# United States Court of Appeals for the Federal Circuit

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**NIDEC MOTOR CORPORATION,**
*Appellant*

**v.**

**ZHONGSHAN BROAD OCEAN MOTOR CO. LTD., BROAD OCEAN MOTOR LLC, BROAD OCEAN TECHNOLOGIES LLC,**
*Appellees*

**JOSEPH MATAL, PERFORMING THE FUNCTIONS AND DUTIES OF THE UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR, U.S. PATENT AND TRADEMARK OFFICE,**
*Intervenor*

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2016-2321

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Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2014-01121, IPR2015-00762.

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Decided: August 22, 2017

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SCOTT R. BROWN, Hovey Williams LLP, Overland Park, KS, argued for appellant. Also represented by MATTHEW B. WALTERS; CHRISTOPHER MICHAEL HOLMAN,

University of Missouri-Kansas City School of Law, Kansas City, MO.

STEVEN F. MEYER, Locke Lord LLP, New York, NY, argued for appellees. Also represented by JOSEPH ANTHONY FARCO; CHARLES BAKER, Houston, TX.

NATHAN K. KELLEY, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA argued for intervenor. Also represented by FRANCES LYNCH, JOSEPH MATAL, SCOTT WEIDENFELLER.

DAVID R. MARSH, Arnold & Porter Kaye Scholer LLP, Washington, DC, for amicus curiae Biotechnology Innovation Organization. Also respresented by SEAN MICHAEL CALLAGY, San Francisco, CA.

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Before DYK, REYNA, and WALLACH, *Circuit Judges*.

Opinion for the court filed PER CURIAM.

Concurring opinion filed by *Circuit Judge* DYK, in which *Circuit Judge* WALLACH joins.

PER CURIAM.

Nidec Motor Corporation ("Nidec") appeals a final written decision of the Patent Trial and Appeal Board ("Board") in an *inter partes* review ("IPR"). The Board determined that claims 1–3, 8, 9, 12, 16, and 19 of U.S. Patent No. 7,626,349 (the "'349 Patent") are invalid as anticipated or obvious. We affirm.

## BACKGROUND

Appellant Nidec owns the '394 patent, which is directed to low-noise heating, ventilating, and air conditioning ("HVAC") systems. The patented HVAC system includes a permanent magnet electric motor that turns a fan in order to move air through ductwork. As compared

to conventional HVAC systems, the invention achieves quieter operation of the motor due to improvements in the motor controller. Specifically, the improved motor controller performs sinewave commutation instead of more conventional square-wave commutation. Commutation refers generally to the repeated sequencing of electrical currents applied to windings within the permanent magnet motor that causes the motor to rotate. Square-wave commutation involves abrupt changes in the voltage applied to a given winding as the sequence progresses, similar to repeatedly flipping a switch between three voltage states: positive, zero, and negative. Sinewave commutation, by contrast, involves more gradual and continuous oscillations in applied voltage, similar to sliding a dimmer switch between those states. As compared to square-wave commutation, sinewave commutation results in less vibration and noise generated from the electric motor.

Appellees Zhongshan Broad Ocean Motor Co., Ltd.; Broad Ocean Motor LLC; and Broad Ocean Technologies, LLC (collectively, "Broad Ocean") filed an IPR petition challenging claims 1–3, 8, 9, 12, 16, and 19 of the '349 patent (the "challenged claims"). In a revised petition ("First Petition"), Broad Ocean asserted that the challenged claims are invalid as obvious over the combination of U.S. Patent No. 5,410,230 ("Bessler") and a published doctoral thesis by Peter Franz Kocybik ("Kocybik"). Broad Ocean also asserted that the challenged claims are invalid as anticipated by Japanese Patent Publication JP 2003-348885 ("Hideji").

On January 21, 2015, the Board instituted review on the ground of obviousness over Bessler and Kocybik. The Board declined to institute review on the ground of anticipation by Hideji, however, because Broad Ocean had failed to provide an affidavit attesting to the accuracy of the submitted translation of Hideji as required by 37 C.F.R. § 42.63(b).

About a month later, Broad Ocean filed a second petition for IPR ("Second Petition"), again asserting that the challenged claims are anticipated by Hideji. This time, Broad Ocean included the required affidavit. At the same time, Broad Ocean requested that the Board join the Second Petition with Broad Ocean's already-instituted IPR involving the First Petition pursuant to 35 U.S.C. § 315(c) (allowing for joinder in an IPR at the discretion of the Director of the United States Patent and Trademark Office ("Director")).

On July 20, 2015, a panel of three Administrative Patent Judges again declined to institute review on the ground that Hideji anticipates. The panel majority determined that Broad Ocean had been served with a complaint alleging infringement of the '349 patent on September 25, 2013—more than one year before Broad Ocean filed the Second Petition—and, therefore, the Second Petition was time barred under 35 U.S.C. § 315(b). The majority further held that the exception to the time bar for requests for joinder under 35 U.S.C. § 315(b), (c), did not apply here because, according to the majority's interpretation, the joinder provision does not permit a party to join issues to a proceeding to which it is already a party.

Broad Ocean requested a rehearing of the panel's decision, which was granted by an expanded panel of five Administrative Patent Judges. The expanded administrative panel set aside the original panel's decision and concluded that

> § 315(c) permits the joinder of any person who properly files a petition under § 311, including a petitioner who is already a party to the earlier instituted [IPR]. We also conclude that § 315(c) encompasses both party joinder and issue joinder, and, as such, permits joinder of issues, including

> new grounds of unpatentability, presented in the petition that accompanies the request for joinder.

J.A. 936 (citations omitted). Having determined that the joinder provision is broad enough to permit joinder with respect to the Second Petition, the expanded panel instituted review of the Second Petition and granted Broad Ocean's request to join the proceeding with the earlier-instituted IPR.

On May 9, 2016, the Board, consisting of the expanded panel, issued a Final Written Decision in the joined proceedings. The Board determined that all of the challenged claims are unpatentable under 35 U.S.C. § 103 as obvious over Bessler and Kocybik and that all of the challenged claims are unpatentable under 35 U.S.C. § 102 as anticipated by Hideji.

Nidec appealed the Board's joinder decision as well as the Board's conclusions as to obviousness and anticipation. Broad Ocean responded, and the Director intervened to support the Board's joinder decision. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

## DISCUSSION

We review the Board's legal conclusions de novo and its factual findings for substantial evidence. *In re Affinity Labs of Tex., LLC*, 856 F.3d 883, 889 (Fed. Cir. 2017).

### I

Both Broad Ocean and the Director argue that the Board properly applied the joinder and time bar statutes to allow joinder and institution in this case. Nidec disagrees. We need not resolve this dispute. Nor need we address the Director's and Broad Ocean's arguments that the Board's joinder determination is non-appealable in light of 35 U.S.C. § 314(d)'s bar of judicial review for institution decisions or Nidec's argument that the Board's practice of expanding panels violates due process. For the

reasons set forth below, we affirm the Board's conclusion that all of the challenged claims are unpatentable as obvious over Bessler and Kocybik. Because there is no dispute that Broad Ocean timely filed the First Petition (containing the obviousness ground), the issues on appeal relating only to the Board's joinder determination as to anticipation ultimately do not affect the outcome of this case. Both parties agree that, if we affirm as to obviousness, we need not address Nidec's argument that various procedural aspects of the Board's joinder decision require reversal of its holding concerning anticipation by Hideji. *See* Oral Arg. at 1:28–2:33 (June 8, 2017), *available at* http://oralarguments.cafc.uscourts.gov/default.aspx?fl=2016-2321.mp3 (Nidec agreeing that we need not address the anticipation ground based on Hideji in any respect if we determine that the Board was correct in its obviousness determination under Bessler and Kocybik).

## II

Nidec argues that the Board erred in concluding that the challenged claims would have been obvious to a person of ordinary skill in the art based on the combination of Bessler and Kocybik. Obviousness is a question of law based on underlying questions of fact. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015).

Nidec submits that claim 1 is representative of the independent claims at issue, and Nidec does not raise patentability arguments that are specific to any dependent claims. Claim 1 is reproduced below:

> 1. A heating, ventilating and/or air conditioning (HVAC) system comprising a system controller, a motor controller, an air-moving component, and a permanent magnet motor having a stationary assembly, a rotatable assembly in magnetic coupling relation to the stationary assembly, and a shaft coupled to the air-moving component, wherein the motor controller is configured for performing sin-

> ewave commutation, using independent values of Q and d axis currents, in response to one or more control signals received from the system controller to produce continuous phase currents in the permanent magnet motor for driving the air-moving component.

'349 Patent, col. 5 ll. 34–45.

Nidec does not appear to dispute that the claimed elements are described in the prior art. In general, Bessler describes an HVAC system that includes a thermostat, a motor controller (or microprocessor), and an electronically commutated motor that turns a fan (or a "blower ECM motor"). *See, e.g.*, J.A. 223, col. 4 ll. 35–68 (thermostat); *id.* col. 5 ll. 45–48 (microprocessor); *id.* col. 5 l. 23 (blower ECM motor). Bessler does not describe the claimed sinewave commutation or the use of independent Q and d axis currents. However, the Board determined—and Nidec does not dispute—that Kocybik describes sinewave commutation as well as the use of independent Q and d axis currents in electric motors, although Kocybik does not mention HVAC systems. And Kocybik does not limit the application of such commutation to "high precision control tasks," as Nidec contends. Nidec Reply Br. 7.

The Board determined that "a person of ordinary skill in the art would have effected the combination proposed"—"configuring the system of Bessler to perform sinewave commutation in the manner described in Kocybik." J.A. 29. The Board concluded that "the use of sinewave commutation and independent Q and d axis currents would have provided predictable results to address known problems associated with other types of motors." J.A. 29. Nidec asks us to reweigh the evidence the Board used to make its determination, which we may not do. *See In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1334 (Fed. Cir. 2016).

Nidec makes two arguments as to why the Board's conclusion was erroneous. First, Nidec argues that the Board wrongly construed the term "HVAC system" in the claim preambles to be non-limiting. J.A. 21. Whether or not Nidec is correct, the result does not change. The Board specifically addressed the issue by stating, "[o]ur conclusion would be unaffected by a determination that the preambles of the claims reciting an HVAC system are limiting. Although Kocybik is not directed specifically to HVAC systems, Petitioner relies on Bessler for such a teaching." J.A. 34 n.10. There is no dispute that Bessler teaches an HVAC system as recited in the claims. Because we need only construe terms "that are in controversy, and only to the extent necessary to resolve the controversy," *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999), we need not construe the claim preambles here where the construction is not "material to the [obviousness] dispute," *id.* We see no error in the Board's decision in this regard.

Second, Nidec argues that Bessler teaches away from the asserted combination. Nidec argues that the purpose of Bessler is to reduce the complexity of HVAC systems by eliminating the need for a conventional system controller. According to Nidec, incorporating sinewave commutation into an HVAC system only increases complexity, which is contrary to the fundamental goal of Bessler. Thus, Nidec urges that a person of ordinary skill in the art would not have combined the teachings of Bessler and Kocybik. We disagree.

There is nothing in Bessler that "criticize[s], discredit[s], or otherwise discourage[s]" the use of sinewave commutation in HVAC systems. *Meiresonne v. Google, Inc.*, 849 F.3d 1379, 1382 (Fed. Cir. 2017) (quoting *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013)). As Nidec has conceded, Bessler does not even mention sinewave commutation. Oral Arg. at 13:32–13:47. Instead, Bessler states only that "[i]t is an object of

this invention to provide a central [HVAC] system which does not require a system controller." J.A. 222, col. 2 ll. 3–5. This statement does not teach away from sinewave commutation.

For support, Nidec points out that each challenged claim requires a "system controller" and that Bessler teaches away from the use of a system controller that is separate from a motor controller and that receives and processes system demand signals. But this argument has limited relevance to sinewave commutation. In fact, the challenged claims make clear that it is the "motor controller" (not the system controller eliminated in Bessler) that performs sinewave commutation. *See, e.g.*, '349 Patent, col. 5 ll. 39–41 (claim 1 reciting "wherein the motor controller is configured for performing sinewave commutation"). Nidec does not dispute that Bessler teaches a motor controller.[1]

And the '349 Patent specification uses the term "system controller" in a different sense than in Bessler. The '349 Patent states that "the system controller . . . may be a thermostat." *Id.* col. 4 ll. 35–36. There is no dispute that Bessler teaches the use of a thermostat in an HVAC system as opposed to the eliminated system controller

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[1] Nidec argues that a motor controller capable of achieving sinewave commutation requires an advanced microprocessor, such as a "digital signal processor" (DSP), and that Bessler teaches away from the use of such hardware. In fact, however, Bessler does not limit or suggest limiting the types of microprocessors that might be used, and Kocybik teaches the use of DSPs with permanent magnet motors. Kocybik explains that "[m]ass production [of DSPs] has [led] to a decrease in prices; leading to a whole range of reasonably priced and well-tested devices available to implement digital control strategies." J.A. 267.

which receives and processes signals from a thermostat. *See* J.A. 223, col. 4 ll. 31–68 (Bessler describing the functions of a "conventional thermostat" in a preferred embodiment).

However, Nidec argues that Bessler's thermostat is too primitive to qualify as the system controller required by the '349 Patent claims. Specifically, the claimed system controller must be capable of sending "one or more control signals" to the claimed motor controller. *E.g.*, '349 Patent, col. 5 l. 42 (claim 1); *see also id.* col. 6 l. 50 (claim 19 reciting "at least one control signal from a system controller"). Nidec points to a portion of the '349 Patent specification that explains, "[s]uch control signals may represent, for example, a desired torque or speed of the motor 406. Alternatively, the control signals may represent a desired airflow to be produced by the air-moving component 410." *Id.* col. 3 l. 66–col. 4 l. 2. By contrast, Bessler's thermostat only "generat[es] a two state (on/off) signal." J.A. 223, col. 4 ll. 42–43. Thus, Nidec argues, Bessler's thermostat is incapable of generating the "control signals" required by the claims of the '349 Patent.

Nidec too narrowly construes the "control signals" limitation. In an IPR involving an unexpired patent, the "broadest reasonable construction" standard governs. *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–45 (2016); 37 C.F.R. § 42.100(b). The '349 Patent specification explains that "torque," "speed," and "airflow" are provided only as examples of the types of control signals that might be used; it is not an exhaustive list. *See* '349 Patent, col. 3 l. 66–col. 4 l. 2. ("*for example*, a desired torque or speed" and "[*a*]*lternatively*, the control signals *may* represent a desired airflow" (emphases added)). Moreover, analysis of the dependent claims supports a broader construction than that advanced by Nidec. For instance, dependent claim 20 provides in relevant part, "wherein receiving includes receiving at least one control signal representing a *desired airflow* for the blower, a

*desired torque* of the permanent magnet motor, *or* a *desired speed* of the permanent magnet motor." *Id.* col. 6 ll. 57–60 (emphases added). This limitation confirms that the "control signals" limitation recited in the independent claims encompasses other signals in addition to "torque," "speed," and "airflow." An on/off signal amounts to a control signal because a motor controller cannot carry out its claimed function of "performing sinewave commutation . . . in response to one or more control signals" if it does not receive at least an "on" signal from the thermostat. '349 Patent, col. 5 ll. 40–42. Indeed, Nidec concedes that "Bessler . . . describes . . . a motor controller that is directly responsive to a two-state (on/off) temperature signal provided by a thermostat." Nidec Opening Br. 12.

We conclude that the Bessler thermostat is a "system controller" and that the on/off signals it generates are "control signals" encompassed by the '349 Patent's claims. The Board did not err in concluding that the challenged claims would have been obvious over the combination of Bessler and Kocybik.[2]

## CONCLUSION

In summary, we conclude that the Board correctly determined that challenged claims 1–3, 8, 9, 12, 16, and 19 of the '349 Patent are invalid under § 103 as obvious over the combination of Bessler and Kocybik. We reach no

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[2] Although the Board invalidated dependent claim 12, it is not clear from Nidec's briefs whether claim 12 is at issue on appeal. *See, e.g.*, Nidec Opening Br. 23 (omitting reference to claim 12); *id.* at 10–11 (omitting summary of claim 12 and identification of claim 12 as one of the claims-at-issue); *but see id.* at 19, 20, 69, Nidec Reply Br. 31 (arguing that the Board erred in invalidating, inter alia, claim 12). In any event, both at the Board level and on appeal, claim 12 was not separately argued.

conclusion as to the Board's determinations involving the anticipation ground based on Hideji.

**AFFIRMED**

COSTS

Costs to appellee.

# United States Court of Appeals for the Federal Circuit

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DYK, *Circuit Judge*, joined by *Circuit Judge* WALLACH, concurring.

Although we join the per curiam decision in full, we write separately to express our concerns as to the United States Patent and Trademark Office's ("PTO") position on joinder and expanded panels since those issues are likely

to recur. Although we do not decide the issues here, we have serious questions as to the Board's (and the Director's) interpretation of the relevant statutes and current practices.

First, the IPR joinder statute provides:

> **(c) Joinder.**—If the Director institutes an inter partes review, the Director, in his or her discretion, may join as a party to that inter partes review any person who properly files a petition under section 311 that the Director, after receiving a preliminary response under section 313 or the expiration of the time for filing such a response, determines warrants the institution of an inter partes review under section 314.

35 U.S.C. § 315(c). Thus, joinder is only permissible if the Director determines that a petition "warrants the institution of an inter partes review." *Id.*

The IPR time-bar statute provides,

> **(b) 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 privy of the petitioner is served with a complaint alleging infringement of the patent. *The time limitation set forth in the preceding sentence shall not apply to a request for joinder under subsection (c).*

35 U.S.C. § 315(b) (emphasis added). Particularly relevant to this appeal is the second sentence, which provides an exception to the 1-year time limit for "a request for joinder under subsection (c)." *Id.*

The joinder dispute in this case turns on the relationship between the joinder provision of § 315(c) and the exception to the time bar in § 315(b). Section 315(b)

ordinarily bars a petitioner from proceeding on a petition if it is filed more than one year after the petitioner is sued for patent infringement. *Id*. Without the exception to that rule described in the second sentence of § 315(b), an untimely petition would still be barred even if it raised the same issues as those involved in an existing proceeding that had been timely initiated by a different petitioner. But the exception makes clear that the time bar "shall not apply to a request for joinder under subsection (c)." Thus, the exception to the time bar for "request[s] for joinder" was plainly designed to apply where time-barred Party A seeks to join an existing IPR timely commenced by Party B when this would not introduce any new patentability issues. This is supported by the legislative history for the joinder provision, § 315(c). *See* H.R. Rep. No. 112-98, pt. 1, at 76 (2011) (explaining that under § 315(c), "[t]he Director may allow other petitioners to join an [IPR]").

The issue in this case is whether the time bar provision allows a time-barred petitioner to add new issues, rather than simply belatedly joining a proceeding as a new party, to an otherwise timely proceeding. Section 315(c) does not explicitly allow this practice. We think it unlikely that Congress intended that petitioners could employ the joinder provision to circumvent the time bar by adding time-barred issues to an otherwise timely proceeding, whether the petitioner seeking to add new issues is the same party that brought the timely proceeding, as in this case, or the petitioner is a new party.

Second, we are also concerned about the PTO's practice of expanding administrative panels to decide requests for rehearing in order to "secure and maintain uniformity of the Board's decisions." Director Br. 27. Here, after a three-member panel of administrative judges denied petitioner Broad Ocean's request for joinder, Broad Ocean requested rehearing and requested that the rehearing be decided by an expanded panel. Subsequently, "[t]he

Acting Chief Judge, acting on behalf of the Director," J.A. 933 n.1, expanded the panel from three to five members, and the reconstituted panel set aside the earlier decision.

Nidec alleges that the two administrative judges added to the panel were chosen with some expectation that they would vote to set aside the earlier panel decision. The Director represents that the PTO "is not directing individual judges to decide cases in a certain way." Director Br. 21 (quotation marks omitted). While we recognize the importance of achieving uniformity in PTO decisions, we question whether the practice of expanding panels where the PTO is dissatisfied with a panel's earlier decision is the appropriate mechanism of achieving the desired uniformity. But, as with the joinder issue, we need not resolve this issue here. Nor need we address the predicate issue of appealability.