

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

MIDWEST ENERGY EMISSIONS CORP.
Patent Owner

Case IPR2025-00687
Patent 10,933,370

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

Mail Stop "PATENT BOARD"
Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

TABLE OF CONTENTS

I. Introduction.....1

II. The Invention of the '370 Patent Was Conceived and Reduced to
Practice Before Downs-Boiler and Lissianski.....1

A. The '370 Patent Is a Pre-AIA Patent.....1

B. The Inventors Conceived and Reduced to Practice the '370
Invention No Later Than September 2003.....3

III. No Motivation to Combine Vosteen with Starns and Mass-EPA. 6

TABLE OF AUTHORITIES

Cases

<i>In re DaFano</i> 392 F.2d 280 (CCPA 1968)	4, 5
<i>Pernix Ireland Pain DAC v. Alvogen Malta Operations Ltd.</i> No. CV 16-139-WCB, 2018 WL 2225113 (D. Del. May 15, 2018)	5

Exhibit List	
Exhibit	Description
2001	Declaration of Justin T. Nemunaitis
2002	Declaration of Richard Cochrane
2003	Original Complaint for Patent Infringement, <i>Midwest Energy Emissions Corp., et al. v. Vistra Energy Corp., et al.</i> , C.A. 1:19-cv-01334, ECF No. 1 (D. Del. July 17, 2019)
2004	Transcript of Jury Trial, <i>Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.</i> , C.A. 1:19-cv-01334 (D. Del.) (Feb. 26, 2024–March 1, 2024)
2005	Non-Final Judgment Following Jury Verdict, <i>Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.</i> , C.A. 1:19-cv-01334, ECF No. 697 (D. Del. March 8, 2024)
2006	Case Management Order, <i>In re: Midwest Energy Emissions Corp. Pat. Litig.</i> , No. 4:24-md-03132-SHL-WPK, ECF No. 60 (S.D. Iowa March 7, 2025)
2007	Complaint for Patent Infringement, <i>Midwest Energy Emissions Corp. v. Berkshire Hathaway Energy Company, et al.</i> , 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, <i>In re: Midwest Energy Emissions Corp. Pat. Litig.</i> , 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, <i>In re: Midwest Energy Emissions Corp. Pat. Litig.</i> , 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, <i>In re: Midwest Energy Emissions Corp. Pat. Litig.</i> , 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, <i>Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.</i> , 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, <i>Midwest Energy Emissions Corp. v. Berkshire Hathaway Energy Company, et al.</i> , 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, <i>Midwest Energy Emissions Corp. v. Berkshire Hathaway Energy Company, et al.</i> , 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, <i>Midwest Energy Emissions Corp. v. Berkshire Hathaway Energy Company, et al.</i> , 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, <i>Midwest Energy Emissions Corp., et al. v. Vistra Energy Corp., et al.</i> , 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, <i>In re: Midwest Energy Emissions Corp. Pat. Litig.</i> , No. 4:24-md-03132-SHL-WPK, ECF No. 131 (S.D. Iowa May 22, 2025)

2037	RESERVED
2038	RESERVED
2039	RESERVED
2040	RESERVED
2041	RESERVED
2042	RESERVED
2043	J. D. Kilgroe, C. B. Sedman, R. K. Srivastava, J. V. Ryan, C. W. Lee, S. A. Thorneloe, <i>Control of Mercury Emissions from Coal-Fired Electric Utility Boilers: Interim Report</i> , U.S. Environmental Protection Agency, Office of Research and Development, EPA-600/R-01-109, April 2002.
2044	RESERVED

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. Only two of those issues are relevant in this IPR—conception and reduction to practice and arguments concerning Vosteen and the procedural history of the prior litigations.

First, the inventors of the '370 Patent conceived and reduced to practice their invention before the effective filing date of Downs-Boiler and Lissianski. Notes and official reports memorialize the inventors' possession of the invention.

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

II. The Invention of the '370 Patent Was Conceived and Reduced to Practice Before Downs-Boiler and Lissianski.

The earliest possible priority dates of Downs-Boiler and Lissianski are March 22, 2004 and January 6, 2004, respectively. The inventors both conceived and reduced to practice the invention of the '370 by at least September 2003. This is evidenced by corroborated inventor declarations and official reports detailing testing during development.

A. The '370 Patent Is a Pre-AIA Patent.

As an initial matter, Petitioners' attempt to challenge the pre-AIA status of the '370 Patent is outside the scope of the Board's authorization for reply. Reply at

2–5. 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 2–3 (“The current petition assumes *arguendo* that the Challenged Claims of the ’370 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 ’370 Patent under certain conditions. Pet. at 17–18. 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 ’370 Patent.¹

The ’370 Patent claims priority back to the provisional application through a chain of continuations and a divisional application. Ex. 1004. There are no

¹ Petitioners requested multiple petitions based on two different priority dates. IPR2025-00687, Paper 2. Should the Board allow the Petitioners to contest the priority date of the ’370 Patent in this proceeding, Patent Owner requests that the priority date arguments in the POPR in IPR2025-00688 be incorporated herein. Alternatively, Patent Owner requests leave to address those issues in this proceeding.

continuation-in-part applications in the chain connecting the '370 Patent to the provisional application. Consequently, the '370 Patent is a pre-AIA patent.

The '370 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 '370 Patent.

B. The Inventors Conceived and Reduced to Practice the '370 Invention No Later Than September 2003.

Petitioner states that Patent Owner's evidence of conception is limited to an "uncorroborated declaration" of one of the inventors. Reply at 5. 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 22–24. 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 21–24 (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 5. 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 limitations from the independent claims.” 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 29–51. In addition, as ME2C explained in the POPR, the inventors specifically tested bromine additives along with other halogens and other additives. POPR at 31–35, 47–48.

Even if Patent Owner had only described a single species, e.g., NaBr, “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 single species sufficient for antedating 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 halogens/halides “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 halogens 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 halogens, carbon, and mercury regardless of other inert materials included in the flue gas. ’370 Patent at 8:21–48.

Petitioners also attack the evidence cited by Patent Owner as “unwitnessed” or failing to address the ’370 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. Finally, while the inventors’ claim charts focus on the ’114 Patent, Petitioners identify no limitations

unique to the '370 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.

III. 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 14–19. 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.pier@quarles.com
lauren.bolcar@quarles.com

Date: August 5, 2025

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