

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCEDES-BENZ USA, LLC and BMW of NORTH AMERICA, LLC,
Petitioner,

v.

STRAGENT, LLC,
Patent Owner.

IPR2021-00728
Patent 10,002,036 B2

Before LYNNE E. PETTIGREW, DANIEL J. GALLIGAN, and
JASON M. REPKO, *Administrative Patent Judges*.

PETTIGREW, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Mercedes-Benz USA, LLC and BMW of North America, LLC (collectively, “Petitioner”) filed a Petition for *inter partes* review of claims 84–101, 109–120, 122–125, and 127 of U.S. Patent No. 10,002,036 B2 (Ex. 1001, “the ’036 patent”). Paper 1 (“Pet.”). Stragent, LLC (“Patent

Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). Upon our authorization, Petitioner filed a Reply directed to discretionary denial issues under 35 U.S.C. §§ 314(a) and 325(d), and Patent Owner filed a Sur-Reply. Papers 12, 13.

Under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a), we have authority to institute an *inter partes* review if “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). After considering the Petition, the Preliminary Response, and the evidence of record, we conclude the information presented does not show there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of at least one of claims 84–101, 109–120, 122–125, and 127 of the ’036 patent. Accordingly, we do not institute an *inter partes* review.

II. BACKGROUND

A. Real Parties-in-Interest

Petitioner identifies the following real parties-in-interest: Daimler AG, Daimler North America Corp., Mercedes-Benz, LLC, Mercedes-Benz Vans, LLC, Daimler Trucks North America LLC, Mercedes-Benz U.S. International, Inc., BMW of North America, LLC, BMW Manufacturing Co., LLC, and Bayerische Motoren Werke, AG. Pet. 79. Patent Owner identifies itself as the real party-in-interest. Paper 5, 1 (Patent Owner’s Mandatory Notices).

B. Related Matters

The parties identify three district court proceedings involving the ’036 patent: *Stragent, LLC v. BMW of North America, LLC, and BMW*

Manufacturing Co., LLC, No. 1:10-cv-00510-LPS (D. Del.); *Stragent, LLC v. Mercedes-Benz USA, LLC*, No. 1:10-cv-00511-LPS (D. Del.); and *Stragent, LLC v. Volvo Car North America, LLC*, No. 1:10-cv-00512-LPS (D. Del.). Pet. 81–82; Paper 5, 2.

Petitioner filed five other petitions challenging claims of the '036 patent: IPR2021-00425, IPR2021-00426, IPR2021-00427, IPR2021-00726, and IPR2021-00727. *See* Pet. 82; Paper 5, 2–3. The Board denied institution of *inter partes* review in IPR2021-00425, IPR2021-00426, and IPR2021-00427. *See, e.g., BMW of N. Am., LLC and Mercedes-Benz USA, LLC v. Stragent, LLC*, IPR2021-00425, Paper 14 (PTAB July 19, 2021). Petitioner's request for rehearing and request for Precedential Opinion Panel review of those decisions remain pending. *See, e.g., BMW of N. Am., LLC and Mercedes-Benz USA, LLC v. Stragent, LLC*, IPR2021-00425, Papers 15, 16.

The '036 patent is related to U.S. Patent No. 8,209,705 B2 ("the '705 patent") and U.S. Patent No. 8,566,843 B2 ("the '843 patent") through a chain of continuations. Ex. 1001, code (63). The parties identify several previous *inter partes* reviews involving the '705 patent and '843 patent: IPR2017-00457, IPR2017-00458, IPR2017-00676, IPR2017-00677, IPR2017-01502 through -01504, and IPR2017-01519 through -01522. Pet. 81; Paper 5, 2. In those proceedings, the Board determined that all claims of the '705 patent and '843 patent were unpatentable. *See* Pet. 81.

C. Overview of the '036 Patent

The '036 patent "relates to the field of distributed control and monitoring systems," which "may optionally apply to electronic vehicle communication and control systems, real-time monitoring systems, industrial automation and control systems, as well as any other desired

system.” Ex. 1001, 1:24–30. In particular, the ’036 patent describes an automotive electronic control unit (ECU) that uses a storage resource to facilitate data sharing between two networks utilizing different network protocols. *Id.* at code (57), 3:22–28, 3:34–43.

D. Illustrative Claim

Although this Petition does not challenge independent claims 1 and 102 or dependent claims 106–108, 121, and 126 directly, Petitioner analyzes their limitations because each of challenged claims 84–101, 109–120, 122–125, and 127 depends directly or indirectly from one or more of those claims. *See* Pet. 20 n.7.¹ Claim 1 is illustrative of the subject matter of the challenged claims:

1. An apparatus, comprising:

- [1.1] an automotive electronic control unit including a non-transitory memory storage comprising instructions, and at least one hardware processor in hardwired communication with the memory storage, wherein the at least one hardware processor executes the instructions to:
 - [1.2] identify information associated with a message received utilizing a Flexray network protocol associated with a Flexray network;
 - [1.3] issue a storage resource request in connection with a storage resource of the automotive electronic control unit and determine whether the storage resource is available for storing the information;
 - [1.4] determine whether a threshold has been reached in association with the storage resource request;
 - [1.5] in the event the storage resource is not available and the threshold associated with the storage resource request has not been reached, issue another storage

¹ The petition in IPR2021-00726 directly challenges independent claims 1 and 102.

resource request in connection with the storage resource;

[1.6] in the event the storage resource is not available and the threshold associated with the storage resource request has been reached, send a notification;

[1.7] in the event the storage resource is available, store the information utilizing the storage resource; and

[1.8] share the information in less than one millisecond utilizing a Controller Area Network protocol associated with a Controller Area Network, the automotive electronic control unit remaining in hardwired communication with the Flexray network and the Controller Area Network, and including:

[1.9] a first interface for interfacing with the Flexray network, the first interface including a first interface-related data link layer component that uses Flexray network-related data link layer header bits and a first interface-related network layer component that uses Flexray network-related network layer header bits; and

[1.10] a second interface for interfacing with the Controller Area Network, the second interface including a second interface-related data link layer component that uses Controller Area Network-related data link layer header bits and a second interface-related network layer component that uses Controller Area Network-related network layer header bits.

Ex. 1001, 12:37–13:15 (with numbering added by Petitioner).

E. Asserted Grounds of Unpatentability

Petitioner asserts that claims 84–101, 109–120, 122–125, and 127 are unpatentable based on the following grounds (Pet. 14):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
84, 85, 89, 101, 106–108, 125, 127	103(a) ²	Miesterfeld, ³ Wense, ⁴ OSEK-COM, ⁵ OSEK-NM ⁶
86–88, 99, 100, 118–120	103(a)	Miesterfeld, Wense, OSEK-COM, OSEK-NM, OSEK-OS ⁷
90–97, 109–116	103(a)	Miesterfeld, Wense, OSEK-COM, OSEK-NM, OSEK-OS, OSEK-Binding ⁸
98, 117	103(a)	Miesterfeld, Wense, OSEK-COM, OSEK-NM, OSEK-FTCom, ⁹ OSEK-OS
122	103(a)	Miesterfeld, Wense, OSEK-COM, OSEK-NM, OSEK-FTCom

² The '036 patent claims priority through a chain of continuations to an application that was filed before the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”) amendments to 35 U.S.C. § 103. Therefore, we refer to the pre-AIA version of § 103.

³ U.S. Patent No. 6,141,710, issued Oct. 31, 2000 (Ex. 1050, “Miesterfeld”).

⁴ H.-C. von der Wense and A. J. Pohlmeier, “Building Automotive LIN Applications,” *Advanced Microsystems for Automotive Applications*, 280–292, © 2001 (Ex. 1045, “Wense”).

⁵ OSEK/VDX Communication Specification, Ver. 2.2.2 (Dec. 18, 2000) (Ex. 1008, “OSEK-COM”).

⁶ OSEK/VDX Network Management: Concept and Application Programming Interface, Ver. 2.51 (May 31, 2000) (Ex. 1007, “OSEK-NM”).

⁷ OSEK/VDX Operating System, Ver. 2.2 (Sept. 10, 2001) (Ex. 1010, “OSEK-OS”). Petitioner mistakenly identifies Exhibit 1010 as Ver. 2.1 rev. 1 (Nov. 13, 2000), which we treat as typographical error. See Pet. ix.

⁸ OSEK/VDX Binding Specification, Ver. 1.3 (Sept. 17, 2001) (Ex. 1006, “OSEK-Binding”).

⁹ OSEK/VDX Fault-Tolerant Communication, Ver. 1.0 (Nov. 13, 2000) (Ex. 1009, “OSEK-FTCom”).

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
123, 124	103(a)	Miesterfeld, Wense, OSEK-COM, OSEK-NM, OSEK-FTCom, OSEK-Binding

III. DISCUSSION

A. Principles of Law

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective indicia of non-obviousness.¹⁰ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Citing the Declaration of Dr. Vijay K. Madiseti, Petitioner contends that a person of ordinary skill in the art at the time of the invention would have had “at least . . . a bachelor’s degree in electrical engineering, computer engineering, or a related engineering discipline and at least two years of industry experience in the field of distributed computing or automotive engineering, or equivalent experience, education, or both.” Pet. 12 (citing

¹⁰ With respect to the fourth *Graham* factor, the parties do not present arguments or evidence regarding objective indicia of non-obviousness. Therefore, the obviousness analysis in this Decision is based on the first three *Graham* factors.

Ex. 1004 ¶¶ 58–59). Patent Owner and its declarant generally agree with Petitioner’s proposed definition. Prelim. Resp. 14–15 (citing Ex. 2001 ¶¶ 15–17 (Declaration of Dr. Michael Smith)).

For purposes of this Decision, with the exception of the open-ended phrase “at least,” which expands the range of experience indefinitely without an upper bound, we adopt Petitioner’s assessment of the level of ordinary skill in the art because it is consistent with the ’036 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

In this *inter partes* review, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2020). In applying this standard, we generally give claim terms their ordinary and customary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc).

The parties address the construction of various claim terms. Pet. 12–13; Prelim. Resp. 15–33. For purposes of this Decision, we need not construe any claim terms expressly. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Asserted Obviousness over Miesterfeld, Wense, OSEK-COM, and OSEK-NM

Petitioner contends that claims 84, 85, 89, 101, 106–108, 125, and 127 are unpatentable under 35 U.S.C. § 103(a) as obvious over Miesterfeld,

Wense, OSEK-COM, and OSEK-NM. Pet. 20–58. Petitioner relies on the declaration testimony of Dr. Madisetti in support of its showing. *Id.* (citing Ex. 1004). Patent Owner opposes and relies on the declaration testimony of Dr. Smith. Prelim. Resp. 47–92 (citing Ex. 2001). For the reasons discussed below, we conclude that Petitioner has not demonstrated a reasonable likelihood it would prevail in showing that claims 84, 85, 89, 101, 106–108, 125, and 127 are unpatentable on this asserted ground.

1. Overview of Prior Art References

Miesterfeld discloses a “gateway for enabling the exchange of data between a vehicle data bus (VDB) and an intelligent transportation system (ITS) data bus.” Ex. 1050, code (57). Miesterfeld’s gateway “includes a memory accessible by both a VDB interface and an ITS data bus interface so that data and commands may be shared between each respective bus through the shared memory.” *Id.*

Wense describes the Local Interconnect Network (LIN) communication system for use in automotive electronic systems and generally compares the features of LIN with those of other automotive communication networks, including the Controller Area Network (CAN) and Flexray. Ex. 1045, 10–11.

OSEK-COM and OSEK-NM are among several documents that describe various aspects of the OSEK/VDX “industry standard for an open-ended architecture for distributed control units in vehicles.” Ex. 1010, 2. OSEK-COM provides a standardized interface for communication services. Ex. 1008, 11. OSEK-NM defines a set of node-monitoring services. Ex. 1007, 7.

VDB interface 62, ITS data bus interface 58, and serial peripheral interface random access memory (SPI RAM) 64. *Id.* at 3:59–64. “SPI bus 66 interconnects VDB interface 62 and ITS data bus interface 58 with SPI RAM 64.” *Id.* at 3:65–67.

Beginning its analysis of limitation [1.1] with “an automotive [ECU] including a non-transitory memory storage comprising instructions,” Petitioner asserts that the “Board has already found that Miesterfeld discloses a ‘system’ that includes a ‘processor’ and ‘memory,’ and that the processor is ‘operable to process vehicle data to control at least one vehicle related function,’ and that it uses ‘software.[.]’” Pet. 21 (citing *Daimler AG v. Stragent, LLC*, IPR2017-00458, Paper 31, 51 (PTAB June 13, 2018) (Final Written Decision) (“FWD-458”)). Petitioner argues that Miesterfeld’s ITS gateway is an automotive ECU “because it is in a vehicle, which controls information sharing between electronic control devices on the vehicle data bus VDB and the ITS data bus for the purpose of monitoring and controlling vehicle functions.” *Id.* at 21–22 (citing Ex. 1050, 1:13–40, 2:66–3:49; Ex. 1004 ¶ 80). Petitioner also argues that “Miesterfeld discloses ‘a gateway including memory [non-transitory] which the vehicle data bus and the intelligent transportation system data bus may each access in order to exchange data between the respective buses.’” *Id.* at 22 (quoting Ex. 1050, 1:7–10) (alteration in Petition).

Regarding a “hardware processor in hardwired communication with the memory storage,” Petitioner asserts that the Board has already found that “Miesterfeld discloses a processor because it discloses a ‘vehicle controller operable to process vehicle data to control at least one vehicle function.’” *Id.* (quoting FWD-458, 51) (emphasis omitted). Petitioner argues that the VDB interface in Miesterfeld’s gateway is a processor (e.g., a HIP7030A2

processor). *Id.* (citing Ex. 1050, 5:1–3). Petitioner also argues that Miesterfeld’s ITS data bus interface is a processor because it enables data exchange between memory and the ITS data bus, and a person of ordinary skill in the art would have readily understood that the ITS data bus interface performs the same functions as the VDB interface. *Id.* (citing Ex. 1050, 3:20–25; Ex. 1004 ¶¶ 82–85). Petitioner further argues that Miesterfeld’s processor (i.e., VDB interface 62 or ITS data bus interface 58) is in hardwired communication with the memory storage (i.e., SPI RAM 64) via SPI bus 66, as shown above in Petitioner’s annotated Figure 2. *Id.* at 22–23 (citing Ex. 1050, 3:65–67).

For the recitation that “the hardware processor executes the instructions” stored in the memory storage, Petitioner contends that “Miesterfeld’s processor executes instructions stored in the SPI RAM.” *Id.* at 23. Specifically, Petitioner argues, “the VDB/ITS interface reads command requests stored into SPI RAM 64 and based on those command requests, queues an ‘appropriate’ message for transmission.” *Id.* (citing Ex. 1050, 7:17–26 (“VDB interface 62 processes command requests written to SPI RAM 64 by ITS data bus interface 58 for transmission onto VDB 48.”), 8:36–42 (“VDB interface 62 prepares the appropriate VDB message for transmission.”)).

Claim 1 further requires the hardware processor to execute the instructions stored in the memory storage to perform the operations recited in limitations [1.2]–[1.8]. Most of these limitations (i.e., [1.3]–[1.7]) relate to determining the availability of a storage resource of the automotive ECU for storing information received from one network (i.e., a Flexray network) to be shared with a second network (i.e., CAN) and storing the information if the storage resource is available. *See* Ex. 1001, 12:43–67. Petitioner

primarily relies on the flow chart in Figure 4 of Miesterfeld for teaching limitations [1.3]–[1.7], adding OSEK-NM and OSEK-COM for teaching a threshold in association with a storage resource request as recited in limitations [1.4]–[1.6]. Pet. 29–41. As Miesterfeld explains, Figure 4 depicts “the sequence for ITS data bus interface 62 reading/writing from/to SPI RAM 64,” which includes testing certain signal lines to determine whether SPI RAM 64 is available. Ex. 1050, 6:31–7:8.

In its Preliminary Response, Patent Owner argues, among other things, that the Petition fails to demonstrate that the cited prior art teaches an automotive ECU including a non-transitory memory storage comprising instructions that a hardware processor executes, as recited in limitation [1.1], to perform the operations recited in limitations [1.2]–[1.8]. Prelim. Resp. 48–58. Patent Owner contends that the commands stored in Miesterfeld’s SPI RAM 64, which Petitioner asserts are the claimed “instructions” in a “non-transitory memory storage,” are not instructions that are executed by the processor to carry out the steps in Figure 4 that Petitioner alleges correspond to the operations recited in limitations [1.2]–[1.8]. *Id.* at 48–55.

We agree with Patent Owner that Petitioner does not show sufficiently, for purposes of instituting an *inter partes* review, that Miesterfeld, in combination with the other references, teaches or suggests limitation [1.1] together with limitations [1.2]–[1.8] in the manner claimed. Petitioner asserts that Miesterfeld’s SPI RAM 64, shown in Figure 2, corresponds to the claimed “non-transitory memory storage” and that “command requests” written to SPI RAM 64 by either the VDB interface or ITS data bus interface are “instructions” stored in the non-transitory memory storage and executed by the processor (i.e., either the VDB interface or ITS

data bus interface) when it queues a message for transmission. Pet. 22–23 (citing Ex. 1050, 7:17–26, 8:36–42). However, the passages in Miesterfeld cited by Petitioner describe VDB interface 62 processing a command that was written by ITS data bus interface 58 to SPI RAM 64 for transmission onto the VDB 48 via VDB interface 62. *See, e.g.*, Ex. 1050, 7:17–21. The commands processed in this way are commands that are exchanged between the ITS data bus and the VDB via their respective interfaces connected to shared memory (i.e., SPI RAM 64). *See, e.g., id.* at code (57) (“The gateway includes a memory accessible by both a VDB interface and an ITS data bus interface so that data and commands may be shared between each respective bus through the shared memory.”). They are not commands or instructions executed by a processor to carry out the steps in the flow chart of Figure 4, which Petitioner maps to the operations recited in limitations [1.3]–[1.7].

In other words, for the claimed “instructions,” Petitioner points only to commands that, like other data, are exchanged between the ITS data bus and the VDB; Petitioner does not point to any “instructions” stored in a “non-transitory memory storage” that are executed by a processor to perform the storage operations in limitations [1.3]–[1.7], as required by the claim language. Nor does Petitioner otherwise argue that it would have been obvious to a person of ordinary skill in the art to store such instructions in a non-transitory memory storage. *See* Pet. 23.

Furthermore, Petitioner’s reliance on the Final Written Decision in IPR2017-00458, an earlier case involving a different patent, does not bolster its argument here. Finding that Miesterfeld discloses a “system” that includes a “processor” and “memory,” and the processor uses “software,” falls short of establishing that Miesterfeld teaches an automotive ECU including a non-transitory memory storage including instructions executed

by a hardware processor to carry out certain functions, as claim 1 of the '036 patent specifically requires.

For at least these reasons, based on the record before us, Petitioner does not make an adequate showing, for purposes of instituting an *inter partes* review, that the combination of Miesterfeld, Wense, OSEK-COM, and OSEK-NM teaches or suggests all the limitations of claim 1. For the same reasons, Petitioner does not adequately show that the asserted prior art teaches or suggests all the limitations of independent claim 102, which recites limitations similar to those in claim 1. *See* Pet. 52–53 (referring back to claim 1 analysis); Ex. 1001, 18:43–19:22. Claims 84, 85, 89, 101, 106–108, 125, and 127 depend from either claim 1 or claim 102. *See* Pet. 48–52, 54–58. Therefore, we conclude the information presented does not demonstrate a reasonable likelihood that Petitioner would prevail in establishing that claims 84, 85, 89, 101, 106–108, 125, and 127 of the '036 patent are unpatentable under 35 U.S.C. § 103(a) for obviousness over the combination of Miesterfeld, Wense, OSEK-COM, and OSEK-NM.

E. Remaining Obviousness Grounds

Petitioner further challenges claims 86–88, 90–100, 109–120, and 122–124 by adding the teachings of one or more of OSEK-OS, OSEK-Binding, and OSEK-FTCom to those of the references discussed above. Pet. 69–84. Petitioner relies on OSEK-OS, OSEK-Binding, and OSEK-FTCom only for teaching limitations of dependent claims, not for teaching the subject matter of independent claims 1 and 102, and therefore these additional references do not remedy the deficiencies addressed above with respect to claim 1. *Id.* Thus, for the same reasons discussed above, the information presented does not demonstrate a reasonable likelihood that Petitioner would prevail in showing that claims 86–88, 90–100, 109–120,

and 122–124 are unpatentable as obvious over the asserted combinations of references.

IV. CONCLUSION

After considering the parties’ evidence and arguments, we determine that the information presented does not show a reasonable likelihood that Petitioner would prevail in establishing that at least one of claims 84–101, 109–120, 122–125, and 127 of the ’036 patent is unpatentable on the grounds asserted in the Petition.

V. ORDER

Accordingly, it is

ORDERED that the Petition is *denied*, and no *inter partes* review is instituted.

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