Trials@uspto.gov
571-272-7822

Paper 33
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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WEBASTO ROOF SYSTEMS, INC.,
Petitioner,

v.

UUSI, LLC,
Patent Owner.

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Case IPR2014-00648
Patent 8,217,612 B2

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Before GLENN J. PERRY, HYUN J. JUNG, and JASON J. CHUNG,
*Administrative Patent Judges.*

PERRY, *Administrative Patent Judge.*

# FINAL WRITTEN DECISION
*Inter Partes* Review
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

# I. INTRODUCTION

## *A. Procedural Posture*

Petitioner, Webasto Roof Systems, Inc. ("Webasto"), filed a Corrected Petition (Paper 4, "Pet.") on April 30, 2014, requesting *inter partes* review of claims 1, 2, and 5–8 of U.S. Patent No. 8,217,612 B2 ("the '612 patent"). Patent Owner UUSI, LLC ("UUSI") filed a Preliminary Response (Paper 9, "Prelim. Resp.") to the Petition. On October 17, 2014, we instituted *inter partes* review of claims 1–2 and 5–8 on the following grounds of unpatentability alleged in the Petition:

A. claims 6–8 are unpatentable under 35 U.S.C. § 102 as anticipated by Bernard;[1]
B. claims 1, 2, and 5–8 are unpatentable under 35 U.S.C. § 103 over Lamm,[2] Itoh,[3] and Bernard; and
C. claims 1, 2, and 6–8 are unpatentable under 35 U.S.C. § 103 over Duhame[4] and Kinzl.[5]

Paper 14 ("Dec."), 17–18.

Following institution, UUSI filed a Response (Paper 20, "PO Resp."). Webasto filed a Reply (Paper 24, "Reply"). Webasto moved (Paper 26, "Mot.") to exclude evidence. UUSI opposed (Paper 28, "Opp.") that motion. We heard oral argument on June 29, 2015. Paper 31 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6(c). This Final Written

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[1] U.K. Published Patent Application GB 2 026 723 A, published Feb. 6, 1980 (Ex. 1005, "Bernard").
[2] German Published Patent Application DE 40 00 730 A1, published Aug. 1, 1991 (Translation Ex. 1008, "Lamm").
[3] U.S. Patent No. 4,870,333, issued Sept. 26, 1989 (Exhibit 1006, "Itoh").
[4] U.S. Patent No. 5,218,282, issued June 8, 1993 (Ex. 1009, "Duhame").
[5] U.S. Patent No. 4,468,596, issued August 28, 1984 (Ex. 1007, "Kinzl").

Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For reasons stated below, Webasto has shown, by a preponderance of the evidence, that claims 1, 2, and 5–8 of the ’612 patent are unpatentable.

### *B. Related Matters*

The parties state that the ’612 patent is asserted in the following district court proceedings:

1. *UUSI, LLC v. Robert Bosch LLC*, No. 2:13-cv-10444 (E.D. Mich.) (“UUSI v. BNA”), filed February 4, 2013. *See* Pet. 1 and Paper 6, 2.

2. *UUSI, LLC v. Webasto Roof Sys., Inc.*, No. 2:13-cv-11704 (E.D. Mich.) (“UUSI v. Webasto”), filed April 15, 2013. *See* Pet. 1, Paper 6, 2.

The ’612 patent belongs to a family of patents involved in multiple *inter partes* reviews including IPR2014-00416, IPR2014-00417, IPR2014-00648 (this proceeding), IPR2014-00649, and IPR2014-00650. The petition in IPR2014-00416 (“the ’416 proceeding”), like the present Petition, challenges the ’612 Patent. We determined in a Final Decision that claims 1, 2, and 5–8 of the ’612 patent have been shown to be unpatentable. *See Brose North America, Inc. and Brose Fahrzeugteile GMBH v. UUSI, LLC*, Case IPR2014-00416 (PTAB July 27, 2015) (Paper 40).

## II. THE ’612 PATENT

### *A. Described Invention*

The ’612 patent describes protecting against pinching objects in the travel path of a vehicle power-driven movable panel, such as a window or sun roof. The ’612 patent further describes analyzing sensor signals to determine panel movement directly or indirectly and determine whether a panel collides with an object in its travel path. *See* Ex. 1001 at [57] and 1:56–2:20.

Figure 1 of the '612 patent is shown below:

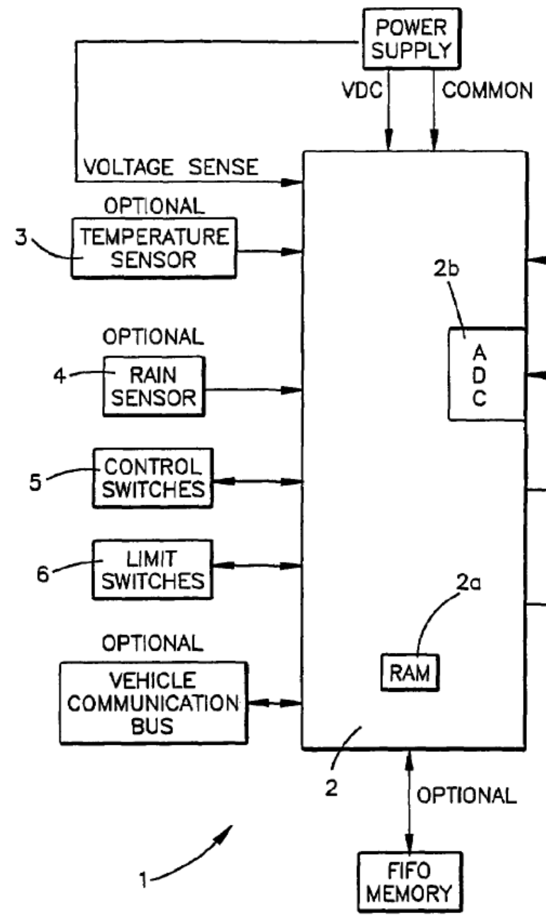



Fig.1

Figure 1 is a schematic diagram of an exemplary actuator safety feedback control system 1. Ex. 1001, 2:24–25, 2:63–65. Controller 2 monitors and controls movement of a motor driven panel. *See id.* at 2:65–3:5. Forward and reverse motor drive elements 7a and 7b drive the motor (not shown in Figure 1) in forward and reverse directions, respectively. *See id.* at 3:36–41. Controller 2 can sense obstacles in the panel's path in various ways based on sensor signals from, e.g., a paired infrared emitter and detector disposed along the panel's path (*see id.* at 3:60–4:64), a motor current monitor (*see id.* at 4:9–11, 7:20–8:3, 8:33–10:5), and other monitors (*see id.* at 11:14–20).

### *B. Illustrative Claim*

Of the challenged claims, claims 1 and 6 are independent. Claim 1 is illustrative and is reproduced below.

> 1. Apparatus for controlling activation of a motor coupled to a motor vehicle window or panel for moving said window or panel along a travel path and de-activating the motor if an obstacle is encountered by the window or panel, said apparatus comprising:
>
> a) a sensor for sensing movement of the window or panel and providing a sensor output signal related to a speed of movement of the window or panel;
>
> b) a switch for controllably actuating the motor by providing an energization signal;
>
> c) one or more switches for use by the controller to determine window or panel position; and
>
> d) a controller having an interface coupled to the sensor and the switch for controllably energizing the motor; said controller sensing a collision with an obstruction when power is applied to the controller by:
>
> i) monitoring movement of the window or panel by monitoring a signal from the sensor related to the movement of the window or panel;
>
> ii) adjusting an obstacle detection threshold in real time based on immediate past measurements of the signal sensed by the sensor to adapt to varying conditions encountered during operation of the window or panel;
>
> iii) identifying a collision of the window or panel with an obstacle due to a change in the signal from the sensor that is related to a change in movement of the window or panel by comparing a value based on a most recent signal from the sensor with the obstacle detection threshold; and

> iv) outputting a control signal to said switch to deactivate said motor in response to a sensing of a collision between an obstacle and said window or panel.

III. ANALYSIS

*A. Claim Construction*

The ’612 patent has expired. We therefore construe its claims in a manner similar to that of a district court, as articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316, 1327 (Fed. Cir. 2005). Claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire patent disclosure. *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365-66 (Fed. Cir. 2012). We construe the terms below in accordance with that standard.

Webasto proposes a construction for one claim term. Pet. 7–8. UUSI proposes construction of additional terms in its response. PO Resp. 18−22.

*1. “identifying a collision of the window or panel with an obstacle” “deactivate said motor in response to a sensing of a collision” (claim 1)*

UUSI argues that the claimed controller’s “identifying” and “sensing” features must each be given weight in that the “sensing” is a different action from the “identifying.” PO Resp. 19. In support, UUSI points to use of the indefinite article “a” before “sensing.” UUSI further argues that these two separate actions require two separate algorithms operating concurrently (but logically distinct), the first for “identifying” and second for “sensing.” *Id.* at 19−20.

We do not subscribe to UUSI’s view. Claim 1 itself explains how “identifying” and “sensing” are carried out. A threshold is established and updated as time passes. Comparisons are made between a current sensor signal and the threshold (whatever the threshold may be at time of comparison). The claim says nothing about carrying out these activities by algorithms being executed by the controller.

Reading claim 1 as a whole, we do not adopt a construction requiring separate and distinct algorithms. Claim 1, written in outline format, includes a limitation "d" that requires a controller to sense a collision. Limitation "d" ends with the word "by" followed by a colon. What follows is a list of limitations that are enumerated "i," "ii," "iii" and "iv," which are further indented than limitations "a," "b," "c," and "d." Limitation "d" tells us that the limitations following the colon explain how the sensing is accomplished. The "sensing a collision" (step "d") is accomplished by i) monitoring movement of the window, ii) adjusting a threshold, and iii) identifying a collision by comparing a signal value to the threshold. The final claim limitation ("iv") tells us that a control signal deactivates the motor in response to "a sensing of a collision." Even though "a sensing of a collision" is introduced by the indefinite article "a" (rather than "the"), we do not view this as requiring a separate and distinct "algorithm." Rather, we read limitations "i" through "iv" as explaining how limitation "d" is carried out.

As for UUSI's "concurrent" argument, the claim does not explicitly or implicitly set forth performing the "identifying" and "sensing" limitations concurrently. Nor does the claim say anything about how the various described activities are to be implemented in code.

*2. "a control signal . . . to deactivate said motor" (claims 1 and 6)*

Claims 1 and 6 require *"a control signal . . . to deactivate said motor.*" Webasto construes the term "deactivate" to mean "turn off" thereby excluding reversing a motor without turning it off. Pet. 7. UUSI argues that no construction is needed for the term "deactivate" (PO Resp. 21−22), but that if the Board construes "deactivate," it should be construed according to Webster's Dictionary, which specifies "not active, unmoving, immobile, inoperative" in any mechanical or electrical manner. *Id.* at 22 (citing Exs. 2001 and 2020).

We decline to adopt UUSI's dictionary definition because the Specification of the '612 patent disparages immediately reversing (without first deactivating) the motor in response to detecting an obstacle (Ex. 1001, 3:42–55), which may result in "motor plugging," described as "unnecessary" and "undesirable" as causing "undesired motor heating," is "detrimental to the life and reliability" and because it "can also cause undesirable transients, trip breakers, and blow fuses in a power supply system." Pet. 8. According to Webasto, at least one of UUSI's earlier patents includes claim language that is broader with respect to motor control. *Id.* (citing Ex. 1019, Claims). Thus, as Webasto argues, the choice of the word "deactivate" in the challenged claims was a conscious decision that should be given effect. *Id.*

We construe the claim term "deactivate" to embrace any of turning off, removing power from, and stopping the motor. Our construction excludes immediate reversing of the motor without first turning off, removing power from, or stopping the motor.

#### *3. "deactivate said motor in response to a sensing said window or panel has stopped moving" (claim 6)*

Claim 6 recites a controller programmed to "deactivate said motor in response to a sensing said window or panel has stopped moving prior to reaching a position limit." Ex. 1005, 28:27–30. UUSI urges that plain meaning requires us to construe this limitation as requiring an "abrupt" stopping of the panel. PO Resp. 44−46.

We find nothing in the Specification of the '612 patent that suggests anything other than "has stopped" means that there is no motion. We read "has stopped" as meaning that the panel has ceased motion (zero velocity). The phrase within which "has stopped" appears says nothing about the rate of deceleration of the panel from a velocity greater than zero to a velocity of zero. We decline to read "abrupt" into the claim because the claim does not explicitly state or even imply "abrupt."

*B. Challenges relying on Bernard (Ex. 1005)*

Webasto presents a detailed read of Bernard on claims 6–8. Pet. 8–16. These portions of the Petition make liberal reference to Declaration testimony of Hamid A. Toliyat, Ph.D. (Ex. 1003).

*1. Overview of Bernard (Ex. 1005)*

Bernard describes control circuits for electric window winders for operating moving windows in vehicles. Ex. 1005, 16,[6] ll. 4–6. Bernard's Figure 4 is reproduced below.

[6] Page numbers refer to the page number of the exhibit, not the page number of an exhibit's contained document.

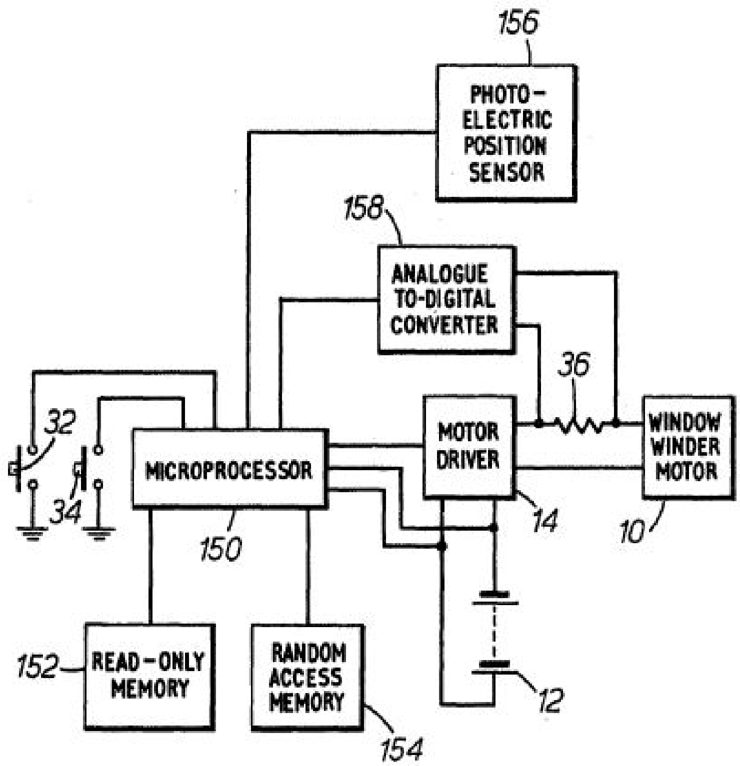



FIG. 4

Figure 4 is a block diagram of a circuit for controlling an electric window winder. *Id.* at 18, ll. 75–77. Bernard provides protection against injury by sensing an increase in motor current resulting from a window meeting an obstruction. It deenergizes window winder motor 10 if microprocessor 150 determines that a threshold value of motor current is exceeded. *Id.* at 16, ll. 111–118; 20, ll. 110–118; 22, ll. 97–110.

*2. Applying Bernard (Ex. 1005)*

Webasto argues that Bernard detects stoppage of a window and deactivates its window winder (10) in response. Tr. 23. Webasto explains that Bernard detects when the window winder is "stalled" and reacts by de-energizing it. *Id.* at 24.

UUSI argues that Bernard does not sense "abrupt stoppage" of the window and offers Dr. Ehsani's explanation. PO Resp. 46 (citing Ex. 2001, 157–159). For Bernard's Figure 5 embodiment, Dr. Ehsani's explanation is that it takes Bernard 0.1 seconds of delay to react to window stoppage if the window does not move after the driver motor is energized. Furthermore, if the window does not move due to an obstruction when the motor is energized, the Bernard system takes at least 0.4 seconds to detect that the window does not move and to reverse the motor. *Id.* (citing Ex. 2001, 157). Similar explanation is made with regard to Bernard's Figure 2 embodiment. *Id.* at 46–47. For these reasons, UUSI argues that Bernard does not meet the required abrupt stoppage limitation of claim 6.

As stated *supra* in Part III.A.3, claim 6 does not require an "abrupt" stoppage. Thus, UUSI's argument does not apply. Furthermore, UUSI appears to conflate abrupt stoppage of the window panel with how rapidly stoppage is *detected*. Arguments that Bernard requires an additional 0.1 second or 0.4 second miss the point. Bernard reacts (albeit with a small delay) to stoppage of the window as claim 6 requires.

### *C. Challenges relying on Lamm (Ex. 1008), Itoh (Ex. 1006), and Bernard*

Webasto contends that claims 1, 2 and 5–8 are rendered obvious by Lamm, Itoh, and Bernard. Pet. 31–46. These portions of the Petition make liberal reference to Declaration testimony of Hamid A. Toliyat, Ph.D. (Ex. 1003).

#### *1. Overview of Lamm (Ex. 1008)*

Lamm describes operating power-actuated components that pose a clamping hazard to objects or a person's body parts. Ex. 1008 at [57]. Lamm describes itself as being particularly suitable for operating sliding sunroofs, window lift motors, door closing mechanisms, and seatbelt positioning devices in vehicles. *Id.* at 2.[7] The system and method continuously determine first and/or higher order derivatives with respect to different travel paths to increase reliability of detecting an obstacle. *Id.* at 2–3. The first and/or higher order derivatives are compared to multiple pre-specified thresholds and once a single threshold value is exceeded, the device is switched off and/or the direction of the movement is reversed. *Id.*

Lamm's Figure 1 is reproduced below.

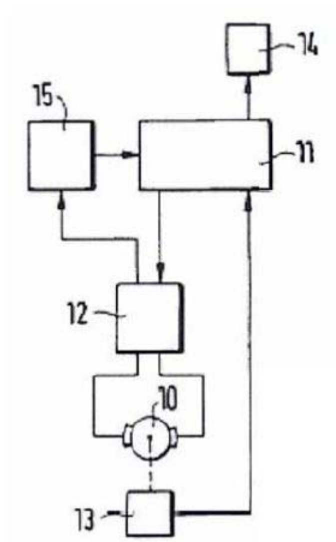
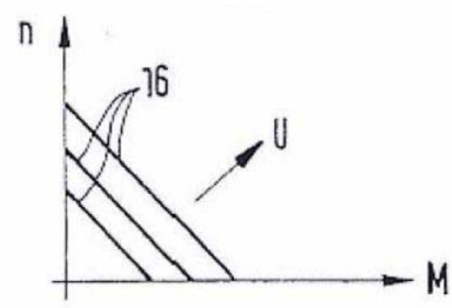



Figure 1 is a block diagram of a drive of a power-actuated component. *Id.* at 3, col. 3. Electric motor 10 is controlled by signal processing device 11 via motor driver circuit 12. *Id.* Sensor 13 detects the rotary speed of motor 10 and provides this speed to signal-processing device 11. *Id.* Device 11 is given commands for controlling motor 10 via operating device 14. *Id.* at 3, col. 4. Lamm explains a relationship between rotary speed of motor 10 as measured by sensor 13 and "rotary torque" M with reference to Lamm's Figure 2, reproduced below. *Id.*

[7] Page numbers refer to the page number of the exhibit.




Lamm's Figure 2 graphically represents a functional correlation between the rotary speed n and the rotary torque M of a direct current motor. *Id.* Lamm explains that, for various motor voltages, relationships between motor speed n and torque M are represented by curves 16 in Lamm Figure 2. *Id.* Thus, the force on an object being pinched is related to motor speed and voltage measured at motor 10 by a voltage meter 15 (Lamm Figure 1). *Id*. At least one derivative with respect to the path traveled by the moving panel is determined by signal processing device 11. *Id*. The derivative is compared to a pre-specified threshold, which, if exceeded, indicates a pinch condition that causes motor 10 to be switched off or reversed. *Id*.

*2. Overview of Itoh (Ex. 1006)*

Itoh's Figure 7 is reproduced below:

FIG. 7

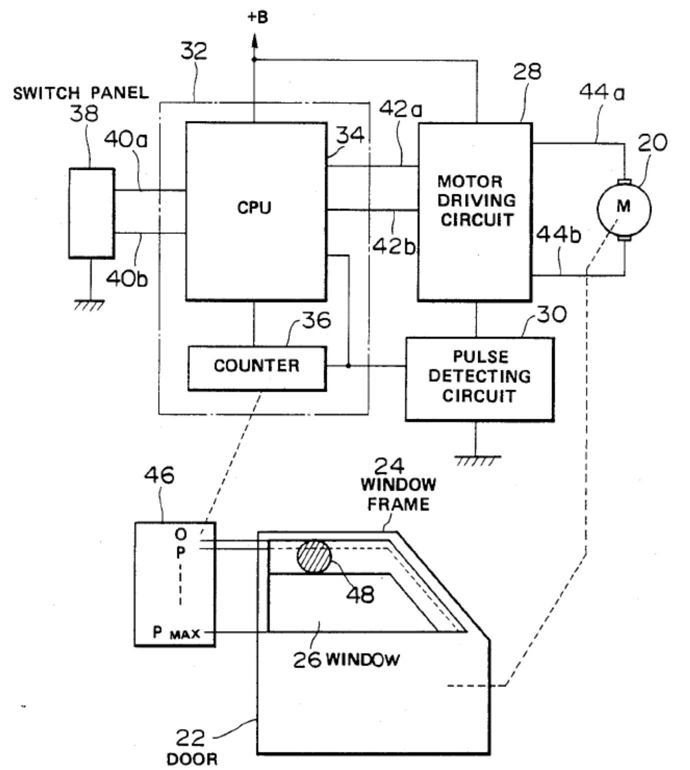



Figure 7 is a schematic diagram of a system for opening and closing window 26. Ex. 1006, 7:50–52. The Itoh system indirectly measures the speed of window 26 by detecting (30) pulses of motor current ripple from motor driving circuit 28. A rate of motor speed change is compared to a threshold α (Fig. 5 decision block 108). If the threshold is exceeded, it is determined that the window has collided with an object. The system may then reverse the direction of travel of window 26 to move it in an opening (downward in Fig. 7) direction. *See id.* at 8:49–52, 11:16–20.

Itoh's controller 32, including CPU 34 and counter 36, controls motor 20 (*id.* at 7:53–8:9 and Fig. 7) via motor driving circuit 28, which switches the motor, controlling the direction of rotation of the motor and controlling whether the motor is on or off. *Id.* at 7:57–59, 7:67–8:11, 11:16–19, 1:48–

50, Fig. 5 (pulse counter clearing and resetting). Motor switching (and the resulting counting of the window position) responds to both the disclosed algorithm and user control switches shown in Figure 7 as "Switch Panel" 38.

CPU 34 is programmed with known positions (memory map 46 shown in Fig. 7) along the window travel path, including (i) "window entirely closed" (designated as the 0 count), (ii) window "full-opened" (e.g., a count value of 2000, Pmax), and (iii) window nearly closed (e.g., a count value of 100, P). *Id*. at 8:14−21, 9:24–34, 10:48–60, 11:35−47, Figs. 10(A), 10(B), 11(A), and 11(B). CPU 34 detects a position of the window by counting (counter 36) pulses of motor ripple current (sensor 30) and comparing the count to memory map 46. *Id.* at 8:10–16, 5:6–10, 8:33–48, 9:16–34 (position), 9:37–62 (speed).

CPU 34 detects an obstacle caught between the window frame and the window using the algorithm shown in Figure 5. *Id*. at 8:49−52. It does so by storing a number of "n" immediately prior speed values in a FIFO-type memory (*Id.* at 10:12–17, Fig. 9), calculating the average (Tm) of those speed values (*Id.* at 10:36–44), calculating the rate-of-change of motor speed (Tp/Tm, where Tp is the instant motor speed value), and comparing that rate-of-change to a threshold (α). *Id.* at 10:61−66. If the rate-of-change of the speed (Tp/Tm) exceeds the α threshold, the CPU issues a signal to the driving circuit 28 to make the motor reverse and the window to descend/open. *Id.* at 11:16–20.

In response to an obstacle, CPU 34 reverses the motor. *Id.* at 11:16–20. Elsewhere (i.e., not Embodiment 3) Itoh discloses deactivating the motor. *See, e.g.*, Abstract. Itoh teaches deactivating the motor if the motor speed exceeds a threshold and the window is "near to the closed position."

*Id.* at 3:52–60. Itoh also teaches that "it is possible to stop the opening or closing action of the window at a halfway, or possible to convert the action of the window in the reverse direction." *Id*. at Abstract.

*3. Applying Lamm, Itoh, and Bernard*

This challenge relies upon Itoh's description of storing multiple window speed or position values. Pet. 33. It also relies upon Bernard's description of switches for determining window position, and end of window travel detection. *Id.* at 35.

UUSI argues that neither Itoh nor Bernard can be combined with Lamm, noting that "a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983)." PO Resp. 26−27 (emphasis omitted). UUSI argues that Itoh uses speed for obstacle detection, but Lamm uses one or more derivatives of speed with respect to the path traveled. Lamm compares the derivatives to respective thresholds that are calculated using clamping tests. *Id.* Dr. Ehsani opines, Lamm's derivative-based obstacle detection scheme is radically different than Itoh's speed-based obstacle detection scheme. *Id.* at 27 (citing Ex. 2001 at 99).

Itoh neither calculates derivatives of speed nor calculates obstacle detection thresholds using clamping tests as Lamm does. *Id.* Although Lamm performs speed-based motor shutoff or motor reversal when the motor speed drops below a minimum speed, it is only a fail-safe mechanism when the derivatives cannot be calculated and an obstacle cannot be detected below the minimum motor speed. *Id.* Dr. Ehsani opines that this minimum-speed-based motor shutoff or reversal procedure is a self-diagnostic process to abort the derivative-based obstacle detection and is therefore not an obstacle detection scheme in Lamm. *Id.* Itoh does not use speed-based motor shutoff or motor reversal when the motor speed drops below a minimum speed as Lamm does. *Id.* While Lamm alleges that the reliability of obstacle detection can be increased by using higher-order derivatives, Itoh alleges that obstacles can be reliably detected quite differently – by merely using the thresholds α and β. UUSI argues further that Itoh, in practice, would be prone to false positives which would be contrary to the high reliability sought by Lamm. *Id.* at 28.

We do not find UUSI's argument persuasive. Obviousness does not require direct substitution. Both Lamm and Itoh are reasonably pertinent to the particular problem with which the inventor is involved — preventing pinching. They both would have commended themselves to an inventor's attention in considering the problem addressed by claims 1, 2 and 5–8 of the '612 patent. *See In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011).

UUSI argues that Lamm fails to teach two concurrent obstacle detection algorithms. PO Resp. 22−25. As noted *supra* in Part III.A.1, the claims do not require the use of two concurrent obstacle detection algorithms. Such an implication from the claim wording is a bridge too far. As stated in our claim construction section, *supra* in Part III.A.1, claim 1 requires that a threshold be established and updated as time passes. It also requires comparison between a current sensor signal and the immediate threshold, whatever it may be.

UUSI also argues that Itoh and Bernard each fail to teach two concurrently executing algorithms. *Id.* at 25−26. Again, UUSI's argument is not founded on a proper claim construction. *See supra* Part III.A.1.

UUSI argues that neither Lamm (*id.* at 33−36), nor Itoh (*id.* at 36−42), nor Bernard (*id.* at 42−44) teach a 40 ms time interval (claim 5) within which past measurements for an obstacle detection threshold are measured.

According to Webasto, the 40 ms limitation is an obvious matter of design choice. Webasto argues (S*ee* Tr. 31−34) that a numerical range is not patentable unless it produces a new and unexpected benefit (citing *In re Huang*, 100 F.3d 135 (Fed. Cir. 1996) and *In re Aller*, 220 F2d 454 (CCPA 1955)). Webasto notes that the only place "40 milliseconds" appears (aside from claim 5) is in a priority application. In that priority application, a buffer is disclosed that has a 20 value depth. Tr. 32. No particular advantage is pointed out. There is no discussion that 40 ms is critical. *Id.* Dr. Ehsani reasons that because 40 ms appears in claim 5, it must have been important. Ex. 1022, 86:8−22.[8]

Webasto extrapolated from Dr. Ehsani's expert Declaration that when the Itoh motor is running at a certain speed, such that TP is 1.2 milliseconds, the 33 TP measurements would occur over the course of 39.6 milliseconds, which is less than the 40 ms required by claim 5. Tr. 33.

The original Examiner recognized that 40 ms was an obvious design choice. The preponderance of the evidence in this case suggests to us that the Examiner was correct.

UUSI argues the patentability of claim 6 over Lamm, Itoh, and Bernard by arguing that these references do not meet the "abrupt stoppage" requirement of claim 6. Pet. 44−54. As discussed in the claim construction

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[8] Page numbers refer to pages as numbered in the deposition transcript incorporated into Exhibit 1022.

section *supra* in Part III.A.3, we do not read an "abruptness" requirement into claim 6.

As to each of these three references, UUSI's arguments focus on how quickly the reference arrangement can react to stoppage of the window. However, the challenged claims do not include limitations related to swiftness of reaction to window stoppage.

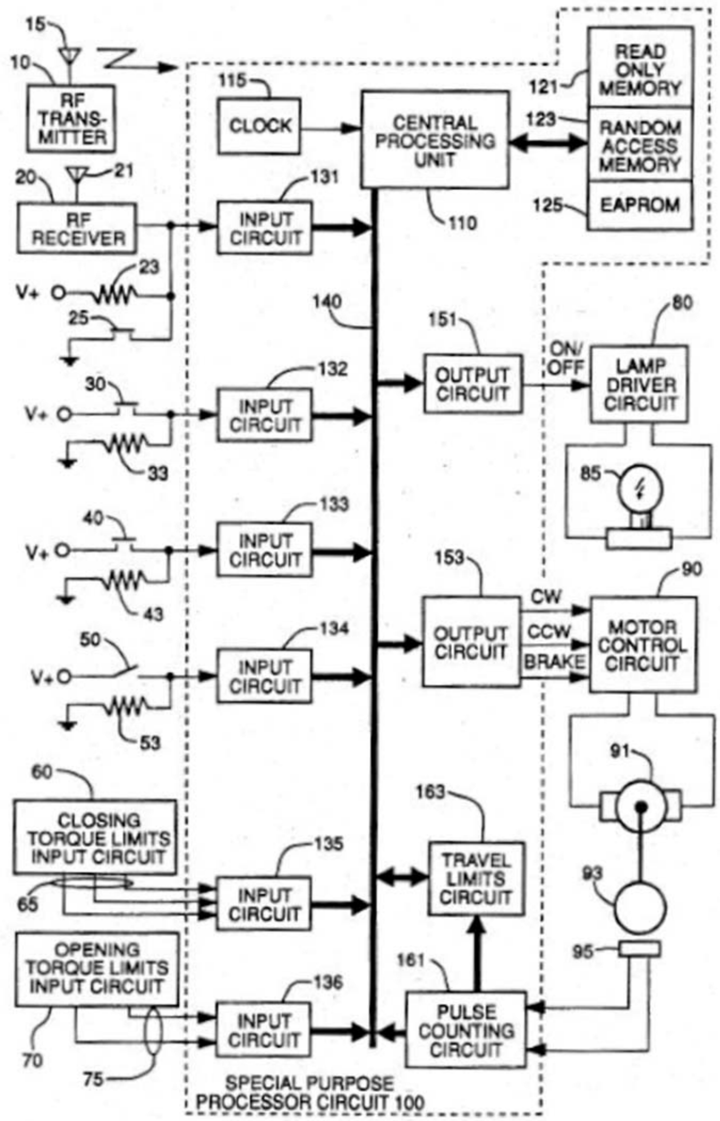
We are persuaded that Webasto has established by a preponderance of the evidence that that Lamm, Itoh, and Bernard render obvious claims 1, 2 and 5–8 of the '612 patent.

### *D. Challenges relying on Duhame (Ex. 1009) and Kinzl (Ex. 1007)*

Webasto presents a detailed read of Duhame and Kinzl on claims 1, 2 and 5–8 at Petition pages 46–60. These portions of the Petition make liberal reference to Declaration testimony of Hamid A. Toliyat, Ph.D. (Ex. 1003).

#### *1. Overview of Duhame (Ex. 1009)*

Duhame describes an automatic door operator including an obstruction detector for stopping the motor when a threshold related to the torque of the motor is exceeded. Ex. 1009 at [57]. Duhame Figure 1 is reproduced below.




Duhame Figure 1

Figure 1 shows a block diagram of an automatic door opener. *Id.* at 4:66–67. Based on measurements of speed from its Hall-effect sensors 95, Duhame's controller (processor circuit 100 including CPU 110 shown in Duhame Figure 1) detects "[a]n obstruction . . . whenever th[e] rate of change of speed indicates a rate of increase in torque greater than a predetermined amount." *Id.* at 3:38–41, 24:5–29. Memory 125 stores open and close travel limits of a door being controlled. *Id.* at 6:59–62. A closing torque limits input circuit 60 (detailed in Duhame, Figure 4) and travel limits circuit 163, among other inputs, establish limits of protection afforded to an object pinched by the moving door. *Id.* at 7:63–8:3, 11:52–57. Travel circuit 163 includes counter 510 (Duhame Fig. 6) that keeps track of door position with respect to a fully opened position. *Id.* at 12:17–23.

*2. Overview of Kinzl (Ex. 1007)*

Figures 1 and 2 of Kinzl are reproduced below.

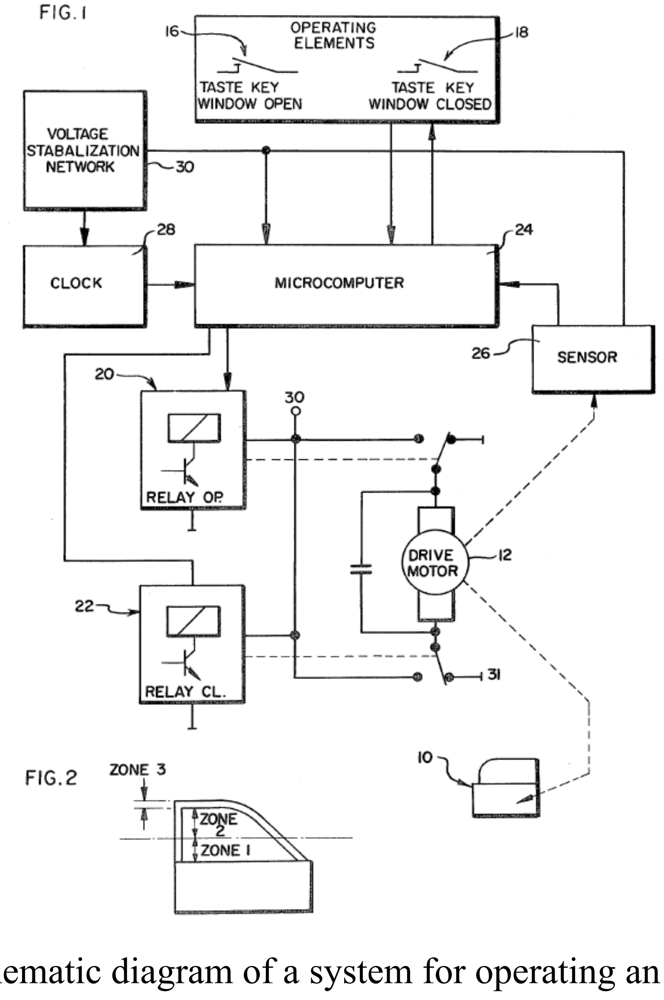



Figure 1 is a schematic diagram of a system for operating an electric window of an automotive vehicle, and Figure 2 shows three zones of window position established for operation of the system. *See* Ex. 1007, 1:7–13, 2:37–41. Microcomputer 24 uses sensor 26 to monitor the opening and closing of electric window 10, via drive motor 12. *See id.* at 2:44–57. Microcomputer 24 determines from sensor 26 whether window 10 has been blocked and, if a block is detected, responds in different manners dependent upon whether window 10 is in zone 1, 2, or 3. *See id.* at 3:6–26.

### *3. Applying Duhame and Kinzl*

UUSI also argues that Duhame and Kinzl cannot be combined, referring only to reasons set forth with respect to claim 1. *Id.* at 57. The referenced argument merely refers us to Ex. 2001 ¶¶ 120–130 without further explanation. Given the similar problem to which Duhame and Kinzl are directed, we find UUSI's argument against combination to be insufficient.

#### *a. Independent claim 1*

UUSI argues that each of Duhame and Kinzl fails to teach two concurrent obstacle detection algorithms. PO Resp. 30−31. As stated *supra* in Part III.A.1, we do not construe the claims as requiring two concurrent obstacle detection algorithms. This argument is therefore unpersuasive.

#### *b. Independent claim 6*

UUSI further argues that Duhame does not disclose detecting an "abrupt" stoppage of the window. *Id.* at 55. As discussed *supra* in Part III.A.3, we do not read into the claims a limitation that the stoppage be "abrupt." The claims require only that the window be stopped and that in response to the window having stopped, its driving motor is deactivated.

UUSI argues that neither Duhame nor Kinzl detects an "abrupt" stoppage. *Id.* at 55–57. As discussed *supra* in Part III A. 3, we decline to read "abrupt" into the claim because the claims do not explicitly or implicitly recite "abrupt." We are therefore not persuaded by this argument.

*c. Dependent claims 2, 7, and 8*

UUSI does not separately argue claims 2, 7, and 8.

*d. Dependent claim 5*

Webasto argues that Duhame meets the claim 5 limitation: "wherein the immediate past measurements of said signal are sensed within a forty millisecond interval prior to the most recent signal from the sensor." Pet. 56. Webasto reasons that Duhame meets this claim limitation because a "50 Hz or 60 Hz motor will complete 50 or 60 revolutions per second, or every 20 to 16 milliseconds, respectively." *Id.*

UUSI preliminarily argued (but did not repeat its argument in its Response) that claim 5 should be construed to require that immediate past measurements used to adjust the obstacle detection threshold of claim 1 must *all* be taken within the preceding 40 milliseconds (40 ms). Prelim. Resp. 7−9. We look to claim 1 for context in construing claim 5. Claim 1 requires "adjusting an obstacle detection threshold in real time based on immediate past measurements of the signal sensed by the sensor to adapt to varying conditions encountered during operation of the window or panel." A plurality of measurements is used to establish a threshold. As time passes, additional measurements are taken and the threshold is adjusted. Thus, the threshold is always determined by some measurements that are older than others (this is the nature of a moving average). The plain meaning of claim 5 is that the most recent measurement used to adjust the threshold must be fresh (taken within 40 ms of a current measurement being compared). Using UUSI's construction would suggest that the threshold be determined anew and determined only from measurements taken within 40 ms of the current measurement. UUSI's construction of "all" measurements taken within 40 ms is only correct in a limited scenario when the movement of the window or object is first activated and stopping the movement within 40 ms. We find that to be contrary to the overall concept of establishing a threshold and adjusting it measurement by measurement because when the window or panel is moving for more than 40 ms, then UUSI's construction would not make sense. That is, UUSI's interpretation effectively means that the threshold is re-calculated anew, rather than being adjusted.

UUSI has not pointed us to any Specification text that discusses the claimed 40 ms time period referred to in claim 5. The SUMMARY portion of the Specification states that in one exemplary embodiment, stored empirical parameter characterizations and algorithms adaptively modify obstacle detection thresholds during an ongoing actuation for improved obstacle detection sensitivity and thresholds resulting in quicker obstacle detection with lower initial force, lower final pinch force and reduced occurrences of false obstacle detection. Ex. 1001, 2:9−16. In the DETAILED DESCRIPTION portion of the Specification, we find only general discussions relating to adapting the threshold and the abilities of DSPs. For example, "adaptive DSP algorithms modify the obstacle detection thresholds in real time response to actual monitored motor operation parameters." *Id.* at 12:64−66.

UUSI correctly notes that claim 5 does not recite that one or more of the immediate past measurements are sensed within a forty millisecond interval. PO Resp. 32. However, claim 5 also does not recite that *all* of the measurements must be taken with 40 milliseconds.

UUSI disagrees and argues that the 60 Hz or 50 Hz power merely indicates that the frequency of the AC line voltage that powers the motor is 50 or 60 cycles per second, and does not necessarily indicate or imply that the speed of the motor is 50 or 60 revolutions per second as the Webasto argues. Prelim. Resp. 8.

According to UUSI, Webasto implies that if one revolution of the motor occurs in 20 milliseconds, then the time interval over which the immediate past measurements of the signal are sensed would be less than 20 milliseconds. Prelim. Resp. 8. However, the length of time for each revolution of the motor does not determine the time interval over which the immediate past measurements of the signal are sensed. Even if Duhame implicitly taught that one revolution of the motor occurs in 20 milliseconds, Duhame would still be silent on the length of the time interval over which immediate past measurements of the signal would be sensed. *Id*. Therefore, according to UUSI, Duhame does not disclose that "the immediate past measurements of said signal are sensed within a forty millisecond interval prior to the most recent signal from the sensor" as recited in claim 5. We agree. Webasto has not carried its burden with respect to claim 5.

UUSI correctly notes that Webasto does not rely on Kinzl as disclosing that "the immediate past measurements of said signal are sensed within a forty millisecond interval prior to the most recent signal from the sensor" as recited in claim 5. Prelim. Resp. 9.

In light of the analysis presented in the Petition with respect to each of the challenged claims under this Ground, we are persuaded that Webasto has established by a preponderance of the evidence that Duhame and Kinzl render obvious claims 1–2 and 6–8 of the ’612 patent, but we are not persuaded that Webasto has made a sufficient showing as to claim 5.

### *E. Additional Arguments*

#### *1. Expert not Familiar with the State of the Art*

UUSI contends Dr. Hamid A. Toliyat did not have personal experience with the state of the art in 1992 at the time of filing and is not an expert in automotive vehicle window or sunroof movement mechanisms or their control systems. PO Resp. 5–18.

We are persuaded, however, that Dr. Toliyat is an expert in the field of electrical and computer engineering since before 1992. Ex. 1004. Dr. Toliyat’s specific expertise is in industrial drives, electrical machines, power electronics, power systems and control, which are all in the field of automotive engineering. Ex. 1003 ¶ 7. Accordingly, we conclude that Dr. Toliyat is an expert familiar with the State of the Art of automotive engineering in 1992.

#### *2. Enablement of References*

UUSI contends Lamm, Itoh, and Kinzl are non-enabling references that would require undue experimentation to make or use because of an inordinate amount of false positives and false negatives that would occur with Itoh’s and Kinzl’s respective algorithms. PO Resp. 2–4, 58–59. Moreover, UUSI contends Lamm, Itoh, and Kinzl do not overcome many real-world vehicle problems such as the varying loads caused by wind buffeting or booming caused by the pressure difference between the inside and the outside of the passenger compartment of a vehicle moving at high speeds. *Id.* at 4.

Webasto argues that there is no genuine dispute that a person of ordinary skill in the art would have been able to implement them. Reply 1. Other than alleged poor performance, UUSI has not identified any persuasive evidence that the references cited by Webasto should not be relied upon for their respective disclosures.

Regarding the asserted grounds under § 103, we have determined that Lamm, Itoh, and Kinzl provide sufficient disclosure to allow a person having ordinary skill in the art to make and use the inventions recited in each of the challenged claims. *In re Antor Media Corp.*, 689 F.3d 1282, 1290 (Fed. Cir. 2012) ("Enablement of prior art requires that the reference teach a skilled artisan to make or carry out what it discloses in relation to the claimed invention. Even if a reference discloses an inoperative device, it is prior art for all that it teaches." (quotation omitted) (citations omitted)); *Symbol Techs., Inc. v. Opticon, Inc.*, 935 F.2d 1569, 1578 (Fed. Cir. 1991) ("[A] non-enabling reference may qualify as prior art for the purpose of determining obviousness under § 103.").

### *F. UUSI's Motion to Exclude*

Webasto moved to exclude portions[9] of the opinion testimony of Mark Ehsani, Ph.D because Dr. Ehsani applied a presumption of validity, used erroneous methodology to interpret the challenged claims, acted as an advocate rather than as an expert, and used inadmissible exhibits. Mot. 4–15. Webasto also moves to exclude Exhibits 2009, 2010, 2012, 2013, 2017,

[9] Webasto seeks to exclude paragraphs 6, 41, 46, 54, 66–68, 77–81, 88–89, 91–98, 100–04, 110–11, 114–16, 118–27, 129–31, 137–39, 145, 148, 150–56, 159, 162–63, 165, and 169–83 of the Declaration of Dr. Mark Ehsani in Support of UUSI's Response (Ex. 2001).

2022, and 2036 because they are not referenced in UUSI's arguments. *Id.* at 1.

Although we briefly cite Dr. Ehsani's Declaration (Ex. 2001) in this Decision, we merely cite paragraphs 90, 91, and 110–120 as support for explaining what UUSI is arguing. We do not find any of the paragraphs that we cited or that Webasto seeks to exclude to be persuasive for their substance. Moreover, we do not rely on any of the exhibits sought to be excluded. Accordingly, we dismiss the Motion as moot.

### *G. Conclusion*

For the reasons set forth above, we are persuaded that Webasto has shown by a preponderance of the evidence that:

(1) claims 6–8 are unpatentable under 35 U.S.C. § 102 as anticipated by Bernard;

(2) claims 1, 2, and 5–8 are unpatentable under 35 U.S.C. § 103 over Lamm, Itoh, and Bernard; and

(3) claims 1, 2, and 6–8 are unpatentable under 35 U.S.C. § 103 over Duhame and Kinzl.

## IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Webasto's Motion to Exclude is dismissed as moot;

FURTHER ORDERED that claims 1, 2, and 5–8 of the '612 patent have been shown, by a preponderance of the evidence, to be unpatentable; and

FURTHER ORDERED that because this is a final written decision of the Board under 35 U.S.C. § 318(a), parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

For PETITIONER:

Charles Sanders
Timothy Rousseau
Phong Dinh
GOODWIN PROCTER LLP
csanders@goodwinprocter.com
trousseau@goodwinprocter.com
pdinh@goodwinprocter.com

For PATENT OWNER:

Monte L. Falcoff
Hemant M. Keskar
Michael R. Nye
HARNESS, DICKEY & PIERCE, P.L.C.
mlfalcoff@hdp.com
hkeskar@hdp.com
mnye@hdp.com