

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNION ELECTRIC COMPANY

Petitioner

v.

BIRCHTECH CORP.

(f/k/a MIDWEST ENERGY EMISSIONS CORP.)

Patent Owner

IPR2025-01118

Patent 10,343,114

**PATENT OWNER BIRCHTECH CORP.'S
AUTHORIZED REPLY IN SUPPORT OF DISCRETIONARY DENIAL**

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Patent Trial and Appeal Board
U.S. Patent and Trademark Office
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Exhibit List	
Exhibit	Description
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. Ameren Corp., et al.</i> , 4:24-cv-00980, ECF No. 1 (E.D. Mo. July 17, 2024)
2008	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)
2009	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)
2010	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)
2011	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)
2012	Third Amended Complaint for Patent Infringement, <i>Midwest Energy</i>

	<i>Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.</i> , C.A. 1:19-cv-01334, ECF No. 326 (D. Del. Oct. 7, 2021)
2013	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)
2014	Amended and Restated Refined Coal Sales Agreement (Labadie Energy Center) between Larkwood Energy, LLC, and Union Electric Company, d/b/a Ameren Missouri, dated March 11, 2014 (SEALED)
2015	Refined Coal Sales Agreement (Rush Island Project Generation Facility) between Buffington Partners, LLC, and Union Electric Company, d/b/a Ameren Missouri, dated November 4, 2011 (SEALED)
2016	Memorandum Opinion, <i>Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.</i> , C.A. 1:19-cv-01334, ECF No. 791 (D. Del. Sept. 25, 2025)
2017	Declaration of Inventor John Pavlish, dated July 27, 2020
2018	EPA Clean Air Act Overview, https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary-title-iii
2019	EPA, Mercury and Air Toxics Standards, https://www.epa.gov/mats/cleaner-power-plants
2020	EPA, “Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units—Final Report to Congress”
2021	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
2022	Pilot- and Full-Scale Demonstration of Advanced Mercury Control Technologies for Lignite-Fired Power Plants, Final Report, dated February 2005
2023	DOE, Success Story for Sorbent Enhancement Additives
2024	Declaration of Thomas Erickson including PTC logbook entries
2025	Mercury Control Technologies for Electric Utilities Burning Subbituminous Coals, Final Report (For the period January 1, 2004 through June 30, 2005), dated October 2005

2026	Center for Air Toxic Metals (CATM), 2003 Research Ideas, dated August 30, 2002
2027	Document Metadata for Center for Air Toxic Metals (CATM), 2003 Research Ideas
2028	EPA, Mercury Study Report to Congress Vol. I (1997)
2029	EERC internal presentation, “Description of Test Facilities Particulate Test Combustor”
2030	EERC internal presentation, “Mercury Control Technologies for Electric Utilities Burning Lignite Coals, Introduction to Project” (12/4/2001)
2031	EERC internal presentation, “Mercury Control Technologies for Electric Utilities Burning Lignite Coals Project Kickoff Meeting” part 1 (2/28/2002)
2032	EERC internal presentation, “Mercury Control Technologies for Electric Utilities Burning Lignite Coals Project Kickoff Meeting” part 2 (2/28/2002)
2033	EERC internal presentation, “Mercury Control Technologies for Electric Utilities Burning Lignite Coals, Project Review Meeting” (2/25/2003)
2034	“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”)
2035	Metadata for Notes on Center for Air Toxic Metals (CATM) 2003 Research Ideas
2036	United States Patent No. 10,343,114
2037	File History, U.S. Patent No. 10,343,114 (U.S. App. No. 15/978,760)
2038	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.

The Deputy Director authorized this Reply in Support of Patent Owner’s Request for Discretionary Denial to address a Memorandum Opinion and Order (“Memorandum Opinion”) (Ex. 2016) entered by the court (the “Delaware Court”) in *Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.*, C.A. 1:19-cv-01334 (D. Del.), which has been identified as a related case in this matter. *See, e.g.*, IPR2025-01118, Paper 1, Petition at 2.

As explained in Patent Owner’s Brief Regarding Discretionary Denial, the weakness of Petitioner’s unpatentability challenge (Factor 3) strongly supported discretionary denial in part because the Petition is time-barred under 35 U.S.C. § 315(b). In particular, Patent Owner argues that Petitioner’s real-parties-in-interest or privies were served with a complaint alleging infringement of the challenged patent more than one year before the present petition. The Delaware Court’s Memorandum Opinion further supports that finding. Critically, the Opinion rejects the argument that Petitioner and refined coal providers had a standard supplier/customer relationship.

As background, Petitioner owns power plants that used something called “the Chem-Mod Solution” to burn coal. This process involved refining coal by treating it with bromine. Petitioner purchased this refined coal. In its Delaware Action, Patent Owner asserted that this Chem-Mod Solution caused direct infringement at Petitioner’s power plants, among others. Ex. 2003 at 12–13. In

particular, Petitioner purchased refined coal from Chem-Mod LLC sub-licensees Buffington Partners, LLC and Larkwood Energy, LLC for combustion at the Rush Island and Labadie power plants, respectively. The agreements related to these sales contain indemnity provisions related to the provision of refined coal. *See* Ex. 2014, art. VII; Ex. 2015, art. VII. By 2021, PO had filed multiple complaints in the Delaware Court that alleged infringement of the '114, '225, '517, and '430 Patents, and named as defendants Chem-Mod LLC, Buffington Partners, LLC and Larkwood Energy, LLC. Exs. 2003, 2011, 2012. Ultimately, at a trial against the refined coal defendants remaining in the case, the Delaware Court issued a judgment as a matter of law of no invalidity, and the jury found the patents indirectly infringed by the refined coal supplier defendants. Ex. 2005.

On September 25, 2025, the Delaware Court entered a Memorandum Opinion denying the Delaware defendants' motion for judgment as a matter of law and found that the relationship between the refined coal defendants and the directly infringing utilities (*including Petitioner*) supported the jury's verdict of indirect infringement by the refined coal defendants. Ex. 2016 (citing Ex. 2004, trial transcript, throughout the opinion).

The Delaware Court concluded that there was evidence to support the following findings of fact and law illustrating the close relationship between the refined coal defendants and the directly infringing utilities (including Petitioner):

- “[I]t is important to first step back and emphasize that, as to CERT’s provision of the coal itself, the facts here don’t involve just a simple, typical sale of a product by a defendant to a far-flung group of third party customers—i.e., to third parties who purchase the product online or in a store, and who then might (or might not) later directly infringe when using that product.” Ex. 2016 at 14.
- “[H]ere, CERT’s actions were a *particularly important, and particularly direct* cause of the alleged infringement—far more than in a typical circumstance where an alleged inducer simply sells a component to direct infringers, and that component later happens to be used to infringe.” Ex. 2016 at 27 n.23 (emphasis in original).
- “In other words, the evidence showed that CERT was not merely (as CERT puts it) making a ‘sale of refined coal knowing it will be put [] to an infringing use[.]’ Instead, in order to later obtain significant financial benefits in the form of Section 45 tax credits, CERT took action that resulted in the power plants getting paid to accept CERT’s refined coal, as the coal was traveling through those plants’ facilities on a conveyer belt.” *Id.* at 17.
- “[T]hese [refined coal] Defendants worked on site at each particular power plant, where they bought the coal at issue, made it into refined coal by treating it, and/or sold it back to the power plants at a loss, all while the coal was on a conveyor belt where it was destined to be burned and treated in an infringing manner.” Ex. 2016 at 36–37 (internal quotes and citations omitted).
- “In 2012, CERT gave presentations to power plants conveying that the use of CERT’s bromine solution would allow power plants to use less activated carbon (therefore saving money) and would allow the power plant to get more usable fly ash, which is created during the combustion process and which power plants sell

to cement manufacturers.” Ex. 2016 at 15–16)

- “In 2015, power plants requested that CERT help them optimize amounts of bromine and activated carbon to comply with MATS.” Ex. 2016 at 16.
- In light of the indemnity provisions in the refined coal agreements, *see* Exs. 2014, 2015, “the jury could reasonably infer that, because the power plants were already being paid to burn refined coal, these indemnity provisions were meant to overcome the deterrent effect that the patent laws have on would-be infringers.” Ex. 2016 at 17 n.19 (internal quotes and citations omitted).
- “[T]he evidence at trial bore out [the] allegations” that “were the plants to stop operating their activated carbon injection systems, they could face fines that would destroy the economic incentives for dealing with a refined coal provider, or be shut down; [and] were the plants to unilaterally reduce their activated carbon injection rate, or were Defendants to reduce the amount of bromine added to the refined coal that they provide to the plants, this could hinder the plants’ ability to comply with state and federal mercury regulations[.]” Ex. 2016 at 13.
- “Substantial evidence at trial proved that . . . Defendants earned millions of dollars in tax credits for refined coal combusted by the power plants; and . . . had power plants shut down their operations when this lawsuit was filed, CERT’s investors would have lost approximately \$300-350 million in tax credits.” Ex. 2016 at 22–23.

In view of the factual findings and legal conclusions above, the Delaware Court found that the refined coal defendants were not entitled to judgment as a matter of law with respect to induced, contributory, or willful infringement. Ex. 2016 at 44.

The findings of the Delaware Court show that the Petitioner was in privity

with the Delaware Defendants when the complaints were filed in that Court. Specifically, the Delaware Court concluded that the relationship was not limited to “just a simple, typical sale” of products (*see, e.g., id.* at 14),¹ citing, *inter alia*, the parties’ physical integration of operations at the accused plants (*see, e.g., id.* at 15, 20–21, 29, 37), the fact that the refined coal defendants paid utilities to accept the refined coal (*see, e.g., id.* at 15), the parties’ efforts to optimize the proper amount of bromine and activated carbon to add (*see, e.g., id.* at 15–16), the parties’ significant financial stakes and mutual dependency to keep the power plants compliant and operating (*see, e.g., id.* at 22–23, 42–43), and that the “indemnity provisions were meant to overcome the deterrent effect that the patent laws have on would-be infringers” (*see, e.g., id.* at 17 n.19).

For the same reasons, the Board should conclude that Petitioner’s relationship with Chem-Mod sublicensees (Buffington Partners, LLC and Larkwood Energy, LLC, defendants in the Delaware Action) was sufficiently close when those defendants were served with a complaint alleging infringement of the Challenged Patent such that the Petition is time-barred under 35 U.S.C. § 315(b).

¹ This finding directly contradicts the Board’s conclusions in its decision to institute IPRs as to the Challenged Patent in matters filed by Petitioner’s co-defendants. *See* IPR2025-00274, Paper 33 at 18 (“[T]he current record supports that the relationship . . . was a standard supplier/customer relationship.”).

Dated: October 14, 2025

Respectfully submitted,

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

It is hereby certified that on this 14th day of October, 2025, a copy of the foregoing document was served via electronic mail, as consented to by Petitioner upon the following counsel of record:

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