

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AM GENERAL LLC,
Petitioner,

v.

UUSI, LLC,
Patent Owner.

Case IPR2016-01049
Patent 5,570,666

Before PHILLIP J. KAUFFMAN, MEREDITH C. PETRAVICK, and
RICHARD E. RICE, *Administrative Patent Judges*.

RICE, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. *Background*

AM General LLC (“Petitioner”) filed a Petition requesting *inter partes* review of claims 10, 11, and 13 of U.S. Patent No. 5,570,666 (Ex. 1001, “the ’666 Patent”). Paper 1 (“Pet.”). UUSI, LLC (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”).

Under 35 U.S.C. § 314, 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(a). Upon considering the Petition and the Preliminary Response, we determine that Petitioner has shown a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims. Accordingly, we institute an *inter partes* review.

B. *Related Proceedings*

We are informed that the ’666 Patent is involved in litigation before the U.S. Court of Federal Claims (“CoFC”) in *UUSI, LLC. v. United States*, Case No. 1:12-cv-00216 (C.F.C.). Pet. 6–7; *see* Prelim. Resp. 1–18. We also are informed that Petitioner has requested *inter partes* review of U.S. Patent Nos. 5,729,456, 6,009,369 and 6,148,258, which are related to the ’666 Patent. Pet. 7; *see* Prelim. Resp. 18 (IPR2016-01048, IPR2016-1050, and IPR2016-1051).

C. *Statutory Bar under 35 U.S.C. § 315(b)*

Section 315(b) of the patent statute (Title 35) provides:

PATENT OWNER’S ACTION.—An *inter partes* review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, real party

in interest, or privity of the petitioner is *served with a complaint alleging infringement of the patent*. (Emphasis added.)

Patent Owner argues that Petitioner lacks standing under § 315(b) because the Petition was filed more than one year after: (1) the United States Government (which Patent Owner contends is a privity of Petitioner) was served with a complaint in the CoFC alleging infringement of the '666 Patent under 28 U.S.C. § 1498¹; (2) Petitioner, as an interested party to the CoFC proceeding, was served with a Rule 14 Notice/Summons, together with a copy of the complaint²; (3) the Government and Petitioner both were served with an amended complaint in the CoFC proceeding. Prelim. Resp. 1–18. As we authorized, Petitioner filed a Reply to the Preliminary Response (Paper 11, “Pet. Reply to Prelim. Resp.”) addressing Patent Owner’s § 315(b) contentions, and Patent Owner filed a Sur-Reply (Paper 13).

For the reasons explained below, we are not persuaded that Petitioner ever was “served with a complaint alleging infringement of the patent” within the meaning of § 315(b).

¹ *See Zoltek Corp. v. United States*, 672 F.3d 1309, 1327–28 (Fed. Cir. 2012) (en banc) (holding that “28 U.S.C. § 1498(a) creates an independent cause of action for direct infringement by the Government or its contractors that is not dependent on 35 U.S.C. § 271(a)” and “[w]hen the United States is subject to suit under § 1498(a) for alleged infringement of a patent by a contractor acting by and for the United States, the contractor by law is rendered immune from individual liability for the alleged infringement”).

² Rule 14 of the CoFC provides that a third party having an interest in a suit against the Government may be served with a notice, including copies of all pleadings that have been filed in the suit, and that the third party served with the notice may file an appropriate pleading setting forth the third party’s interest in the subject matter of the litigation.

1. Service on the Government - Privity

Our Office Patent Trial Practice Guide states that “[p]rivity is essentially a shorthand statement that collateral estoppel is to be applied in a given case.” 77 Fed. Reg. 48,756, 48,759 (Aug. 14, 2012) (quoting 154 Cong. Rec. S9987 (daily ed. Sept. 27, 2008) (statement of Sen. Kyl)). For application of collateral estoppel, i.e., issue preclusion, to a person who was not a party to a suit, i.e., a nonparty, the nonparty must have had a full and fair opportunity to litigate the claims and issues settled in that suit. *See Taylor v. Sturgell*, 553 U.S. 880, 892–907 (2008); *see also Aspex Eyewear, Inc. v. Zenni Optical, Inc.*, 713 F.3d 1377, 1382 (Fed. Cir. 2013) (stating that “[a] full and fair opportunity to litigate is the touchstone of any preclusion analysis.”). For example, a nonparty who “assume[d] control” over litigation in which a judgment was rendered will be bound by the judgment because “such a person . . . has already ‘had his day in court’ even though he was not a formal party to the litigation.” *Taylor*, 553 U.S. at 895 (citations omitted). Thus, in analyzing “privity” for purposes of 35 U.S.C. § 315(b), “[a] common consideration is whether the non-party exercised or could have exercised control over a party’s participation in a proceeding.” Office Patent Trial Practice Guide, 77 Fed. Reg. at 48,759; *see, e.g., ARRIS Group, Inc. v. TQ Delta LLC*, Case IPR2016-00430, slip op. at 7 (PTAB July 1, 2016) (Paper 9) (analyzing whether the petitioner had control or the legal right to assume control over a suit at the time of filing the petition).

In view of these principles, we are not persuaded that the Government is a privy of Petitioner such that service, *on the Government*, of either the complaint or the amended complaint would trigger running of the one-year statutory bar against Petitioner. Patent Owner contends that application of

“[collateral estoppel] principles here mandates the conclusion that Petitioner’s privy, the Government, was served with a complaint alleging patent infringement more than a year prior to the date the petition for *inter partes* review was filed.” Prelim. Resp. 13. Patent Owner argues that “[b]ecause Petitioner is also a party to the CoFC matter, it will have a full and fair opportunity to litigate the invalidity issues raised by the Government.” *Id.* Patent Owner further asserts that Petitioner has adopted the Government’s invalidity positions and is jointly participating with the Government in presenting claim construction positions. *Id.* at 14.

In response, Petitioner argues that “a CoFC judgment in a 1498(a) action *cannot be used preclusively against a nominal, third-party defendant* such as Petitioner.” Pet. Reply to Prelim. Resp. 9 (citing *Penda Corp. v. United States*, 44 F.3d 967, 972 (Fed. Cir. 1994)). Petitioner also argues that Patent Owner has produced no evidence to show that the Government has exercised any control over Petitioner’s participation in this *inter partes* review proceeding, or that the Government is funding or directing the proceeding. *Id.* Petitioner further argues that its indemnity obligation to the Government does not create a real-party-in-interest or privity relationship. *Id.* at 10.

Patent Owner has failed to persuade us that the Government is a privy of Petitioner. In *Penda*, the Federal Circuit held that a CoFC judgment cannot support the assertion of issue preclusion against a Government contractor or supplier such as Petitioner. *See Penda*, 44 F.3d at 972–73. Moreover, we do not agree that Petitioner will have a full and fair opportunity to litigate the invalidity issues in the CoFC action because, regardless of Petitioner’s participation in the defense of the CoFC action,

Petitioner lacks any right to appeal the CoFC's final judgment. *See id.* at 973. Further, Patent Owner has produced insufficient evidence that Petitioner is controlling the CoFC action or that the Government is controlling or bankrolling this *inter partes* review proceeding. In the Sur-Reply, Patent Owner relies on Petitioner's indemnity obligation and participation in the CoFC action in arguing that Petitioner controls the CoFC litigation. Sur-Reply 7–8. We have held, however, that the mere existence of an indemnification agreement does not establish that the indemnitor has the opportunity to control an *inter partes* review, especially where, as here, there is no evidence that Petitioner must defend the claim against the Government. *Nissan N. Am., Inc. v. Diamond Coating Techs., LLC*, Case IPR2014-01546, slip. op. at 7 (PTAB Apr. 21, 2015) (Paper 18).

2. *Service on Petitioner*

Further, we are not persuaded that service, *on the Petitioner*, of the Rule 14 Notice/Summons in the CoFC action, together with a copy of the complaint, establishes that Petitioner was “served with a complaint alleging infringement of the patent” within the meaning of § 315(b). In *Motorola Mobility LLC v. Arnouse*, Case IPR2013-00010 (PTAB Jan. 30, 2013) (Paper 20), we stated that the legislative history of § 315(b) shows that the primary concern related to the one-year statutory bar was to provide *defendants* sufficient time to analyze fully the patent claims, without creating an open-ended process:

The legislative history of 35 U.S.C. § 315(b) shows that the primary concern related to the one-year time period was to provide *defendants* sufficient time to fully analyze the patent claims, but not to create an open-ended process. *See* 157 Cong. Rec. S5429 (daily ed. Sept. 8, 2011) (statement of Senator Kyl) (“it is important that the section 315(b) deadline afford

defendants a reasonable opportunity to identify and understand the patent claims that are relevant to the litigation”) []; see also Meeting of H. Comm. on the Judiciary, Transcript of Markup of H.R. 1249, p. 72 (April 14, 2011) (statement of Judiciary Committee Chairman Lamar Smith) (“The inter partes proceeding in H.R. 1249 has been carefully written to balance the need to encourage its use while at the same time preventing the serial harassment of patent holders”) [].

Motorola, slip. op. at 4–5 (emphasis added).

Subsequently, in *Petroleum Geo-Services, Inc. v. Westerngeco LLC*, Case IPR2014-00687, we interpreted “served with a complaint alleging infringement of the patent” in 35 U.S.C. § 315(b) “to mean that the party is served *as a defendant in the case* rather than served the complaint for the purpose of enforcing a third party subpoena [seeking discovery].”

Petroleum Geo-Services, Inc. v. Westerngeco LLC, Case IPR2014-00687 [“PGS”], slip op. at 2–3 (PTAB Mar. 17, 2016) (Paper 105) (emphasis added); see *PGS*, slip op. at 40–42 (PTAB Dec. 15, 2015) (Paper 100). We reasoned, after reviewing the legislative history of § 315(b) and our decision in *Motorola*, that Congress did not intend the one-year time bar to apply to a third party who, although served with a complaint alleging infringement of the patent, was never a defendant in the litigation and, thus, did not necessarily possess, upon service of the complaint, an incentive to evaluate the patent claims involved in the litigation. *PGS*, slip op. at 40–42 (Paper 100). We held, therefore, that the § 315(b) time bar did not apply to a third party who was not a defendant, but merely appeared in the litigation for the purpose of responding to the subpoena. *Id.*

Here, Petitioner was served with a copy of the complaint in the CoFC action, but is no more than a *nominal* defendant in that action. See *Penda*, 44 F.3d at 971. As explained by the Federal Circuit, in *Penda*, “[b]ecause of

the limited subject matter jurisdiction of the Court of Federal Claims, no claim before that court was directed against Cadillac [the third party defendant].” Thus, the Federal Circuit determined that, “[f]rom the perspective of the Court of Federal Claims, Cadillac was at most a nominal defendant.” *Id.* The Federal Circuit also determined, as discussed above, that “the Court of Federal Claims judgment [against the Government] cannot support the assertion of issue preclusion against Cadillac by either the Government or Penda.” *Id.* at 972. Here, similarly, Petitioner is at most a nominal defendant. Although Petitioner has an indemnity obligation to the Government, no claim before the CoFC is directed against Petitioner, and the CoFC judgment cannot support the assertion of issue preclusion against Petitioner by either the Government or Patent Owner. *See id.* For these reasons, we determine that Petitioner is no more than a nominal defendant in the CoFC action, despite its active participation and support of the Government in that action.

Accordingly, we determine that the § 315(b) time bar does not apply to a third party defendant in a CoFC action, such as Petitioner here, that was served with a copy of the complaint against the Government alleging infringement of the patent under 28 U.S.C. § 1498, but is at most only a nominal defendant in the action.

Third, for the reasons discussed above, we similarly determine that the § 315(b) time bar does not apply to a third party defendant in a CoFC action, such as Petitioner here, that was served with a copy of an amended complaint against the Government alleging infringement of the patent under 28 U.S.C. § 1498, but is at most only a nominal defendant in the action.

In summary, we conclude that Petitioner does *not* lack standing under § 315(b).

D. The '666 Patent

The '666 Patent issued November 5, 1996 from an application filed April 1, 1993, which is a continuation-in-part of an application filed October 31, 1991. Ex. 1001, (45), (22), (63). The '666 Patent is titled “Glow Plug Controller.” *Id.* at (54). The '666 Patent describes a glow plug controller system that assists in low temperature engine starting by energizing the glow plugs for pre-set times before and after engine cranking takes place (the pre-glow and after-glow periods). *Id.* at 5:62–6:5, 7:6–61, Fig. 4. Once enabled, “[t]he controller . . . reads the engine temperature from an internal controller temperature sensor.” *Id.* at 7:6–12. The controller then looks up the corresponding pre-glow and after-glow periods from a table in memory. *Id.* at 7:13–24. If the engine temperature is equal to or less than 11° Celsius, the pre-glow period is 35 seconds and the after-glow period is 60 seconds. *Id.* at 7:25–27. If the engine temperature is above 11° Celsius, the pre-glow and after-glow periods each are zero seconds. *Id.* at 7:27–28.

Figure 4 of the '666 Patent is reproduced below.

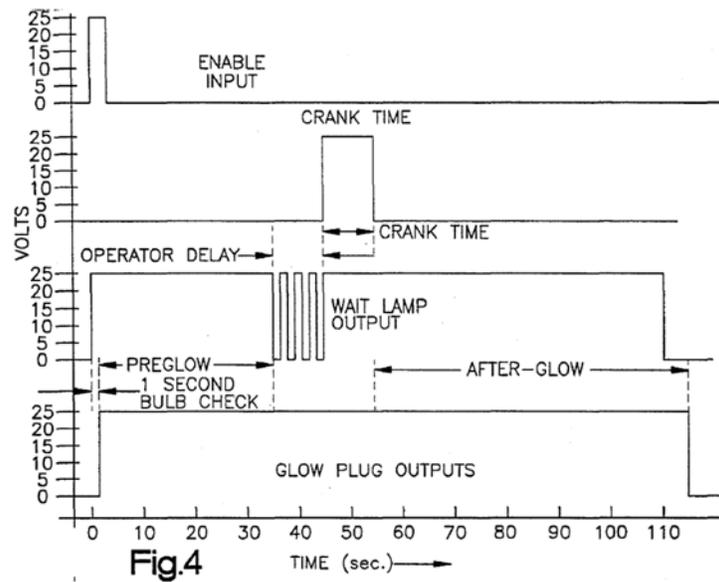


Figure 4 is a timing diagram for 35 seconds of pre-glow, 10 seconds of operator delay, 10 seconds of crank time, and 60 seconds of after-glow. *Id.* at 5:29–31. As indicated by the cyclic “wait lamp output” in Figure 4, a wait/pilot lamp flashes at the end of the pre-glow period, prompting the operator to crank the engine. *Id.* at 7:41–44. The operator delay shown in Figure 4 is the time between the end of the pre-glow period and the low-to-high transition of the crank input (indicating that the operator has begun cranking the engine).³ *Id.* at 7:44–49. When the crank input undergoes a high-to-low voltage transition (indicating that the operator has stopped cranking the engine), the after-glow period begins. *Id.* at 7:49–51.

E. The Challenged Claims

Independent claim 10 is illustrative and is reproduced below:

10. Apparatus for governing application of electrical power to a one or more glow plugs in a diesel engine, the diesel

³“The cranking period is the time that the cranking input is high.” *Id.* at 7:47–49.

engine having associated therewith a starter for starting the engine, said apparatus comprising:

a) a user actuated switch for applying power to the glow plugs prior to starting the engine;

b) user actuated apparatus and circuitry for actuating said starter and for producing a cranking signal only when said starter is operating;

c) a temperature sensor mounted to the diesel engine for monitoring an ambient temperature prior to starting of the diesel engine; and

d) glow plug control circuitry comprising:

i) a programmable controller electrically connected to said temperature sensor and to said user actuated switch having a stored program that responds to actuation of said switch by calculating a preglow period if a sensed temperature as indicated by a signal from the temperature sensor is below a first set point temperature; and

ii) output circuitry coupled to the programmable controller responsive to the cessation of said cranking signal to apply electrical power to said glow plug during an afterglow period initiated in response to cessation of said cranking signal.

F. Asserted Grounds of Unpatentability

Petitioner contends that the challenged claims are unpatentable based on the following specific grounds (Pet. 10):

Reference[s]	Basis	Claim[s] Challenged
Yasuhara ⁴	§ 103(a)	10, 11, and 13
Yasuhara and Masaka ⁵	§ 103(a)	10, 11, and 13
Demizu ⁶ and Masaka	§ 103(a)	10, 11, and 13

⁴ U.S. Patent No. 4,491,100 (Jan. 1, 1985) (Ex. 1004).

⁵ U.S. Patent No. 4,939,347 (July 3, 1990) (Ex. 1006).

⁶ U.S. Patent No. 4,566,410 (Jan. 28, 1986) (Ex. 1005).

Petitioner relies on the Declaration of C. Arthur MacCarley, Ph.D. (Ex. 1003). Patent Owner relies on the Declaration of Bruno Lequesne, Ph.D. (Ex. 2001).

II. ANALYSIS

A. *Claim Construction*

Petitioner asserts that the '666 Patent has expired, the claims should be given their ordinary and customary meaning under the *Phillips*^[7] standard, and no claim term requires express construction. Pet. 14. Patent Owner responds that Petitioner's failure to provide any express claim construction is a violation of 37 C.F.R. § 42.104(b)(3). Prelim. Resp. 25. Nonetheless, Patent Owner agrees that the '666 Patent has expired and proposes express constructions under the *Phillips* standard for two claim terms. *Id.* at 25–33.

Before proceeding with claim construction, we must determine the proper standard to apply. We apply the broadest reasonable construction standard only to unexpired patents. *See* 37 C.F.R. § 42.100(b). For expired patents, we apply the *Phillips* standard used in district court patent litigation. *See, e.g., In re Rambus, Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012) (holding that when an expired patent is subject to reexamination before the Office, the *Phillips* standard applies); *Cisco Sys., Inc. v. AIP Acquisition, LLC*, Case IPR2014-00247, slip. op. at 3 (PTAB July 10, 2014) (Paper 20) (stating with regard to application of the *Phillips* standard that “there still would be no presumption of validity,” “Petitioner’s burden of proof is still by a

⁷ *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

preponderance of the evidence,” and “we will not be applying a rule of construction with an aim to preserve the validity of claims”). Here, there is no dispute that the ’666 Patent has expired, and, accordingly, we apply the *Phillips* standard.

In determining the meaning of a disputed claim limitation under the *Phillips* standard, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence. *See DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). There is a presumption, however, that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002).

Upon review of the Petition and the Preliminary Response, we determine that the Petition contains a sufficient explanation of Petitioner’s contentions regarding how the challenged claims are to be construed. *See* 37 C.F.R. § 42.100(b). We discuss Patent Owner’s proposed claim constructions below.

1. “*cranking signal*”

Claim 10 pertinently recites “user actuated apparatus and circuitry for actuating said starter and for producing a *cranking signal* only when said starter is operating” (emphasis added). Patent Owner contends that “the cranking signal is indicative of the starter motor being actually cranked.” *Id.* at 30. In support of this construction, Patent Owner asserts that the cranking signal “begins after (sometime after) the user activates the ignition switch to power the starter motor and ends once the starter motor deactivates and the engine has been started.” *Id.* Patent Owner further asserts: “In this way, the

cranking signal is only provided when the starter motor is operating.” *Id.* (citing Ex. 2001 ¶¶ 45–46).

The Specification supports Patent Owner’s contention that “cranking signal” in claim 10 refers to a signal that is indicative of the starter motor being actually cranked. The Specification describes an engine crank signal from the starter solenoid (also referred to in the Specification as the “cranking input” or “crank input”). Ex. 1001, 6:38–45, 7:43–60, 8:1–7. A low-to-high voltage transition in the signal indicates that the operator is cranking the engine. *Id.* at 6:38–41 (“A low (less than 1 volt DC) to high (greater than 10 volts DC) signal transition” indicates that “[t]he operator is cranking the engine.”). “The controller then waits for the high to low transition, at which time the pre-glow period terminates, if the pre-glow period is in effect, and the after glow period shall begin.” *Id.* at 6:41–44. “The cranking period is the time that the cranking input is high.” *Id.* at 7:45–46. “When the crank input undergoes a high to low voltage transition, the after glow period begins.” *Id.* at 7:48–50.

For purposes of this Decision, we determine that “cranking signal” in claim 10 means a signal that is indicative of the starter motor being actually cranked.

2. *“temperature sensor mounted to the diesel engine for monitoring an ambient temperature prior to starting of the diesel engine”*

Patent Owner asserts that above-quoted limitation “should be construed to mean a temperature sensor that is mounted to the diesel engine that monitors engine ambient temperature as opposed to the temperature of the coolant water away from the engine.” Prelim. Resp. 32. Patent Owner argues, for example, that “[t]he ’666 Patent is unambiguous about a location

in the closest vicinity of the engine.” *Id.* (citing Ex. 1001, 12:62–13:21; Ex. 2001 ¶¶ 50, 76).

We disagree with Patent Owner’s proposed claim construction, which improperly focuses on an issue of claim application, i.e., whether the limitation reads on a sensor that monitors “the temperature of the coolant water away from the engine,” rather than clarification or interpretation of the claim language. Prelim. Resp. 32; *see infra* Section II.D. At this stage of the proceeding, we determine that only the included term “ambient temperature” requires construction. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that only those terms in controversy need to be construed, and only to the extent necessary to resolve the controversy). In this regard, we note that the Specification uses the term “ambient engine temperature” to mean “existing engine temperature,” which accords with the ordinary meaning of “ambient.” *See, e.g.*, MERRIAM WEBSTER’S COLLEGIATE DICTIONARY 36 (10th ed. 1993) (Ex. 3001); Ex. 1001, 1:57–58 (describing prior art glow plug controller circuits in which, sometimes, during the after-glow cycle, the duty cycle of the glow plugs is “reduced as the ambient engine temperature rises prior to glow plug cut-off”).

For purposes of this Decision, we construe “ambient temperature” in claim 10 to mean existing engine temperature.

B. Claims 10, 11, and 13—Obviousness—Demizu and Masaka

Petitioner argues that claims 10, 11, and 13 would have been obvious over Demizu and Masaka. Pet. 44–64. Patent Owner disagrees. Prelim. Resp. 46–47.

1. *Overview of Demizu*

Petitioner asserts that Demizu, titled “Diesel Engine Glow Plug Controlling Device,” and issued January 28, 1986, is prior art to the challenged claims under 35 U.S.C. § 102(b). Pet. 44. Demizu discloses a glow plug controlling device having a computer that “decides whether or not the engine needs to be preheated, on the basis of the output signal of the water temperature sensor and when necessary, the computer calculates a current supply time which is necessary to heat the glow plugs to a predetermined temperature.” Ex. 1005, 3:46–51. The computer calculates the time necessary to heat the glow plugs to a predetermined temperature if the temperature sensed by a water temperature sensor is less than a predetermined temperature. *Id.* at 4:51–5:19.

2. *Overview of Masaka*

Petitioner asserts that Masaka, titled “Energization Control Apparatus for Glow Plug,” and issued July 3, 1990, is prior art to the challenged claims under § 102(b). Pet. 17. Masaka discloses an energization control apparatus for a glow plug that includes preheating timer 107 and after-glow timer 108. Ex. 1006, 9:30–10:29, Fig. 8. “The after[-]glow timer 108 is started in response to an ST position detection signal output from the ST position detector 110.” *Id.* at 9:68–10:2. “Counting of the after[-]glow timer 108 is started when the ST position detection signal goes low.” *Id.* at 10:3–4. “The ST position detection signal output through the ST position detector 110 goes high when a movable contact 102d of the key switch 102 is connected to a starter terminal 102b.” *Id.* at 10:8–11. “When the movable contact 102d is released from the starter terminal 102b, the ST position detection signal goes low.” *Id.* at 10:11–13.

3. *Analysis*

A claim is unpatentable for obviousness under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented 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 the subject matter pertains. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). In analyzing the obviousness of a combination of prior art elements, it can be important to identify a reason that would have prompted one of skill in the art to combine the elements in the way the claimed invention does. *Id.* 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 skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations, if in evidence. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Petitioner contends that “[i]t would have been obvious to a POSITA to combine the teachings of Demizu and Masaka, and in particular to employ Masaka’s teachings of an advantageous afterglow initiation sequence in response to cessation of a cranking signal.” Pet. 45. Petitioner further contends that “the benefits of afterglow activation of glow plugs, as taught by Masaka, were well-known in the art” and that “[l]inking the initiation of the afterglow period to the cessation of the cranking signal would [have] improve[d] efficiency and effectiveness of the glow plug start process.” *Id.* at 46 (citing Ex. 1006, 1:24–31; Ex. 1003 ¶ 92).

Patent Owner responds, as a threshold matter, that we should reject the Petition under 35 U.S.C. § 325(d) because the Examiner considered

Masaka during prosecution of the '666 Patent, and because the arguments considered by the Examiner were substantially similar to those set forth in the Petition. Prelim. Resp. 52. We do not agree that the same or substantially the same prior art or arguments previously were considered by the Examiner. *See* 35 U.S.C. § 325(d). Patent Owner has not persuaded us that the Examiner considered whether the challenged claims would have been obvious over a combination of prior art substantially similar to either Demizu/Masaka or Yasuhara/Masaka. *See* Prelim. Resp. 23–25. For this reason, we decline to exercise our discretion to reject the Petition under § 325(d).

Patent Owner argues that a skilled person would not have looked to combine Masaka with Demizu “to solve the problems solved by the challenged patent.” *Id.* at 40. This argument, however, does not respond sufficiently to Petitioner’s specific contentions, for example, that the known benefits of after-glow activation of glow plugs as taught by Masaka would have provided a reason for the person of ordinary skill in the art to combine the teachings of the references. Masaka’s “Background of the Invention” section teaches that an after-glow period not only can warm-up the interior of the combustion chamber, but also can prevent engine-knocking and generation of noise, smoke, and hydrocarbons. *See* Pet. 46 (citing Ex. 1006, 1:24–31). On the current record, we determine that Petitioner has provided an adequate reason to combine the teachings of Demizu and Masaka.

Petitioner provides arguments and a claim chart identifying where each of the limitations of claims 10, 11, and 13 may be found in the Demizu/Masaka combination. *Id.* at 47–64. For example, with respect to claim 10, Petitioner identifies where Demizu teaches both: (i) the “sensor”

limitation, i.e., a temperature sensor mounted to the diesel engine for monitoring an ambient temperature prior to starting of the diesel engine; and (ii) the “controller” limitation, i.e., a programmable controller that calculates a pre-glow period if a sensed temperature as indicated by a signal from the temperature sensor is below a set point temperature. *Id.* at 53–57. Further, Petitioner identifies where Masaka teaches both: (iii) the “cranking signal” limitation, i.e., apparatus and circuitry for producing a cranking signal only when the starter is operating; and (iv) the “after-glow” limitation, i.e., output circuitry coupled to the programmable controller responsive to the cessation of the cranking signal to apply electrical power to the glow plug during an afterglow period initiated in response to cessation of the cranking signal. *Id.* at 52–53, 59–60.

On the current record, Patent Owner’s opposing arguments are not persuasive. *See* Prelim. Resp. 41–42, 46–48. For example, Patent Owner’s argument that Masaka fails to teach the “cranking signal” limitation (*id.* at 40–42) does not address Masaka’s disclosure that the after-glow timer starts counting when the ST position detection signal (asserted cranking signal) goes low (Ex. 1006, 10:3–4), or explain sufficiently why the ST position detection signal is not a signal that is indicative of the starter motor being actually cranked, as required under our claim construction (*see supra* Section II.A.1).

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing at trial on its challenge to claims 10, 11, and 13 as obvious over Demizu and Masaka.

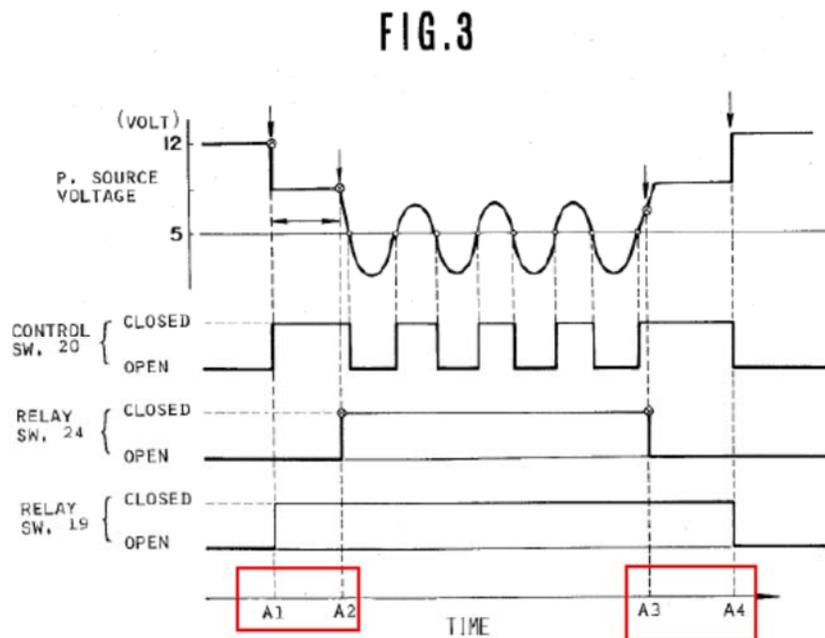
C. Claims 10, 11, and 13—Obviousness—Yasuhara

Petitioner argues that claims 10, 11, and 13 would have been obvious over Yasuhara alone. Pet. 15–44. Patent Owner disagrees. Prelim. Resp. 40–46.

1. Overview of Yasuhara

Petitioner asserts that Yasuhara, titled “Control System for a Glow Plug of an Internal Combustion Engine,” and issued January 1, 1985, is prior art to the challenged claims under 35 U.S.C. § 102(b). Pet. 15. Yasuhara discloses a temperature sensor that senses the temperature of the engine, and a control unit that calculates a glow plug preheating period on the basis of the sensed engine temperature and the time elapsed since the engine was last turned off. Ex. 1004, 3:57–59, 5:13–18. If the engine temperature is higher than a reference value representing that preheating is unnecessary, the preheating period is set equal to zero. *Id.* at 7:18–21. Upon completion of preheating, an indicator urges the engine operator to start the engine. *Id.* at 5:36–43. The glow plugs, if activated for preheating, remain activated during and after activation of the starting motor. *Id.* at 6:29–34. Not until the rotational speed of the crankshaft exceeds a reference value are the glow plugs deactivated. *Id.* at 6:36–40, Fig. 3.

Petitioner’s annotated version of Yasuhara’s Figure 3 is reproduced below.



Pet. 3. Figure 3 of Yasuhara is a control system time chart. Ex. 1004, Fig. 3. With respect to the period A3–A4 shown in the figure above, Petitioner explains: “After cranking ceases at A3, control switch 20 remains closed—and glow plug section 21 remains active—for a period of time (i.e., afterglow) until A4.” Pet. 4 (citing Ex. 1004, 6:36–51, Fig. 3).

2. Analysis

Petitioner contends that Yasuhara teaches each of the limitations of claims 10, 11, and 13. For example, Petitioner argues that a person of ordinary skill in the art would have understood from Yasuhara’s teachings that the current supplied to activate the starter motor and to crank the engine “produces a ‘cranking signal.’” Pet. 24 n.7. Petitioner further argues that a person of ordinary skill in the art “would have understood that the cranking signal of Yasuhara is produced *only* when the starter is operating” or, alternatively, that a person of ordinary skill in the art “would have found it obvious to produce a cranking signal *only* when the starter is operating.” *Id.*

at 25 n.8. Petitioner asserts that producing the cranking signal only when the starter is operating “would have yielded the predictable and desirable result of allowing for synchronization between starter motor activation and other control-related operations, such as activating (and deactivating) other glow plug controller functions.” *Id.* (citing Ex. 1003 ¶ 58).

Petitioner also contends that a person of ordinary skill in the art would have understood that Yasuhara teaches an after-glow period because the glow plugs remain active after the starting motor has been deactivated (as represented by Point A3 in Yasuhara’s Figure 3) and until the rotational speed of the crankshaft reaches a reference value (as represented by Point A4 in Yasuhara’s Figure 3). *Id.* at 36 n.13 (citing Ex. 1004, Fig 3; Ex. 1003 ¶ 69). Petitioner argues that “it would have been obvious to initiate the afterglow period in response to cessation of the cranking signal because doing so would improve efficiency and effectiveness of the glow plug start process.” *Id.* (citing Ex. 1003 ¶ 69).

Patent Owner responds, *inter alia*, that Yasuhara does not teach the “cranking signal” and “after-glow” limitations. Prelim. Resp. 34–35, 40–42, 44–46. For example, Patent Owner argues:

Yasuhara describes a device for selectively activating and deactivating a glow plug based upon the power being supplied to the glow plug during cranking of a diesel engine. Ex. 1001, Abstract; Fig. 3. There is nothing in *Yasuhara*, in terms of glow plug control, that is responsive to a cessation of the cranking signal. With reference to Figure 3 in *Yasuhara*, at time A3, when relay winding 23 is de-energized, all that happens is that switch 24 is open, such that the glow plug controller has no more “back-up” in case of low voltage. *Id.* at 6:22-35. While *Yasuhara* describes points A3 and A4 corresponding to the ignition switch being removed from the start position and some engine speed level being reached, respectively, *Yasuhara*

provides no details whatsoever concerning glow-plug actuation during such time. . . . Cessation of the starter motor is not shown to affect the pre-glow or afterglow in a glow plug. In *Yasuhara*, the cranking of the motor at most affects the availability of a back-up voltage to provide power to the glow plug, should a controller deem it desirable, not the glow plug controls.

Id. at 34 (citing Ex. 2001 ¶ 54).

We agree with Patent Owner that Petitioner has not shown that cessation of the starter motor affects activation of the glow plugs in *Yasuhara*. The glow plugs in *Yasuhara* remain activated from a time prior to engine cranking to a time after the cranking period, i.e., from time A1, at the beginning of preheating, to time A4, when the rotational speed of the crankshaft exceeds a reference value, as depicted in Figure 3 of *Yasuhara*. Ex. 1004, 5:29–6:45, Fig. 3. Accordingly, it is not evident that Petitioner’s obviousness argument amounts to anything more than re-defining the beginning of the asserted “after-glow period” in *Yasuhara* (the period A3–A4 as depicted in Figure 3) in terms of cessation of the cranking signal, rather than cessation of cranking. Petitioner has not persuaded us, moreover, that the asserted “after-glow period,” as re-defined in terms of the cranking signal, corresponds to “an afterglow period initiated *in response* to cessation of the cranking signal” (emphasis added), as required by the “after-glow” limitation.

Further, on the record before us, we are not persuaded by the reason advanced by Petitioner for initiating *Yasuhara*’s after-glow period in response to cessation of the cranking signal, i.e., that “doing so would improve efficiency and effectiveness of *the glow plug start process*” (emphasis added). *See* Pet. 36 n.13 (citing Ex. 1003 ¶ 69). Petitioner’s reference to “the glow plug start process” is unclear, and Petitioner has not

explained sufficiently why or how initiating the after-glow period in response to cessation of the cranking signal would improve the efficiency or effectiveness of Yasuhara's glow plug control system.

For the reasons set forth above, we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing at trial on its challenge to claims 10, 11, and 13 as obvious over Yasuhara alone.

D. Claims 10, 11, and 13—Obviousness—Yasuhara and Masaka

Petitioner argues that claims 10, 11, and 13 would have been obvious over Yasuhara and Masaka. Pet. 15–44. Patent Owner disagrees. Prelim. Resp. 40–46.

Petitioner provides arguments and a claim chart identifying where each of the limitations of claims 10, 11, and 13 may be found in the Yasuhara/Masaka combination. Pet. 15–44. For example, with respect to the “sensor” limitation of claim 10, Petitioner contends that a person of ordinary skill in the art would have mounted Yasuhara's temperature sensor to the engine (as the claims require) to facilitate measurement of the engine coolant temperature. *Id.* at 30 n.11 (citing Ex. 1003 ¶65). In this regard, Petitioner's declarant, Dr. MacCarley, testifies that “in order for the temperature sensor to provide the most accurate information for determining the temperature of the engine, it would need to be mounted to the engine (e.g., such that it could measure the coolant temperature).” Ex. 1003 ¶ 65.

Patent Owner responds that “[a] coolant temperature sensor would be mounted on the cooling system *away from the engine*, not on the engine as is expressly required by the claim language itself” (emphasis added). *See* Prelim. Resp. 42 (citing Ex. 2001 ¶ 73). Moreover, Patent Owner's declarant, Dr. Lequesne, testifies that “the '666 Patent temperature sensor

senses ambient temperature, which is different from coolant temperature.”
Ex. 2001 ¶ 77. Dr. Lequesne explains that “[a]mbient and coolant
temperatures are frequently very different, such as when a warm engine is
restarted after a short interruption, a situation known as ‘hot soak.’” *Id.*

Under our claim interpretation, the “sensor” limitation requires a
sensor that measures existing engine temperature. *See supra* Section II.A.2.
We determine that the conflicting testimonial evidence of Dr. MacCarley
and Dr. Lequesne creates genuine issues of material fact at this stage of the
proceeding as to: (i) whether a person of ordinary skill in the art would have
been motivated to mount Yasuhara’s temperature sensor to the engine; and
(ii) whether a temperature sensor mounted to the engine that measures the
temperature of engine coolant water corresponds to the required sensor for
monitoring an ambient temperature (existing engine temperature). At this
stage of the proceeding, we view the testimonial evidence in the light most
favorable to the Petitioner solely for the purposes of deciding whether to
institute an *inter partes* review. *See* 37 C.F.R. § 42.108(c).

Petitioner additionally contends that it would have been obvious “to
implement Yasuhara’s control system using Masaka’s advantageous
teaching of producing a cranking signal, such as Masaka’s ST position
detection signal, only when a starter is operating.” Pet. 26 n.9. Petitioner
argues that “incorporation of Masaka’s ST position detection signal into
Yasuhara’s control unit 15 would have enabled improved sensing of when
the starting motor 16 was activated and permitted better control of the
switching of control switch 20 in response.” *Id.*

As discussed above, Patent Owner’s opposing argument that Masaka
fails to teach the “cranking signal” limitation (*id.* at 40–42) does not address

Masaka's disclosure that the after-glow timer starts counting when the ST position detection signal (asserted cranking signal) goes low (Ex. 1006, 10:3–4), or explain sufficiently why the ST position detection signal is not a signal that is indicative of the starter motor being actually cranked, as required under our claim construction (*see supra* Section II.A.1). *See supra* Section II.B.3.

With respect to the “after-glow” limitation, Petitioner contends that it would have been obvious to

implement Yasuhara's control system using Masaka's advantageous initiation of after glow operation in response to cessation of the cranking signal, with the apparatus of Yasuhara because both teachings are directed towards glow plug control circuitry, and further because the benefits of afterglow cycling of glow plugs were well known in the art.

Id. at 38 n.14 (citing Ex. 1003 ¶ 73). Additionally, according to Petitioner, a person of ordinary skill in the art “would have recognized that linking the initiation of the afterglow period to the cessation of the cranking signal would improve the effectiveness of the glow plug-assisted engine start process, and would have ensured consistent timing of the afterglow start upon cessation of the cranking.” *Id.* (citing Ex. 1003 ¶ 73).

Patent Owner's arguments in opposition (Prelim. Resp. 44–46) focus on the individual teachings of Yasuhara and Masaka, and do address sufficiently, or rebut, Petitioner's contentions with respect to the Yasuhara/Masaka combination. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (holding that one cannot show nonobviousness by attacking references individually where the assertion of obviousness is based upon the teachings of a combination of references) (citing *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)).

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing at trial on its challenge to claims 10, 11, and 13 as obvious over Yasuhara and Masaka.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has shown that there is a reasonable likelihood that it would prevail with regard to at least one of the claims challenged in the Petition. At this stage of the proceeding, the Board has not made a final determination as to the patentability of any challenged claim or as to any underlying factual or legal issue.

IV. ORDER

For the reasons given, it is

ORDERED that pursuant to 35 U.S.C. § 314, *inter partes* review is instituted as to the '666 Patent based on the unpatentability of claims 10, 11, and 13 under 35 U.S.C. § 103(a) as obvious over (i) Demizu and Masaka and (ii) Yasuhara and Masaka;

FURTHER ORDERED that *inter partes* review is commenced on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; and

FURTHER ORDERED that the trial is limited to the grounds of unpatentability listed above, and no other grounds of unpatentability are authorized for *inter partes* review.

IPR2016-01049
Patent 5,570,666

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