UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BERKSHIRE HATHAWAY ENERGY COMPANY,
INTERSTATE POWER & LIGHT COMPANY,
MIDAMERICAN ENERGY COMPANY,
PACIFICORP,
WEC ENERGY GROUP, INC., AND
WISCONSIN POWER & LIGHT COMPANY
Petitioners

v.

BIRCHTECH CORP.
Patent Owner

Case IPR2025-00422
Patent 10,668,430

PATENT OWNER'S SUR-REPLY TO PETITIONERS' REPLY TO PATENT OWNER'S PRELIMINARY RESPONSE

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2003	Original Complaint for Patent Infringement, *Midwest Energy Emissions Corp., et al. v. Vistra Energy Corp., et al.*, C.A. 1:19-cv-01334, ECF No. 1 (D. Del. July 17, 2019)
2004	Transcript of Jury Trial, *Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.*, C.A. 1:19-cv-01334 (D. Del.) (Feb. 26, 2024–March 1, 2024)
2005	Non-Final Judgment Following Jury Verdict, *Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.*, C.A. 1:19-cv-01334, ECF No. 697 (D. Del. March 8, 2024)
2006	Case Management Order, *In re: Midwest Energy Emissions Corp. Pat. Litig.*, No. 4:24-md-03132-SHL-WPK, ECF No. 60 (S.D. Iowa March 7, 2025)
2007	Complaint for Patent Infringement, *Midwest Energy Emissions Corp. v. Berkshire Hathaway Energy Company, et al.*, 4:24-cv-00243-SHL-WPK, ECF No. 1 (S.D. Iowa July 18, 2024)
2008	PacifiCorp's First Amended Answer, Affirmative Defenses, and Counterclaims in Response to Plaintiff's First Amended Complaint for Patent Infringement, *In re: Midwest Energy Emissions Corp. Pat. Litig.*, No. 4:24-md-03132-SHL-WPK, ECF No. 82 (S.D. Iowa March 21, 2025) (Redacted)
2009	Defendant MidAmerican Energy Company's First Amended Answer, Affirmative Defenses, and Counterclaims to Plaintiff's First Amended Complaint, *In re: Midwest Energy Emissions Corp. Pat. Litig.*, No. 4:24-md-03132-SHL-WPK, ECF No. 83 (S.D. Iowa March 21, 2025) (Redacted)
2010	Defendant Wisconsin Power and Light Company's First Amended Answer, Affirmative Defenses, and Counterclaims to First Amended Complaint, *In re: Midwest Energy Emissions Corp. Pat. Litig.*, No. 4:24-md-03132-SHL-WPK, ECF No. 87 (S.D. Iowa March 21, 2025) (Redacted)

2011	Opening Expert Report of Dr. Stephen Niksa, *Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.*, C.A. 1:19-cv-01334 (D. Del.)
2012	Pilot- and Full-Scale Demonstration of Advanced Mercury Control Technologies for Lignite-Fired Power Plants, Quarterly Report (for the Period October 1, 2003 – December 31, 2003), dated February 2004
2013	Pilot- and Full-Scale Demonstration of Advanced Mercury Control Technologies for Lignite-Fired Power Plants, Final Report, dated February 2005
2014	Mercury Control Technologies for Electric Utilities Burning Subbituminous Coals, Final Report (For the period January 1, 2004 through June 30, 2005), dated October 2005
2015	Center for Air Toxic Metals (CATM), 2003 Research Ideas, dated August 30, 2002
2016	Document Metadata for Center for Air Toxic Metals (CATM), 2003 Research Ideas
2017	Declaration of Thomas Erickson including PTC logbook entries
2018	Declaration of Inventor John Pavlish, dated July 27, 2020
2019	Plaintiff ME2C's Brief in Support of Its Motion for Preliminary Injunction, *Midwest Energy Emissions Corp. v. Berkshire Hathaway Energy Company, et al.*, 4:24-cv-00243-SHL-WPK, ECF No. 58-1 (S.D. Iowa Oct. 11, 2024)
2020	Defendants' Brief in Support of Their Resistance to Plaintiff's Motion for Preliminary Injunction, *Midwest Energy Emissions Corp. v. Berkshire Hathaway Energy Company, et al.*, 4:24-cv-00243-SHL-WPK, ECF No. 125 (S.D. Iowa Dec. 16, 2024) (Redacted)
2021	Plaintiff ME2C's Reply Brief in Support of Its Motion for Preliminary Injunction, *Midwest Energy Emissions Corp. v. Berkshire Hathaway Energy Company, et al.*, 4:24-cv-00243-SHL-WPK, ECF No. 139 (S.D. Iowa Dec. 23, 2024) (Redacted)
2022	DTE Electric Company Affiliates Report, dated December 31, 2023

2023	First Amended Complaint for Patent Infringement, *Midwest Energy Emissions Corp., et al. v. Vistra Energy Corp., et al.*, C.A. 1:19-cv-01334, ECF No. 130 (D. Del. July 15, 2020)
2024	EPA, "Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units—Final Report to Congress"
2025	EPA Clean Air Act Overview, https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary-title-iii
2026	EPA, Mercury Study Report to Congress Vol. I (1997)
2027	EERC internal presentation, "Description of Test Facilities Particulate Test Combustor"
2028	EERC internal presentation, "Mercury Control Technologies for Electric Utilities Burning Lignite Coals, Introduction to Project" (12/4/2001)
2029	EERC internal presentation, "Mercury Control Technologies for Electric Utilities Burning Lignite Coals Project Kickoff Meeting" part 1 (2/28/2002)
2030	EERC internal presentation, "Mercury Control Technologies for Electric Utilities Burning Lignite Coals Project Kickoff Meeting" part 2 (2/28/2002)
2031	EERC internal presentation, "Mercury Control Technologies for Electric Utilities Burning Lignite Coals, Project Review Meeting" (2/25/2003)
2032	"JV TASK 45 – MERCURY CONTROL TECHNOLOGIES FOR ELECTRIC UTILITIES BURNING LIGNITE COAL, PHASE I BENCH- AND PILOT-SCALE TESTING Final Report" (Oct. 2003) (the "Oct. 2003 Report")
2033	Metadata for Notes on Center for Air Toxic Metals (CATM) 2003 Research Ideas
2034	DOE, Success Story for Sorbent Enhancement Additives
2035	EPA, Mercury and Air Toxics Standards, https://www.epa.gov/mats/cleaner-power-plants
2036	Order Denying Motions to Stay and Motion to Compel, *In re: Midwest Energy Emissions Corp. Pat. Litig.*, No. 4:24-md-03132-SHL-WPK, ECF No. 131 (S.D. Iowa May 22, 2025)

2037	Refined Coal Supply Agreement by and between Portage Fuels Company, LLC and Wisconsin Power and Light Company, dated September 6, 2016 (ALLIANT-ME2C-004484)
2038	Contract for Purchase of Refined Coal between Louisa Refined Coal LLC and MidAmerican Energy Company, dated Oct. 4, 2011 (MEC001747-MEC001789)
2039	Contract for Purchase of Refined Coal between George Neal Refined Coal LLC and MidAmerican Energy Company, dated Aug. 29, 2012 (MEC001916-MEC001934)
2040	Contract for Purchase of Refined Coal between George Neal North Refined Coal LLC and MidAmerican Energy Company, dated Apr. 30, 2013 (MEC001954-MEC001984)
2041	Contract for Purchase of Refined Coal between Walter Scott Refined Coal LLC and MidAmerican Energy Company, dated Oct. 10, 2011 (MEC001832-MEC001873)
2042	License and Services Agreement by and between Arbor Fuels Company, LLC and Wisconsin Public Service Corp., dated July 8, 2016 (WEC000001-WEC000040)
2043	J. D. Kilgroe, C. B. Sedman, R. K. Srivastava, J. V. Ryan, C. W. Lee, S. A. Thorneloe, *Control of Mercury Emissions from Coal-Fired Electric Utility Boilers: Interim Report*, U.S. Environmental Protection Agency, Office of Research and Development, EPA-600/R-01-109, April 2002.
2044	File History of U.S. Patent App. No. 15/974,343, which ultimately issued as U.S. Patent No. 10,668,430

I. Introduction

The Board has authorized this Sur-Reply to address three issues: the real-party-in-interest/privity analysis; conception and reduction to practice; arguments concerning Vosteen and the procedural history of the prior litigations.

First, Petitioners are real-parties-in-interest and/or privies of defendants in the earlier Delaware litigation ("Delaware Litigation"). Tailored indemnity agreements and complex business relationships are directly related to the infringement of the '430 Patent. These agreements and business relationships show that Petitioners are in privity with defendants ("Delaware Defendants") in the Delaware Litigation.

Second, the inventors of the '430 Patent conceived and reduced to practice their invention before the effective filing date of Downs-Boiler. Notes and official reports memorialize the inventors' possession of the invention.

Third, a POSA would not be motivated to combine Vosteen with secondary references Starns and Mass-EPA.

II. Petitioners Are Time-Barred as RPI/Privies of Delaware Defendants.

Petitioners misstate the inquiry to determine an RPI/privity relationship and the timing of that relationship for the purposes of the time bar under 35 U.S.C. § 315(b). The relevant inquiry is what relationship existed between the Petitioners

and the Delaware Defendants at the time of service of the complaint in the Delaware Litigation.

When the Delaware Defendants were served with the complaint in the Delaware Litigation, Petitioners were in privity with them. As part of a complex business relationship that included tailored indemnity agreements, Petitioners are coal plant owners and/or operators with a close relationship to Delaware Defendants. Consequently, the clock for time-barring this Petition ran from the time Delaware Defendants were served in the Delaware Litigation. Service occurred over one year before this Petition was filed. This Petition is time-barred.

A. Relevant Background.

Patent Owner supplies products and services used to comply with mercury capture regulations applicable to coal-fired power plants. *See generally* https://www.birchtech.com/mercury-emission-control. In 2019, Patent Owner filed a patent infringement lawsuit (the "Delaware Litigation") asserting direct infringement of U.S. Patent Nos. 10,343,114 and 8,168,147—which are related to the '430 Patent—by power plant operators Vistra, NRG, Talen, and AEP, and asserting indirect infringement by refined coal suppliers to power plants. Ex. 2003. The refined coal suppliers included several entities affiliated with Chem-Mod LLC that supplied refined coal to at least some of the present petitioners. *Id.*; *see*

generally Ex. 2019 at 4–7. In 2020, Patent Owner amended its complaint to assert the ’430 Patent as well. Ex. 2023.

In 2020, the power plant operator defendants in the Delaware Litigation (Vistra, NRG, AEP, and Talen) petitioned for *Inter Partes* Review of the ’114 and ’147 Patents (IPR2020-00832, IPR2020-00834, IPR2020-00926, IPR 2020-00928, IPR2020-01294, IPR2020-01295, IPR2020-01296, and IPR2020-01297, collectively “the 2020 IPRs”). Although the refined coal supplier defendants did not join in those petitions, they were named as real parties in interest. *See, e.g.*, IPR2020-00832, Petition at 2, 4–6. The petitions also named as real parties in interest the co-owners of power plants accused of infringement in the Delaware Litigation, including current Petitioner PacifiCorp.[1] *See* IPR2020-00832, Pet. at 3. All of the 2020 IPR Petitioners settled with Patent Owner by 2021, and the Board dismissed the 2020 IPRs before Patent Owner filed its Patent Owner Responses.

The remaining defendants in the Delaware Litigation included refined coal suppliers affiliated with Chem-Mod LLC. Those suppliers shut down their

[1] Petitioners identified PacifiCorp as a “potential” real party in interest. Patent Owner objected to this designation and requested that the petitions be denied for failure to clearly identify all real parties in interest as required by 35 U.S.C. § 312(a)(2). IPR2020-00832, POPR at 8–9. The Board overruled that objection. IPR2020-00832, Paper 17 at 9–10 (PTAB Oct. 26, 2020). Nonetheless, the Board specifically ruled that Chem-Mod was a real party in interest, and this background indicates that PacifiCorp is a real party in interest with respect to Talen, a defendant named in the Delaware Litigation.

operations at the end of 2021, and most agreed to collectively pay Patent Owner $27.5M. Ex. 2004, Trial Tr. at 466:19–467:2. Patent Owner proceeded to trial against the remaining refined coal suppliers in 2024, which ME2C won. Ex. 2005.

In 2024, Patent Owner filed several additional lawsuits asserting many of the same patents against an additional group of power plant operators (the "2024 Defendants"). These power plant operators are not incorporated in Delaware and thus could not have been included in the Delaware Litigation. Petitioners are a subset of the 2024 Defendants. They own or operate coal-fired power plants, and they each have an important connection to the Delaware Litigation. *See* Ex. 2007.

For example, PacifiCorp co-owns a power plant that was at issue in the Delaware Litigation, and it contends that its co-owner Talen defended against Patent Owner's infringement assertions and obtained a license on its behalf. Ex. 2008 at 94–100. MidAmerican and WPL own power plants that were at issue in the Delaware Litigation, and they contend that the Chem-Mod-affiliated Defendants defended against Patent Owner's infringement claims and obtained a license on their behalf, at least for some periods of time. Ex. 2009 at 91; Ex. 2010 at 107.

B. RPI/Privity Is Determined at the Time Defendants Were Served with the Complaint in the Delaware Litigation.

"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." 35 U.S.C. § 315(b). "Determining whether a non-party is a 'real party in interest' demands a flexible approach that takes into account both equitable and practical considerations, with an eye toward determining whether the non-party is a clear beneficiary that has a preexisting, established relationship with the petitioner." *Applications in Internet Time, LLC v. RPX Corp*., 897 F.3d 1336, 1351 (Fed. Cir. 2018) (emphasis added); *see Ventex Co., Ltd. v. Columbia Sportswear N. Am., Inc.*, IPR2017-00651, Paper 152 (PTAB Jan. 24, 2019) (precedential) (following *AIT*). "[T]hat relationship must be related to [an earlier] lawsuit…." *Google LLC v. DDC Tech., LLC*, IPR2023-00707, Paper 27 at 37 (PTAB Oct. 25, 2023). Thus, the relationship of the parties is evaluated as it existed at the time of earlier litigation.

Petitioners allege that Talen, Chem-Mod, and Chem-Mod's affiliates "have no interest in the IPR proceedings." Reply at 5. Whether or not that is true is not relevant here. What is relevant is Petitioners' interest in the earlier Delaware Litigation that results in time-barring this Petition.

C. Petitioners Were in Privity with Delaware Defendants at the Time of Service of the Delaware Complaint.

Each Petitioner is in privity with one or more Delaware Defendants based on the nature of their business relationship and associated indemnity agreements.

"Determining whether a non-party is a 'real party in interest' demands a flexible approach that takes into account both equitable and practical

considerations, with an eye toward determining whether the non-party is a clear beneficiary that has a preexisting, established relationship with the petitioner." *Applications in Internet Time, LLC v. RPX Corp*., 897 F.3d 1336, 1351 (Fed. Cir. 2018) (emphasis added); *see Ventex Co., Ltd. v. Columbia Sportswear N. Am., Inc.*, IPR2017-00651, Paper 152 (PTAB Jan. 24, 2019) (precedential) (following *AIT*). The Board has previously found privity when two parties "had a specially structured, preexisting, and well-established business relationship with one another, including indemnification and exclusivity arrangements." *Ventex Co. v. Columbia Sportswear N. Am., Inc.*, IPR2017-00651, Paper 148, at 10, 12 (PTAB Jan. 24, 2019) (precedential). Petitioners and the Delaware Defendants have such a relationship as described in the Relevant Background above and discussion below.

PacifiCorp alleges that it co-owns a power plant that was at issue in the Delaware Litigation, and that it enlisted Defendant Talen as its operating agent for that power plant. Ex. 2008 at 98 (citing https://www.colstripfacts.com/faqs). PacifiCorp further contends that Talen defended against Patent Owner's infringement assertions and obtained a license on its behalf. Ex. 2008 at 94–100. As explained in Patent Owner's Preliminary Response, Brief Regarding Discretionary Denial, and supplemental briefing, because Petitioner PacifiCorp failed to identify Talen as a real party in interest in contravention of § 312(a)(2), and because Talen is time-barred under § 315, the present petition is time-barred.

The imagined distinctions between "real parties-in-interest" and "potential real-parties-in-interest" cannot overcome PacifiCorp's representation that Talen acted on its behalf.

As to remaining Petitioners Berkshire Hathaway Energy Company, Interstate Power & Light Company ("IPL"), MidAmerican Energy Company ("MidAmerican"), WEC Energy Group, Inc. ("WEC"), and Wisconsin Power & Light Company ("WPL"), they and their real parties-in-interest own power plants that used something called "the Chem-Mod Solution" to burn coal. This process involved the sale of refined coal (coal treated with bromine) to Petitioners under sales agreements that included indemnity provisions. This type of supply relationship can create privity. *See Semiconductor Components Indus., LLC v. Greenthread, LLC*, IPR2023-01242, Paper 94 at 3 (PTAB Apr. 24, 2025).

In the Delaware Litigation, Patent Owner asserted that the Chem-Mod Solution caused direct infringement at certain of Petitioners' power plants. Ex. 2003 at 12–13. Chem-Mod LLC and its various sublicensees were named as Defendants in the Delaware Action. Ex. 2003.

Petitioner WPL purchased refined coal from Chem-Mod sub-licensee Portage Fuels Company, LLC for combustion at the Columbia power plant. That agreement provided indemnity to WPL as the Buyer of refined coal for infringement of intellectual property rights:

Ex. 2037 § 13.1. The indemnification provision is tailored specifically targeted to that are heart of the alleged infringement in both the earlier Delaware Litigation and the present proceedings. In contrast to Petitioners' characterization that this agreement is generic, the agreement includes tailored language targeting activity at the heart of the infringement dispute. MidAmerican purchased refined coal from Chem-Mod LLC sublicensees Louisa Refined Coal LLC, George Neal Refined Coal LLC, George Neal North Refined Coal LLC, and Walter Scott Refined Coal LLC for combustion of refined coal at its Louisa, George Neal, and Walter Scott plants. The agreements related to these sales also contain indemnity provisions. Exs. 2038–41. Petitioner Berkshire Hathaway Energy Company owns and controls MidAmerican, and Petitioner IPL co-owns the Louisa and George Neal plants.

Wisconsin Public Service Corporation, the parent of Petitioner WEC, purchased refined coal from Chem-Mod sublicensee Arbor Fuels Company, LLC for combustion at its Weston power plant. The agreements memorializing this

relationship also contain indemnity provisions. *See, e.g.*, Ex. 2042.

By July 15, 2020, Patent owner had sued and named as defendants Chem-Mod LLC and its sublicensees for infringement of the Challenged Patents in the United States District Court for the District of Delaware. Exs. 2003, 2023. While a single privity/real-party-in-interest relationship is sufficient to time-bar a petition, this proceeding involves multiple overlapping relationships: co-ownership and agency with respect to Defendant Talen and PacifiCorp; a supply relationship, indemnification and duty of defense with respect to the Chem-Mod Defendants and Berkshire Hathaway, MidAmerican, WPL, IPL, and WEC; co-ownership with respect to Berkshire Hathaway, PacifiCorp, MidAmerican and IPL, and with respect to WPL and WEC. Consequently, there is nothing generic about the relationship between the Petitioners and Delaware Defendants. In light of the above and associated arguments in Patent Owner's Preliminary Response, Brief Regarding Discretionary Denial, and supplemental briefing, the present petition is time-barred.

D. Later-Taken Licenses by Delaware Defendants Have No Bearing on Their RPI/Privity Relationship with Petitioners.

Petitioners identify current licenses obtained by Talen, Chem-Mod, and Chem-Mod's affiliates to the '430 Patent as a reason they are not in privity with Petitioners. Again, that focuses on the wrong time frame. Talen's, Chem-Mod's, and Chem-Mod's affiliates' licenses arose after service of the complaint in the

Delaware Litigation. Before those licenses were taken, the Delaware Defendants were in privity with Petitioners.

Ultimately, the agreements reached between Patent Owner and Talen and between Patent Owner and the Chem-Mod Defendants only provided a license covering the power plants operated by Talen (including the one that PacifiCorp alleges was operated on its behalf) and the period of time when Chem-Mod's indemnity obligations were in force. Thus, those agreements do not preclude Patent Owner from asserting infringement based on Petitioners' actions at other power plants or that were later-in-time. Nonetheless, at the time the Delaware complaint was filed, privity relationships existed that time-bar the present petition.

III. The Invention of the '430 Patent Was Conceived and Reduced to Practice Before Downs-Boiler.

The earliest possible priority date of Downs-Boiler is March 22, 2004. The inventors both conceived and reduced to practice the invention of the '430 Patent no later than February 2004. This is evidenced by corroborated inventor declarations and official reports detailing testing during development.

A. The '430 Patent Is a Pre-AIA Patent.

As an initial matter, Petitioners' attempt to challenge the pre-AIA status of the '430 Patent is outside the scope of the Board's authorization for reply. Reply at 10–12. The Board authorized Petitioners to address three issues: the real-party-in-interest/privity analysis, conception and reduction to practice, and arguments

concerning Vosteen and the procedural history of the prior litigations. None of those include an inquiry into the priority chain.

Even if the Board had authorized briefing on this issue, Petitioners' have affirmatively forfeited any such arguments in this proceeding. Pet. at 3 ("The current petition assumes *arguendo* that the Challenged Claims of the '430 Patent have priority to August 30, 2004, . . . and ***that the pre-AIA statute applies***."). Petitioners attempt to reserve the ability to challenge the chain of priority of the '430 Patent under certain conditions. Pet. at 18. But Petitioners must make their case-in-chief in the Petition, including arguments challenging the chain of priority. Instead, Petitioners raise an issue they have forfeited while simultaneously claiming Patent Owner failed to meet their burden. The burden cannot have shifted to Patent Owner because the Petitioners have accepted the filing date of the provisional application as a priority date for the '430 Patent.[2]

The '430 Patent claims priority back to the provisional application through a chain of continuations and a divisional application. Ex. 1004. There are no continuation-in-part applications in the chain connecting the '430 Patent to the provisional application. Consequently, the '430 Patent is a pre-AIA patent.

[2] Petitioners requested multiple petitions based on two different priority dates. IPR2025-00422, Paper 2. Should the Board allow the Petitioners to contest the priority date of the '430 Patent in this proceeding, Patent Owner requests that the priority date arguments in the POPR in IPR2025-00423 be incorporated herein. Alternatively, Patent Owner requests leave to address those issues in this proceeding.

The ’430 Patent claims priority back to the provisional application. The provisional application and all intervening application in the priority chain include support for the claims of the ’430 Patent.

B. The Inventors Conceived and Reduced to Practice the ’430 Invention No Later Than February 2004.

Petitioner states that Patent Owner’s evidence of conception is limited to an “uncorroborated declaration” of one of the inventors. Reply at 12–13. But Patent Owner’s Preliminary Response specifically points to “slides from [a] kickoff meeting that identify their plan to test various additives and sorbents.” POPR at 21. Furthermore, the Preliminary Response describes the ongoing testing and contemporaneous notes from the inventors. POPR at 21–23. Patent Owner has met its burden of production to show conception by August 2002. The POPR also describes the reasonable diligence by the inventors to reduce their invention to practice. *See* POPR at 21–23 (describing the kickoff meeting held by the EERC in Feb. 2002 to “discuss[] the project timeline and overall strategy” and multiple tests done in 2002 and 2003 using EERC’s Pilot Test Combustor).

Petitioners allege there is no evidence of early actual reduction to practice. Reply at 13. To reach that conclusion, Petitioners must ignore nearly 50 pages of claim charting mapping the claim limitations to various reports indicating the testing done that reduced the invention to practice. *See* Ex. 2018 at 36–84. In particular, Petitioners allege no “corroborating evidence” for three elements of

claim 1. This is plainly not true. Patent Owner provided written testimony of the reduction to practice date from all three inventors and trial testimony from inventor John Pavlish. That testimony was corroborated by pre-testing planning documents and presentations, logbook entries of the inventors' actual tests as they were being performed, and post-testing reports of the results that were provided to the Department of Energy. *See* Ex. 2018 at 38–43; POPR at 24–29.

Patent Owner's evidence also includes testimony that the test coal included NaBr (i.e., sodium bromide salt that includes Br-), a photo of the bromine being added to the coal, logbook entries recording the addition of bromine, and post-testing reports explaining the results. The Preliminary Response also charts the claims with reference to Reports and the Logbook. POPR at 30–47.

Petitioners further argue, without support, that "[d]isclosure of one species (NaBr) does not demonstrate possession of the undisclosed 'HBr' or 'Br_2' species or the 'bromide compound' genus." Reply at 14. Petitioners are wrong. Indeed, "a single species could be sufficient to antedate" if, as here, it "provide[s] an adequate basis for inferring that the invention has generic applicability." *In re DaFano*, 392 F.2d 280, 284 (CCPA 1968) (finding of single species sufficient for antedation where the inventors appreciated that "other resin-soluble copper salts would behave similarly"); *see Pernix Ireland Pain DAC v. Alvogen Malta Operations Ltd.*, No. CV 16-139-WCB, 2018 WL 2225113, at *16 (D. Del. May 15, 2018)

(Bryson, J., sitting by designation). The inventors clearly appreciated that other species of bromines/bromides "would behave similarly" to NaBr, *see Defano*, 392 F.2d at 284, as evidenced by the inventors' testimony that their invention works based on the fact that atoms of bromine can react with mercury and carbon to increase mercury capture. Ex. 2018 at 9–11 (explaining that halogen atoms can cause catalytic reaction with mercury and carbon and citing corroborating documentation), 15–16 (identifying bromine as effective catalyst and citing corroborating documentation); Ex. 2004 at 246:13–259:12 (explaining identification of bromine catalytic reaction in 2001 document). In fact, the patent itself explains that the relevant reaction is between bromine, carbon, and mercury regardless of other inert materials included in the flue gas. '430 Patent at 29:8–16.

Petitioners also attack the evidence cited by Patent Owner as "unwitnessed" or failing to address the '430 patent, but these vague assertions do not identify any substantive errors in the evidence. As to the logbook entries at issue, those entries are explained by an EERC custodian and all three inventors, who were all cross examined on that testimony via deposition and/or at trial. And while Petitioners claim that they have not had a chance to depose the inventors, that ignores the fact that counsel for their indemnitors and real-parties-in-interest did have that chance. Finally, while the inventors' claim charts focus on the '114 Patent, Petitioners identify no limitations unique to the '430 Patent that are inadequately addressed in

that claim chart or the POPR.

Thus, Patent Owner met its burden of production, and Petitioners have failed to meet their burden of proving that the asserted references qualify as prior art.

IV. No Motivation to Combine Vosteen with Starns and Mass-EPA.

The Petitioners' Reply declines to address two key issues raised in Patent Owner's Preliminary Response. First, this precise obviousness issue was extensively considered during prosecution of the '114 Patent by the examiner, who found Patent Owner's arguments persuasive. POPR at 13–14; Ex. 1026 at 213, April 19, 2019 Office Action at 8–9. Further, as explained in the POPR, the general understanding in the industry was that sorbent additives such as halogens or halides should be mixed with sorbents ***before*** coming in contact with mercury-containing flue gas. POPR at 18–19. Thus, the objective evidence teaches away from the claimed invention. POPR at 13–19. Second, Dr. Niksa's testimony has changed since the earlier IPRs where the Board found that his testimony lacked support. IPR2020-00834, Paper 18 at 17–18. Different testimony now should be given little weight.

There is no motivation to combine Vosteen with Starns or Mass-EPA. The objective evidence teaches away from the combination.

Dated: August 5, 2025

Respectfully submitted,

Birchtech Corp.

/*Hamad M. Hamad*/
Hamad M. Hamad, Reg. No. 64,641
Justin T. Nemunaitis (*pro hac pending*)
Richard Cochrane (*pro hac pending*)
CALDWELL CASSADY CURRY, P.C.
2121 N. Pearl St., Ste. 1200
Dallas, Texas 75201
Telephone: 214.888.4848
Facsimile: 214.888.4849
hhamad@caldwellcc.com
jnemunaitis@caldwellcc.com
rcochrane@caldwellcc.com
midwest@caldwellcc.com

CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6(e)(4)

It is hereby certified that on this 5th day of August, 2025, a copy of the foregoing document was served via electronic mail, as consented to by Petitioners upon the following counsel of record:

Brian W. Oaks (Reg. No. 44,981)
McDermott Will & Emery LLP
300 Colorado Street, Suite 2200
Austin, TX 78701
Tel: 512-726-2574

Email: dtobin@mwe.com
boaks@mwe.com
PacifiCorp-PTAB-ME2C@mwe.com
BHershkowitz@gibsondunn.com
DGlandorf@gibsondunn.com
NLitwinsella@gibsondunn.com
mkemp@perkinscoie.com
rsjohnson@fredlaw.com
tpatton@fredlaw.com
MidAmerican@fredlaw.com
Michael.piery@quarles.com
lauren.bolcar@quarles.com

Date: August 5, 2025

/Hamad M. Hamad/
Hamad M. Hamad, Reg. No. 64,641