses current to drive the motor 13 to reach and maintain a throttle position, such as a hold close position. *See* EX1007, 6:36-39, 6:46-51.

K. [21.J] “determining whether said control effort exceeds a second threshold for a third predetermined time period”

Both of Itabashi’s embodiments determine whether the control effort exceeds a second threshold. EX1034, ¶¶83-85, 121-123. As explained for Element [21.E], when commanding the throttle to open, Itabashi’s drive logic circuit 19 determines that the motor current (the control effort) exceeds $V_{ref}/V_{ref}(L)$ (a threshold) when the output of comparator 30 becomes high. Likewise, when driving the throttle motor in the reverse direction to close the throttle, Itabashi’s drive logic circuit 19 would determine that the motor current exceeds $V_{ref}/V_{ref}(L)$ when the output of comparator 30 becomes high. EX1034, ¶¶83, 121. Indeed, Itabashi states that the system has a set limit level for when driving the throttle motor in the reverse direction. *See* EX1007, 3:55-57; EX1034, ¶¶83, 121.

Both of Itabashi’s embodiments also determine whether the control effort exceeds $V_{ref}/V_{ref}(L)$ for a *third* predetermined time period t_{38}/t_5 .¹¹ EX1034, ¶¶85, 123. As explained for Element [21.E], the drive logic circuit 19 determines whether the control effort exceeds $V_{ref}/V_{ref}(L)$ for a *second* predetermined time period—time period t_{38}/t_5 —when commanding the throttle to open. Likewise,

¹¹ The “second predetermined time period” in Element [21.E] and the “third predetermined time period” in Element [21.J] can be the same duration. *See* EX1001, 4:26-27, 5:41-42, 6:39-40 (both can be 30 milliseconds).

when driving the throttle motor in the reverse direction to close the throttle, Itabashi's drive logic circuit 19 would determine whether the motor drive current exceeds $V_{ref}/V_{ref}(L)$ for predetermined time period t_{38}/t_5 . *See* EX1034, ¶¶85, 123. Indeed, Itabashi states that “[a]lthough the motor current supply is controlled as described above and shown in FIG. 4/[FIG. 7] when the motor locks at the time of the motor drive starting, the motor current supply is controlled in the similar manner when the motor locks [when driving the motor in the reverse direction].” *See* EX1007, 8:11-15, 10:16-20; EX1034, ¶123.

L. [21.K] “reducing said control effort when said control effort exceeds said second threshold for said third predetermined time period”

Both of Itabashi's embodiments disclose this element because, after the motor current exceeds $V_{ref}/V_{ref}(L)$ for predetermined time period t_{38}/t_5 when trying to *close* the throttle, Itabashi's system would reduce the motor current. EX1034, ¶¶87, 125. As explained for Element [21.F], Itabashi's system reduces the motor current—when commanding the throttle to *open*—after the motor current exceeds $V_{ref}/V_{ref}(L)$ for predetermined time period t_{38}/t_5 . A similar reduction to motor current would occur when driving the throttle motor in the reverse direction to *close* the throttle. EX1034, ¶¶87, 125. As Itabashi states, “the motor current is limited to a lower level, when the motor current continues to exceed the limit level for more than the predetermined period t_{38} during the period of the motor drive starting (or [when driving the motor in the reverse direction]).” *See* EX1007, 8:25-

28; EX1034, ¶87. Itabashi also states that “the motor current supply is controlled in the similar manner when the motor locks [when driving the motor in the reverse direction].” *See* EX1007, 10:16-20; EX1034, ¶123. Accordingly, Itabashi’s second embodiment—at the end of t5—would reduce the control effort to zero when commanding the throttle to close. *See* EX1007, 10:12-16; EX1034, ¶123.

* * *

Both of Itabashi’s embodiments (FIGS. 2-4 and FIGS. 5-7) disclose (or at least suggest) every element of Substitute Claim 21. For this reason, Itabashi renders obvious Substitute Claim 21.

VI. Conclusion

The MTA does not present an allowable claim. Even if the Board were to set aside PO’s flagrant procedural violations (they should not), the only substitute claim in the MTA is substantively defective. PO has not shown adequate written description support for at least eight of the twelve claim elements. Confusing antecedent basis throughout the substitute claim rises to the level of indefiniteness. And the amendment does not even overcome the Itabashi reference applied in the Petition, which has two embodiments that both teach or suggest every element. The motion should be *denied*, and PO should not be granted a do-over.

Respectfully submitted,

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APPENDIX

Element	Proposed Amendment to Claim 1
[21.Pre]	A method for controlling a positioning device of an internal combustion engine, the method comprising the steps of:
[21.A]	providing an electric motor for actuating the positioning device;
[21.B]	<u>detecting whether a control effort required to change a position of the positioning device has exceeded a first limit for at least a first predetermined time period;</u>
[21.C]	<u>in the event the control effort is detected to have exceeded the first limit for at least the first predetermined time period,</u> commanding the positioning device to change to a <u>first</u> commanded <u>hold open</u> position;
[21.D]	detecting [[a]] <u>the</u> control effort required to change to said <u>first</u> commanded <u>hold open</u> position;
[21.E]	determining whether said control effort exceeds a <u>first</u> threshold for a <u>second</u> predetermined time period; and
[21.F]	reducing said control effort when said control effort exceeds said <u>first</u> threshold for said <u>second</u> predetermined time period;
[21.G]	<u>detecting whether the control effort has exceeded a second limit for at least a third predetermined time period;</u>

[21.H]	<u>in the event the control effort is detected to have exceeded the second limit for at least the third predetermined time period, commanding the positioning device to change to a second commanded hold close position;</u>
[21.I]	<u>detecting the control effort required to change to said second commanded hold close position;</u>
[21.J]	<u>determining whether said control effort exceeds a second threshold for a third predetermined time period; and</u>
[21.K]	<u>reducing said control effort when said control effort exceeds said second threshold for said third predetermined time period.</u>
[21.L]	wherein commanding the positioning device to change to said commanded position comprises at least one of commanding the positioning device to open to a hold open mode and commanding the positioning device to close to a hold close mode.

CERTIFICATION OF SERVICE

The undersigned hereby certifies that true and correct copies of the above-captioned **PETITIONER VOLKSWAGEN GROUP OF AMERICA, INC.’S OPPOSITION TO PATENT OWNER’S MOTION TO AMEND** was served electronically via email in its entirety on February 9, 2021, upon the following parties:

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