

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GUARDIAN GLASS, LLC,
Petitioner,

v.

AGC INC.,
Patent Owner.

IPR2021-00173
Patent 8,075,983 B2

Before ZHENYU YANG, CHRISTOPHER M. KAISER, and
BRIAN D. RANGE, *Administrative Patent Judges*.

RANGE, *Administrative Patent Judge*.

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

I. INTRODUCTION

Guardian Glass, LLC (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1, 4–8, and 11–38 of U.S. Patent No. 8,075,983 B2 (Ex. 1001, “the ’983 patent”). AGC Inc. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

We have authority under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . 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 (2018); *see also* 37 C.F.R. § 42.4(a) (2019) (“The Board institutes the trial on behalf of the Director.”).

For the reasons below, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition. Accordingly, we deny institution of an *inter partes* review.

II. BACKGROUND

A. *Related Matters*

Petitioner identifies as a related matter a prior *ex parte* reexamination of the ’983 patent (Control No. 90/013,873), which resulted in a reexamination certificate issued on April 10, 2020. Pet. 1. The parties do not identify any other related matters. Paper 4, 1.

B. *The ’983 Patent and Illustrative Claim*

The ’983 patent relates to a heads up display (“HUD”) device “employing a high-functional windshield such as a sound-insulation glass

having a multi-layer interlayer.” Ex. 1001, Abstr.¹ A HUD displays information in the front view field of a driver, such as a windshield. *Id.* at 1:16–20. The ’983 patent explains that glass with multi-layer interlayers may distort a HUD display. *Id.* at 2:16–20. The ’983 patent seeks to overcome this problem by providing “in a HUD device employing a high-functional windshield having a multi-layer interlayer, [a] windshield for a vehicle which does not generate double images of display and is excellent in visibility.” *Id.* at 2:44–49.

Petitioner challenges claims 1, 4–8, and 11–38 of the ’983 patent. These claims represent all claims resulting from reexamination as reflecting in the April 10, 2020, *Ex Parte* Reexamination Certificate US 8,075,983 C1. Ex. 1002. Claims 1, 8, 16, 24, 29, and 34 are independent. We reproduce claim 1 below with emphasis added to recitations of particular importance to this decision.

1. A laminated glass for a vehicle, comprising:
 - two curved glass sheets opposing each other; and
 - an interlayer interposed between the glass sheets with the glass sheets and the interlayer being laminated together,
 - wherein the interlayer is a multilayer film comprising at least two first resin layers and at least one second resin layer having lower hardness than that of the at least two first resin layers,**
 - wherein the at least one second resin layer is interposed between the at least two first resin layers,**
 - wherein the interlayer has a wedge-shaped thickness profile in which an upper side of the interlayer, when the laminated glass is in a

¹ Sauer, US 2002/0086141 A1, published July 4, 2002, Ex. 1007 (“Sauer”), Refers to “a head-up display (HUD) system.” Ex. 1007 ¶ 6. We use the acronym “HUD” in this opinion to refer to a heads-up display or head-up display.

position attached to a vehicle, is thicker than a lower side of the interlayer,

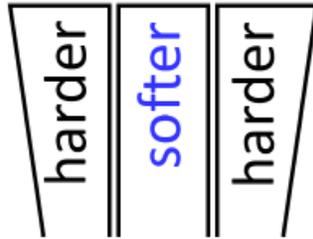
wherein the at least two first resin layers have a wedge-shaped thickness profile with a thickness at the upper side of the first resin layers thicker than a thickness at the lower side of the first resin layers,

wherein a thickness of at least one first resin layer is at least 0.3 mm and the thicknesses of the two first resin layers are not less than about 0.3 mm in a display area to be used for a heads up display (HUD) within 400 mm from an edge of the lower side of the interlayer such that embossing on a surface of the at least one first resin layer is eliminated from the display area to be used for a HUD, and

wherein the two first resin layers have a thickness capable of preventing optical distortion due to an embossed concave-convex profile of the two first resin layers.

Ex. 1002, 1:23–51 (emphasis added). Claim 8 similarly recites “wherein the interlayer is a multilayer film comprising at least two first resin layers and at least one second resin layer having lower hardness than that of the at least two first resin layers, wherein the at least second resin layer is interposed between the at least two first resin layers.” *Id.* at 2:1–6. Claim 16 recites “the interlayer comprises at least two first resin layers and a second resin layer having a hardness lower than that of the at least two first resin layers, the second resin layer is interposed between the two first resin layers.” *Id.* at 2:58–63. Claims 24, 29, and 33 recite “at least one second resin layer having lower hardness than that of the at least one first resin layer” and “wherein the interlayer comprises . . . the at least one second resin layer interposed between two of the first resin layers.” *Id.* at 3:23–48, 3:63–4:25, 4:40–5:7; *see also* Prelim. Resp. 9 (explaining that each independent claim includes recitations similar to those emphasized in claim 1 above).

All claims at issue, therefore, require a second resin layer interposed between two first resin layers, where the second resin layer is less hard (i.e., softer) than the first resin layers. Patent Owner illustrates this requirement in the figure reproduced below.



Prelim. Resp. 10. The illustration above depicts a softer layer between two harder layers.²

C. Asserted Grounds

Petitioner asserts that the challenged claims are unpatentable based on the grounds below:

Ground	Claims Challenged	35 U.S.C. §	References/Basis
1	1, 4–8, 11–38	103 ³	Nakamura ⁴ , Sauer
2	1, 4–8, 11–38	103	Nakamura, Sauer, Miyai ⁵

² We note that the patentee added the requirement that a softer resin layer be between harder resin layers to each independent claim during reexamination. Ex. 1002, 1:28–5:21.

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application that resulted in the ’983 patent was filed before this date, the pre-AIA version of § 103 applies.

⁴ Nakamura, JP 2004-175593, published June 24, 2004, Ex. 1006 (“Nakamura”).

⁵ Miyai, EP 0 710 545 A1, published May 8, 1996, Ex. 1008 (“Miyai”).

The Petition is accompanied by the supporting Declaration of Mark P. Gold. Ex. 1005.

III. DISCRETIONARY DENIAL

Patent Owner contends that we should exercise our discretion under 35 U.S.C. § 325(d) to deny institution of *inter partes* review because, under *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential), the same or substantially the same prior art has been previously presented to the Patent Office. Prelim. Resp. 28–35. Patent Owner also contends Petitioner did not correctly name a real party in interest and that this should weigh in favor of discretionary denial under § 314(a). *Id.* at 35–47. Because we deny institution on the merits of Petitioner’s challenges, we need not reach either of these issues.

IV. ANALYSIS

A. *Legal Standard*

A patent claim is unpatentable under 35 U.S.C. § 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

evidence of nonobviousness.⁶ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

With regard to claim construction, we apply the same claim construction standard used by district courts and the ITC, both of which follow *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny. 83 Fed. Reg. 51340 (Oct. 11, 2018) for *inter partes* reviews filed on or after November 13, 2018. Because the instant Petition was filed on November 5, 2021, we apply that standard here. Accordingly, we construe each challenged claim of the '750 patent to generally have “the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b).

We construe claim terms to the extent necessary for our analysis on whether to institute a trial. *See, e.g., Nidec Motor Corp. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). Here, there is no need to explicitly construe any claim terms.

B. *Level of Ordinary Skill in the Art*

Petitioner argues that a person of ordinary skill in the art as of December 25, 2005, “would have had a bachelor’s degree in materials

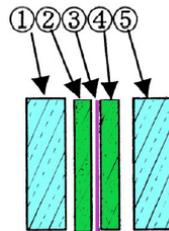
⁶ Patent Owner argues that Petitioner did not adequately address evidence of commercial success that Patent Owner presented during *ex parte* reexamination. Prelim. Resp. 25–28. Because we deny institution for other reasons, we do not address this issue.

engineering, or a similar field, such as optical engineering, chemical engineering, or physics with approximately five years of experience in the field of laminated glass manufacturing.” Pet. 28. Patent Owner does not dispute this argument in the preliminary response. Thus, for purposes of this decision, we adopt Petitioner’s position regarding level of ordinary skill in the art.

C. Challenge Based on Nakamura and Sauer

Petitioner’s first ground of unpatentability is based on obviousness over Nakamura and Sauer. Pet. 15.

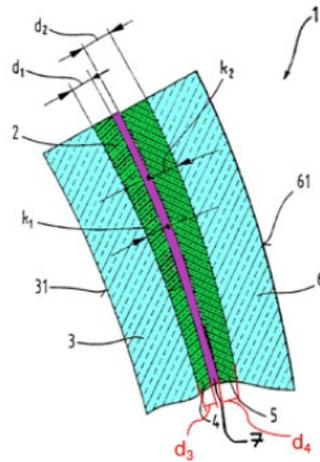
Nakamura is a Japanese patent publication that relates to laminated glass for windshields. Ex. 1006 ¶ 1. Nakamura teaches, for example, sound insulating film 3 sandwiched between two intermediate films 2, 4. *Id.* ¶ 19, Fig. 1; *see also* Pet. 51–52. To illustrate, we reproduce Petitioner’s colored version of Nakamura Figure 1 below.



Pet. 52–53. Nakamura Figure 1 illustrates an embodiment of the Nakamura invention. The sound insulating film is structure 3 (colored purple). Ex. 1006 ¶ 19. Sound insulating film 3 is sandwiched between intermediate films 2, 4 (colored green). *Id.* The intermediate films are between two glass sheets 1, 5 (colored blue). *Id.*

Sauer is a United States patent application publication that teaches, for example, geometry for a windshield having a head-up display system. Ex. 1007, Abstr., ¶¶ 2–8. Sauer, like Nakamura, teaches an interlayer between

glass sheets. To illustrate, we reproduce Petitioner's colorized version of Sauer Figure 3 below.



Pet. 52. Sauer Figure 3 illustrates an embodiment of Sauer where support sheet 7 (colored purple) is between thermoplastic sheets 4 and 5 (colored green). Ex. 1007 ¶ 26. All three sheets are between glass panes 3 and 6 (colored blue). *Id.* ¶ 19.

The critical issue here is whether Petitioner has established a reasonable likelihood of showing that the references teach or suggest vehicle⁷ glass having an interlayer with a softer resin layer between two harder resin layers. For example, does Petitioner establish a reasonable likelihood of showing that a person of skill in the art would have had reason to make sound insulating film 3 of Nakamura softer than intermediate films

⁷ Each '983 patent claim involves design constraints for use with a HUD. Ex. 1002, 1:22–5:21. To establish obviousness, therefore, Petitioner must show not only that a person of skill in the art would have had reason to reach the claims' interlayer structure but also that the person of skill in the art would have had reason to reach such a structure in combination with glass having a HUD. Petitioner's proposed combination of the references' teachings would not make sense except in the context of a person of skill in the art seeking to design a vehicle window. Pet. 46–49.

2, 4? As explained below, we determine that Petitioner did not meet this burden.

Petitioner provides two theories as to how a person of ordinary skill in the art would have been motivated to modify Nakamura and Sauer to reach the '983 patent claims. Pet. 46. The first theory is “modifying the acoustic interlayer of Nakamura to have the geometric arrangement taught in Sauer to eliminate the HUD double-image problem and create ‘enhanced brightness’ of the HUD image.” *Id.* The second theory is “modifying Sauer by using the thickness, acoustic insulation material, and embossment taught in Nakamura.” *Id.* For both theories, Petitioner relies on Nakamura’s teachings to reach the challenged claims’ recitations requiring a softer resin layer between harder resin layers. *Id.* at 53–54.

In particular, Petitioner cites paragraphs 6 and 7 of Nakamura to argue that a person of skill in the art “would have known that the plasticized PVB [(i.e., polyvinyl butyral⁸)] of the sound insulating layer is softer . . . than a less plasticized, standard PVB” and to argue that “a POSA would have understood that [Sauer’s] support sheet 7, when used as an acoustic dampener, would have a lower hardness than that of surrounding thermoplastic sheets 4, 5 (i.e., second resin layers).” Pet. 53–54. There are, however, at least two reasons why Nakamura paragraphs 6 and 7 do not support that it would have been obvious to place a softer resin layer between two harder resin layers in this context. Prelim. Resp. 16–19.

First, when Nakamura paragraph six refers to “intermediate films” that are “generally softer,” the term “intermediate films” only refers

⁸ Nakamura, for example, refers to polyvinyl butyral as PVB. Ex. 1006 ¶ 2.

generally to film between glass. Ex. 1006 ¶¶ 2–6. In particular, Nakamura explains that laminated glass consists of glass “laminated together using a laminating film” and this “polyvinyl butyral (hereinafter called PVB) is often used as the laminating film called the *intermediate film*.” *Id.* ¶ 2 (emphasis added). Nakamura then states that “[l]aminated glass is a material that consists of two or more pieces of glass and an intermediate film with different properties,” which can, for example, enable sound insulation. *Id.* ¶ 3. Nakamura’s discussion of “intermediate film” in paragraph six, therefore, only refers to a laminating interlayer generally; it does not suggest an interlayer with a softer resin layer between two harder resin layers as the ’983 claims require.

Second, and more importantly, Nakamura paragraphs six and seven refer to conventional sound insulating films that, according to Nakamura, have inadequate strength for vehicle windows. Nakamura paragraphs two through eleven are in a section titled “Conventional Technology.” Ex. 1006 ¶ 2. Nakamura states that “intermediate films with improved sound insulating properties are generally softer *and cannot pass the strength-related tests of, for example, automotive window panes*.” *Id.* ¶ 6 (emphasis added). Nakamura further states, “Since intermediate films with improved sound insulating properties cannot be used for automotive windows, other methods must be used when attempting to improve sound insulating properties of automotive windows.” *Id.* Nakamura, therefore, suggests that soft intermediate films are inappropriate for vehicle windows.

Nakamura paragraph seven has one sentence: “Conventional literature discloses the likes of laminated glass combining PVB film and sound insulating film (*see* patent reference 1, for example), sound insulating

laminated glass containing plasticized polyvinyl butyral and methylformamide (*see* patent reference 2, for example), and the like.” Ex. 1006 ¶ 7. Because this paragraph only refers to conventional literature, it does not suggest, in view of paragraph six’s teachings, that the film described in this paragraph is appropriate for a vehicle window. Based on these Nakamura paragraphs, a person of skill in the art would have understood that conventional soft sound insulating films are not appropriate for use in a vehicle window.

The remainder of Nakamura explains what Nakamura teaches as improving upon the conventional art. Nakamura teaches that “sound insulating film 3 is sandwiched between two intermediate films 2, 4.” Ex. 1006 ¶ 15. Nakamura further teaches that PET (i.e., polyethylene terephthalate otherwise known as polyester or PETP⁹) is suitable for Nakamura’s sound insulating film (the meat of Nakamura’s film sandwich) because PET provides sound insulation, transparency, and strength. *Id.* ¶ 21. Nakamura teaches that the intermediate film (the bread of Nakamura’s film sandwich) “is generally a PVB film.” *Id.* ¶ 22. Consistent with these teachings, Nakamura’s examples comprise layers of glass, PVB film, PET film, PVB film, glass. *See, e.g., id.* ¶ 31.

To compare Nakamura’s inventive teachings to the ’983 patent claims, evaluation of the relative hardness of PET film compared to PVB film is necessary. Petitioner provides no evidence regarding the hardness of PET as compared to PVB. Patent Owner, however, provides evidence

⁹ *See* Ex. 2003 (“Polyethylene terephthalate (Polyester, PET, PETP) Material Information”); *see also* Ex. 1007 ¶ 14 (referring to “polyethylene terephthalate (PET)”).

establishing that PET is *harder* than PVB. Prelim. Resp. 15 (citing Ex. 2003, 2004, 2005). Thus, Nakamura as a whole teaches that, in order to have adequate strength for a vehicle window, the interlayer should include a harder film sandwiched between two softer films—which is the opposite of what the '983 patent claims at issue recite.

Sauer, just like Nakamura, also teaches an interlayer of PET sandwiched between PVB layers. Prelim. Resp. 22–23. In particular, Sauer's inner layer 7 is a “support sheet” made of PET. Ex. 1007 ¶ 14 (“This support sheet may, for example, be made of polyethylene terephthalate (PET).”). Sauer's first and second thermoplastic sheets 4 and 5 are made of PVB. *Id.* ¶¶ 20 (“The thermoplastic sheet 4 . . . is made of polyvinyl butyral (PVB).”), 22 (“[I]t is necessary to add a second thermoplastic sheet 5, also made of PVB . . .”). The support sheet 7 is between the two thermoplastic sheets 4 and 5. *Id.* ¶ 26. Sauer, therefore, also suggests vehicle windows with an interlayer with harder film sandwiched between two softer films.

Petitioner also cites the declaration of Mark P. Gold to argue that Sauer support sheet 7 could provide acoustic dampening and notes that “[i]nterlayer with acoustic dampening properties are known to be softer.” Pet. 53. The Gold declaration, however, turns to Nakamura paragraphs 6 and 7 to support that Nakamura's sound insulating film 3 will be softer than intermediate films 2, 4. Ex. 1005 ¶ 119. Nakamura, as explained above, does not support this proposition. The Gold declaration also cites evidence that plasticized PVB interlayers will be soft (*id.* (citing Exs. 1013, 1014)), but as explained above, Nakamura teaches PVB (soft) as the bread of its film sandwich. *Id.* ¶ 22. As such, the Gold declaration does little to help Petitioner in this regard.

In sum, the Petition does not adequately identify evidence supporting that a person of skill in the art would have reached vehicle glass having an interlayer with a softer resin layer between two harder resin layers. As such, Petitioner does not establish a reasonable likelihood of prevailing in demonstrating the unpatentability of any challenged claim of the '983 patent as obvious over Nakamura and Sauer.

D. Challenge Based on Nakamura, Sauer, and Miyai

Petitioner's second ground of unpatentability is based on obviousness over Nakamura, Sauer, and Miyai. Pet. 15. Petitioner states that a person of ordinary skill in the art "would have looked to Miyai to remove the taught optical distortion resulting from [the other references'] embossing." Pet. 74–75. Petitioner does not rely on Miyai as teaching an interlayer with a softer resin layer between two harder resin layers. Therefore, Petitioner's second ground of unpatentability does not establish a reasonable likelihood of prevailing in demonstrating the unpatentability of any challenged claim of the '983 patent for the same reasons as Petitioner's first ground of patentability.

V. CONCLUSION

For the reasons above, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing that at least one of the challenged claims is unpatentable.

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied, and we do not institute *inter partes* review of any claim of the '983 patent based on a ground asserted in the Petition.

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