NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

BASF CORPORATION,
Appellant

v.

ANDREI IANCU, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Intervenor

2017-1425, 2017-1426, 2017-1427, 2017-1428

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2015-01121, IPR2015-01123, IPR2015-01124, IPR2015-01125.

Decided: July 17, 2018

ANISH R. DESAI, Weil, Gotshal & Manges LLP, New York, NY, argued for appellant. Also represented by BRIAN E. FERGUSON, MEGAN WANTLAND, Washington, DC.

MEREDITH HOPE SCHOENFELD, Office of the Solicitor, United States Patent and Trademark Office, Alexandria,

VA, argued for intervenor. Also represented by NATHAN K. KELLEY, KAKOLI CAPRIHAN, THOMAS W. KRAUSE, FARHEENA YASMEEN RASHEED.

Before REYNA, LINN, and CHEN, *Circuit Judges.*

CHEN, *Circuit Judge*.

SUMMARY

Appellant BASF Corporation appeals from four Patent Trial and Appeal Board final written decisions rendering unpatentable claims of its U.S. Patent Nos. 7,601,662 and 8,404,203 (the Patents). The Patents claim a special compound that can break down nitrogen oxide emissions in high temperature combustion processes.[1] IPR2015-01121 and IPR2015-01125 involved the '662 Patent; IPR2015-01123 and IPR2015-01124 involved the '203 Patent.

While this appeal was pending, the Supreme Court held in *SAS Institute, Inc. v. Iancu* that the Board is statutorily prohibited from instituting an inter partes review on a subset of the petitioned claims. 138 S. Ct. 1348, 1352–54 (2018). As with the inter partes review (IPR) in *SAS*, the two final written decisions on the '662 Patent resulted from partial institution decisions. BASF argues that this court lacks jurisdiction over these decisions because the appealed decisions are not final, and for that reason, asks this court to vacate the allegedly non-final Board decisions; the Patent and Trademark Office (the Director) disagrees. We recently held in *PGS Geophysical AS v. Iancu* that this court has jurisdiction under

---

[1] The two patents share the same specification and, for purposes of analysis in this appeal, claim the same subject matter.

circumstances such as here. 891 F.3d 1354, 1359–63 (Fed. Cir. 2018). We thus reject BASF's jurisdictional argument.

As to the merits, we conclude that substantial evidence supports the factual findings underlying the Board's determination that all of the claims at issue are unpatentable as obvious over prior art U.S. Patent No. 6,709,644 (Zones) in view of U.S. Patent No. 4,046,888 (Maeshima). Thus, we *affirm*.

BACKGROUND

A. The Technology

The Patents claim a zeolite catalyst, a compound designed to break down nitrogen oxide (NO) emissions in automobile diesel engine exhaust. The breakdown process is called "selective catalytic reduction" or SCR.

The claimed zeolite is arranged into a special tetrahedral framework of alumina and silica molecules, called the CHA framework, depicted below.

CHA

Appx3186; Appellant's Br. at 9. Metals can be introduced into the zeolite by replacing some of the aluminum with metal cations, such as copper (Cu^{2+}). The claimed zeolite is such a copper-based catalyst. The amount of added copper is called the ion exchange ratio and can be quantified as the ratio of added copper to the aluminum in the zeolite (Cu/Al ratio).

The patented invention has several characteristics, the combination of which BASF claims allowed for greater

hydrothermal and thermal stability of the catalyst, making it commercially viable to catalyze reduction of NO emissions in combustion processes:

- A CHA framework;
- A high silicon to aluminum molar ratio (15 to 150);
- A high copper to aluminum atomic ratio (0.25 to 1); and
- An ability to selectively catalyze NO into nitrogen and water in the presence of ammonia (NH_3), a process referred to herein as ammonia SCR.

The last limitation (ammonia SCR) is the most relevant to BASF's appeal.

The following are the representative claims from the Patents identified by BASF.

> 1. A catalyst comprising: an aluminosilicate zeolite having the CHA crystal structure and a mole ratio of silica to alumina from about 15 to about 150 and an atomic ratio of copper to aluminum from about 0.25 to about 1, the catalyst effective to promote reaction of ammonia with nitrogen oxides to form nitrogen and H_2O selectively.

'662 Patent, Inter Partes Reexamination Certificate (C1), col. 1 l. 56–col. 2 l. 3.

> 14. [A process for the reduction of oxides of nitrogen contained in a gas stream in the presence of oxygen wherein said process comprises contacting the gas stream with a catalyst comprising a zeolite having the CHA crystal structure and a mole ratio of silica to alumina from about 15 to about 100 and an atomic ratio of copper to aluminum from about 0.25 to about 0.50],[2] wherein the pro-

[2] Dependent claim 14 depends from claim 1. The limitations of claim 1 are shown in the brackets.

> cess further comprises adding a reductant to the gas stream.
>
> 15. The process of claim 14, wherein the reductant comprises ammonia or an ammonia precursor.

'203 Patent col. 23 ll. 51–54.

B. Relevant Board Proceedings

In IPR2015-01121 and IPR2015-01123, Petitioner Umicore AG & Co. KG (which is no longer a party to this proceeding due to settlement) petitioned for, and the Board instituted, inter partes reviews of claims 1–8, 12–24, 30, and 32–50 of the '662 Patent and claims 1–31 of the '203 Patent under 38 U.S.C. § 103 for obviousness over the combination of Zones and Maeshima.[3]

Zones undisputedly discloses all elements of the patented invention, other than the specific copper-to-aluminum ratio required by the claims and whether the zeolite effectively catalyzes reduction via ammonia SCR. Zones discusses methods for making and using a particular synthetic zeolite with the CHA structure (SSZ-62). This CHA zeolite has a silica-to-alumina ratio ranging from 20–50, as encompassed by the Patents' claims. Zones, col. 1 ll. 32–35, col. 2 ll. 30–38. Zones' zeolite may

---

[3] A third prior art reference, U.S. Patent Application Publication No. US 2006/0039843 A1 (Patchett), was used to address limitations relating to the emissions treatment system found in some of the instituted claims. BASF does not appeal any of the Board's findings regarding this reference. So, in this decision, we combine analysis of the claims rendered obvious by Maeshima, Zones, and Patchett with the analysis of the claims rendered obvious by Maeshima and Zones alone.

"contain a metal or metal ions (such as . . . copper)." *Id.* at col. 1 ll. 61–65.

Maeshima discloses the claimed copper-to-aluminum ratio. Maeshima teaches zeolite catalysts that can be used to reduce the concentration of nitrogen oxides in exhaust gas, listing a CHA zeolite as one of nine such catalysts. Maeshima, col. 1 ll. 8–10, col. 3 ll. 33–43, col. 4 ll. 3–35. Maeshima specifies that copper is an "especially preferred" metal to add to its zeolites and that standard copper loading rates should be employed, resulting in a copper-to-aluminum ratio falling within the range of the challenged claims. *Id.* at col. 4 ll. 51–54, col. 6 ll. 10–17.

The point of contention in this appeal is the prior art's disclosure of the last claimed limitation: ammonia SCR.

Zones discloses using a copper-based CHA zeolite for the "reduction of oxides of nitrogen contained in a gas stream in the presence of oxygen." Zones, col. 1 ll. 55–56, col. 8 ll. 16–17. Zones Inventor Dr. Stacey Zones stated that this phrase "refers to and teaches a number of different reactions, including . . . the selective catalytic reduction of NO in the presence of an ammonia reducing agent and oxygen." Appx3033. Umicore expert Dr. Lercher testified to the same. Appx3389 (36:16–37:25). BASF agreed in its Patent Owner's Preliminary Response that "reduction of oxides of nitrogen" in Zones "encompasses a number of reactions," including ammonia SCR, and again agreed in oral argument before the Board that the ammonia SCR reaction is "encompassed within that phrase." Appx541, n.5; Appx202 (46:6–23).

Maeshima explains that zeolite catalysts can be used with either hydrocarbons or ammonia as the reducing agent. Maeshima, col. 1 ll. 15–21, col. 2 ll. 4–8. Maeshima teaches that ammonia SCR is preferred because less of the reducing agent can be used and "nitrogen oxides can be removed at a high ratio." *Id.* at col. 1 ll. 21–24.

In its final written decisions in these two IPRs involving the Zones and Maeshima combination, the Board found that the "Patent Owner acknowledges that the limitations in the claims were well-known in the art." Final Written Decision, IPR2015-01121, at 9.[4] The Board further found that "[a]lthough Zones does not explicitly list specific reactions for the reduction of oxides of nitrogen, such as the use of CHA zeolites for ammonia SCR, the evidence of record suggests that a person of ordinary skill in the art would have understood the reference to the 'reduction of oxides of nitrogen' [in Zones] to include ammonia SCR of NOx." *Id.* at 14. The Board also found that Maeshima discloses "'a selective reduction method in which ammonia is used as the reducing [a]gent'" and teaches "metal-exchanged zeolites that are active for the NH_3 SCR of NOx.'" *Id.* at 14–15. The Board thus concluded that a skilled artisan would have been motivated to combine the two references to arrive at the claimed invention, based on evidence from "the prior art references themselves [and] the knowledge of one of ordinary skill in the art" and that the "combined teachings of Zones and Maeshima disclose using a high SAR CHA zeolite for ammonia SCR." *Id.* at 16 (citations omitted). Accordingly, the Board found all instituted claims unpatentable as obvious over Zones and Maeshima.

In IPR2015-01124 and IPR2015-01125, the Board rendered obvious the same claims of both Patents based on a combination of Maeshima and U.S. Patent No. 4,503,023 (Breck), with U.S. Patent Application Publica-

---

[4] For simplicity, this opinion cites only to the Board institution decision, final written decision, and the parties' briefing in IPR2015-01121 on the '662 Patent. The same issues and analysis apply to IPR2015-01123 on the '203 Patent.

tion No. US 2006/0039843 A1 (Patchett) for certain dependent claims. BASF also appeals those decisions here, but we do not reach those issues because we agree with the Board that the claims are unpatentable over Zones and Maeshima.

DISCUSSION

A. Jurisdiction

This court has jurisdiction under 35 U.S.C. §§ 141, 319, and 28 U.S.C. § 1295(a)(4)(A). In *SAS Institute, Inc. v. Iancu*, the Supreme Court held that it was statutorily erroneous for the Board to limit the scope of inter partes review proceedings by instituting an IPR for only some, but not all, petitioned-for claims. 138 S. Ct. at 1352–54. The *SAS* decision has implications in this case.

Of the four inter partes review final written decisions on appeal in this case, the two involving the '662 Patent are the result of partial institutions: IPR2015-01121 and IPR2015-01125. On April 27, 2018, this court issued a letter to BASF and the Director asking the parties to be prepared to address the impact of *SAS* on the disposition of this appeal during oral argument. On May 3, 2018, this court heard oral argument in this case. Both BASF and the Director stated that this case should not be affected by *SAS*. Oral Arg. 1:20–50, 7:55–8:01. Neither party requested any relief based on *SAS*. *Id.* at 7:10–7:20, 7:55–8:01. On May 4, 2018, this court issued a second letter directing BASF and the Director to file simultaneous supplemental briefs fully explaining the legal basis for their positions. The order asked the parties to discuss "(i) whether this court has jurisdiction over these appeals under 28 U.S.C. § 1295(a)(4)(A); and (ii) whether the Board's final written decisions should be deemed ultra vires in light of *SAS* and, if so, what the consequence of such a conclusion would be for what this court may do in these appeals, considering that no party has requested

relief based on *SAS*." Order, Nos. 2017-1425, 2017-1426, 2017-1427, 2017-1428 (Fed. Cir. May 4, 2018).

In the supplemental briefing, the Director maintained that this Court had jurisdiction and further argued that BASF and Umicore had waived any right to *SAS* relief because neither party raised it before the Board or in initial briefing before this court. BASF in its briefing, however, reversed its position from oral argument.

BASF now asks this court to vacate and remand the two '662 Patent IPR appeals on jurisdictional *SAS* grounds.[5] Specifically, BASF argues that "the Board's decisions with respect to at least the 662 patent are improper, *i.e.*, ultra vires, as they are not final decisions as required by § 318(a)" and as such, "appellate review by this Court of those decisions pursuant to § 319 is no longer available." Appellant's Supp. Br. at 8. Therefore, BASF asks this Court to "dismiss the ['662 IPR appeals] as moot" and "direct the Board to vacate those decisions on remand" on the sole ground that "reviewable, final written decisions by the Board do not exist" in the two '662 IPR proceedings. Appellant's Supp. Br. at 9, 11. Importantly, BASF does not seek the Board's evaluation of the non-instituted claims.

We find BASF's request substantively different from parties' requests in cases where this court has vacated a Board decision and remanded on an *SAS* issue. In those cases, at least one of the parties sought further work from the Board on non-instituted claims/grounds. *See, e.g.*, *Adidas AG v. Nike, Inc.*, 2018 WL3213007 (Fed. Cir. July

---

[5] Petitioner Umicore is no longer a party to the case, so vacating and remanding would result in a proceeding before the Board with no petitioner. Oral Arg. 6:50–7:07.

2, 2018) (remanding where Adidas asked for "the Board to issue final written decisions addressing ground 2"); *Ultheра, Inc. v. DermaFocus LLC*, No. 2018-1542, slip op. at 3 (Fed. Cir. May 25, 2018) (remanding where Ulthera asked for "the Board to issue a final written decision with respect to the patentability of claims 5 and 10 of the '559 patent"). Here, BASF does not address the non-instituted claims in the arguments section of its brief, nor explain why it (as the Patent Owner) is harmed by a final Board decision based on a partial institution, nor provide any reasoning for vacating and remanding on all claims versus remanding for consideration on just the non-instituted claims. In short, BASF provides no substantive reason to warrant remand.[6] It argues only jurisdictional deficiency.

For this important reason, BASF's request is controlled by *PGS Geophysical AS v. Iancu*, where this court

---

[6] Examples from other cases of such substantive reasons include: (1) potential interaction between the analysis of the instituted and non-instituted claims, thus meriting having the Board address all of them together in a single decision, and (2) inefficiency in doing a piecemeal form of review, in which this court would review a first batch of claims from a first Board decision, and then review a second batch from a later Board decision, especially when no merits briefing had occurred and there were implications of estoppel in parallel district proceedings. *See, e.g.*, *Polaris Indus. Inc. v. Arctic Cat, Inc.*, 742 Fed. Appx. 948, 949–50 (Fed. Cir. 2018) (where this court granted a patent owner's remand request for the first substantive reason); *Baker Hughes Oilfield v. Smith Int'l, Inc., Nos.*, 2018-1754, -1755, slip op. at 4–5 (Fed. Cir. May 30, 2018) (where this court granted a petitioner's remand request for the second substantive reason).

rejected the jurisdictional challenge and proceeded to review the merits of the Board's decision. This case—like *PGS Geophysical*—is a straight challenge to this court's authority to hear the appeal. In *PGS Geophysical*, we specifically held that "the combination of the non-institution decisions and the final written decisions on the instituted claims and grounds 'terminated the IPR proceeding[s]'" such that those decisions were final and reviewable for purposes of this court's jurisdiction. 891 F.3d at 1361 (citing *Arthrex, Inc. v. Smith & Nephew, Inc.*, 880 F.3d 1345, 1348 (Fed. Cir. 2018)). The same reasoning applies here.

This court further held in *PGS Geophysical* that a partial institution error is not one we are required to "act on in the absence of *an appropriate request for relief* on that basis." *Id.* at 1362 (emphasis added). Such a request should include a substantive claim of harmful error, which is absent here. *Id.* ("Moreover, the Supreme Court in SAS characterized the error at issue here as an error under 5 U.S.C. § 706, but errors under that provision are generally subject to a traditional harmless-error analysis, with challengers of the agency action having the burden of showing prejudice") (citing *Shinseki v. Sanders*, 556 U.S. 396, 406, 409 (2009) and *Suntec Indus. Co. v. United States*, 857 F.3d 1363, 1368 (Fed. Cir. 2017)). BASF has not argued prejudice at all; it does not request to have the Board address the non-instituted claims. Thus, we see no reason to vacate and remand on the '662 Patent IPR appeals.

Instead, we apply the reasoning laid out in *PGS Geophysical*, reject BASF's position that this court lacks jurisdiction over the '662 Patent IPR appeals, decline to vacate and remand on *SAS* grounds, and continue to the merits of the appeal in all four IPRs.

B. Obviousness

As explained above, the Board found all instituted

claims of the Patents unpatentable as obvious over the combination of Zones and Maeshima.

Obviousness is a question of law based on underlying facts. *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1373 (Fed. Cir. 2016). We review the Board's legal determination of obviousness de novo and its underlying factual findings for substantial evidence. *Id.* Substantial evidence is "'such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.'" *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1360–61 (Fed. Cir. 2016) (citation omitted).

BASF challenges the Board's Zones/Maeshima decisions on two grounds: (1) the Board erroneously "fill[ed] in" the ammonia SCR element of the invention on bases different from what Umicore petitioned, and (2) the Board's finding that a skilled artisan would have understood the Zones "reference to the 'reduction of oxides of nitrogen' to include ammonia SCR of NOx" is not supported by substantial evidence.[7] We reject both challenges.

1. BASF Had Sufficient Notice of the Board's Basis for Disclosure of the Ammonia SCR Limitation

As to the first ground, BASF argues that the "sole" theory of obviousness (for this prior art combination)

---

[7] The Director argues that BASF waived any argument as to the ammonia limitation. We do not agree. BASF made the argument regarding the ammonia limitation in its Patent Owner Response, under its lack of motivation to combine Zones and Maeshima argument. Appx826; *see also* Appx850–51. BASF also raised the issue at oral argument in front of the Board. *See* Appx201–03 (45:5–47:14). And the Board even credited BASF with this argument in its Decision. Final Written Decision, IPR2015-01121, at 12.

advanced in Umicore's petitions was premised on Zones explicitly teaching the use of ammonia SCR. Appellant's Br. at 33; Oral Arg. 17:33–56. While the Board found that "Zones does not explicitly list specific reactions for the reduction of oxides of nitrogen," it also found that "a person of ordinary skill in the art would have understood the [Zones] reference to the 'reduction of oxides of nitrogen' to include ammonia SCR of NOx." Final Written Decision, IPR2015-01121, at 14 (citations omitted). BASF argues that the Board's finding that one of skill in the art would generally understand the phrase "reduction of oxides of nitrogen" to include ammonia SCR is a different and new argument, compared to Umicore's argument that Zones specifically disclosed ammonia SCR. We find that this argument lacks merit.

Umicore's petition was not based solely on Zones teaching the use of ammonia SCR. BASF even admitted as much. Oral Arg. 18:28–57. For example, in its Petition, Umicore also relies on Maeshima to supply the ammonia limitation, stating that "Maeshima relates . . . 'contacting the . . . gaseous mixture with a catalyst in the presence of ammonia to reduce the nitrogen oxides selectively.'" Appx292 (quoting Maeshima, col. 2 ll. 4–8). Umicore further articulated in its petition that the combination of Zones and Maeshima would supply the ammonia SCR limitation because "[a]s taught by Zones, the Zones catalyst is useful for reducing oxides of nitrogen" and Maeshima "expressly provides that its catalysts can be used in an SCR process to selectively reduce nitrogen oxides in a gas [ammonia] stream containing oxygen." Appx294. Umicore's petition relies on Zones, Maeshima

and the combination of the two for disclosure of the ammonia SCR limitation.[8]

In its Institution Decision, the Board relied on Maeshima for "disclos[ing] [a CHA zeolite] as a suitable catalyst for the selective catalytic reduction of nitrogen oxides in the presence of ammonia." Appx742. But the Board articulated an additional basis, one that it ended up relying on in the final written decision as well: that the reference in Zones to the "reduction of oxides of nitrogen" would be understood by a person of ordinary skill in the art to encompass/include ammonia SCR. Appx741. In support of this understanding, the Board cited to "the '662 patent, Zones, Maeshima, and other prior art references" which suggest that copper-based CHA zeolite catalysts "were known to be used for SCR of nitrogen oxides in the presence of ammonia." *Id.* Under these circumstances, we are satisfied that BASF was given proper notice and opportunity to be heard in the proceedings below as to possible grounds for why the prior art taught the ammonia SCR limitation. *See Genzyme Therapeutic Prods. Ltd. P'ship. v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1366 (Fed. Cir. 2016); *Securus Techs., Inc. v. Glob. Tel*Link Corp.*, 685 F. App'x 979, 985 (Fed. Cir. 2017).

Moreover, not only did BASF have a full opportunity to address these grounds in the Patent Owner Response,

---

[8] BASF argues that relying on Maeshima requires an obviousness theory where petitioner starts with Maeshima and modifies it with the teaching in Zones. Appellant's Reply Br. 8, 18; Oral Arg. 19:02–19:40, 33:51–34:04. We disagree because the ammonia SCR limitation does not seem to be unique to low or high SAR zeolites. Rather, the evidence in the record indicates that ammonia SCR is a generally well-known reaction for the reduction of oxides in nitrogen to one of skill in the art. *See infra.*

it also had the opportunity to address the issue at oral argument before the Board, where both Umicore and the Board reiterated their grounds for the ammonia SCR limitation. Umicore brought up its petitioned Maeshima-based argument, Appx256:6–7, and BASF admitted as much. Appx198:3–11. Umicore also clearly stated that while there was "no NH_3 written in" Zones, "the reduction of oxides of nitrogen" language in Zones would have been understood by a one of skill in the art to include reduction in the presence of ammonia. Appx254–56. The Board specifically questioned BASF on this basis. Appx197:11–24. In answering, BASF did not argue lack of notice or opportunity to respond; instead, BASF reiterated the point it made in its Preliminary Response that Zones does not disclose ammonia SCR specifically, but that ammonia SCR would be encompassed by the phrase. Appx202 (46:6–23); Appx541, n.5.

Given the bases articulated in Umicore's petition, the Board's Institution Decision, and questions from the Board as well as statements made by both parties at oral argument in front of the Board, we find that BASF was sufficiently on notice of the grounds on which the Board's final decision relied as to the ammonia SCR limitation. There is no due process error here.

2. Substantial Evidence Supports the Board's Finding that a Skilled Artisan Would Understand Zones to Disclose Ammonia SCR

BASF's next argument is that the Board erred in finding that "the evidence of record suggests that a person of ordinary skill in the art would have understood the [Zones reference] to the 'reduction of oxides of nitrogen' to include ammonia SCR of NOx." Final Written Decision, IPR2015-01121, at 14.

In support of its finding, the Board cited to three sources of evidence: (1) the Declaration of Zones inventor Dr. Stacey Zones submitted during reexamination of the

'662 patent, where she states that the phrase "reduction of oxides of nitrogen contained in a gas stream in the presence of oxygen" in the Zones patent specification "refers to and teaches a number of different reactions, including . . . the selective catalytic reduction of NO in the presence of an ammonia reducing agent and oxygen," Appx3033; (2) the cross examination testimony of Umicore's expert, Dr. Lercher, where he gives examples of NO reduction reactions, including ammonia reduction, Appx3389 (36:16–37:25); and (3) BASF's acknowledgement at the Board oral hearing, where BASF states that different reactions, including ammonia SCR, are "encompassed within th[e] phrase [reduction of oxides of nitrogen]." Appx202 (46:6–23).

There are also multiple other sources of evidence that indicate ammonia SCR was well known to one of skill in the art. Maeshima cites, and even promotes, ammonia SCR. Maeshima, col. 1 ll. 21–24, col. 2 ll. 4–8. The '662 and '203 patent specifications state that "[b]oth synthetic and natural zeolites and their use in promoting certain reactions, including the selective reduction of nitrogen oxides with ammonia in the presence of oxygen, are well known in the art." '662 Patent col. 1 ll. 26–29; '203 Patent col. 1 ll. 30–34. And BASF itself acknowledged that "reduction of oxides of nitrogen" in Zones encompasses ammonia SCR. Appx5541, n.5 (Patent Owner Preliminary Response); Oral Arg. 24:10–16.

BASF argues that there is a meaningful difference between the phrase "reduction of oxides in nitrogen" that encompasses ammonia SCR versus a specific disclosure of ammonia SCR. We do not agree. Multiple experts, both parties, other prior art, and the Patents' specifications themselves are evidence that one of skill in the art would have understood the phrase as disclosing a limited number of reaction types, including ammonia SCR. We find that substantial evidence supports the Board's finding that one of skill in the art would have understood the

phrase "reduction of oxides in nitrogen" in Zones to include and disclose ammonia SCR as claimed by the Patents.

In conclusion, we reject both grounds of appeal raised by BASF against the Board's finding of obviousness under the Zones/Maeshima combination. Because the combination renders obvious all instituted and appealed claims, we do not address BASF's other grounds of appeal and *affirm*.

AFFIRMED