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

AUTHORIZED RESPONSE TO DIRECTOR REVIEW REQUEST

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. Argument 1
A. The Director's Decision Is Final and Nonappealable. 1
B. The Litigation History of the Challenged Patent Does Not Require Reversal of the Director's Decision. 3
C. Petitioner's Public Policy Arguments Are Meritless. 4
D. The Fact that Petitioners May File Additional Petitions Does Not Mean that the Director Must Institute Them. 5
E. Petitioner's Request for a Stay Is Unwarranted. 6
F. Petitioner's Request for Joinder Is Untimely and Procedurally Improper. 7
III. Conclusion 8

TABLE OF AUTHORITIES

Cases

Apple Inc. v. Uniloc 2017 LLC
IPR2020-00854, Paper 9 (PTAB Oct. 28, 2020) 7

Bloch v. Powell
348 F.3d 1060 (D.C. Cir. 2003) 1

Code200, UAB v. Bright Data Ltd.
IPR2022-00861, Paper 17 (PTAB July 25, 2022) 7

Facebook, Inc. v. Windy City Innovations, LLC
973 F.3d 1321 (Fed. Cir. 2020) 7

In re Motorola Sols., Inc.
159 F.4th 30 (Fed. Cir. 2025) 1

Midwest Energy Emissions Corp. v. Arthur J. Gallagher & Co.
No. CV 19-1334-CJB, 2023 WL 7411160 (D. Del. Nov. 3, 2023) 4

United States v. Arthrex, Inc.
594 U.S. 1 (2021) 1

Valve Corp. v. Elec. Scripting Prods., Inc.
IPR2019-00062, Paper 11 (PTAB Apr. 2, 2019) 5, 8

Statutes

35 U.S.C. 314 .... 6, 7

35 U.S.C. 314(d) 2

35 U.S.C. 315(c) 7

35 U.S.C. 316 6

37 CFR 42.122 7

Exhibit List	
Exhibit	**Description**
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. Ameren Corp., et al.*, 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, *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)
2009	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)
2010	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)
2011	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)
2012	Third Amended Complaint for Patent Infringement, *Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.*, C.A.

	1:19-cv-01334, ECF No. 326 (D. Del. Oct. 7, 2021)
2013	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)
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, *Midwest Energy Emissions Corp., et al. v. Arthur J. Gallagher & Co., et al.*, 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, *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.

I. Introduction

Before the Director is Petitioner's Request for Director Review of the Director's Discretionary Denial Decision. The Patent Office has provided clear guidelines for institution decisions based on discretionary and *Fintiv* factors. Patent Owner carefully analyzed each of those factors in its request for discretionary denial, and the Director denied institution. Petitioner identifies no error in that conclusion. Indeed, it does not even acknowledge the relevant factors. Instead, Petitioner advances a hodge-podge of *ad hominem* attacks, non-sequiturs, and false statements that are divorced from the controlling authority and evidentiary record. These arguments should not be countenanced, and Petitioner's Request should be denied.

II. Argument

A. The Director's Decision Is Final and Nonappealable.

Petitioner essentially claims that it has a "right" to an instituted IPR. *See, e.g.*, Paper 23 at 2. That is plainly wrong. *See In re Motorola Sols., Inc.*, 159 F.4th 30, 36 (Fed. Cir. 2025) (explaining that there is no "right" to challenge patent validity via IPR rather than in court); *see also United States v. Arthrex, Inc.*, 594 U.S. 1, 8–9 (2021) ("Congress has committed the decision to institute *inter partes* review to the Director's unreviewable discretion."); *Bloch v. Powell*, 348 F.3d 1060, 1069 (D.C. Cir. 2003) ("[W]hen a statute leaves a benefit to the discretion of

a government official, no protected property interest in that benefit can arise.”).

Moreover, while Petitioner styles this request as a request for “Director Review,” the Director already issued an institution decision pursuant to 35 U.S.C. § 314. Subsection 314(d) states: “The determination by the Director whether to institute an inter partes review under this section shall be final and nonappealable.” Petitioner fails to acknowledge this statutory limitation, nor does it identify any authority that authorizes this Request given that Petitioner is not seeking Director review of a Board decision.

Even if this review is permitted, Petitioner fails to articulate any standard for the review. For example, it identifies no new evidence or change in the law.[1] While Petitioner speculates that Patent Owner may settle its claims against its co-defendants, that possibility has always been known to Petitioner. Petitioner also fails to identify any new argument that could not have been made earlier. It is merely asking for an arbitrary reversal because it does not like the Director’s decision. There is simply no basis for that result.

[1] *See Director Review Process* § 2.B, U.S. Patent & Trademark Office (last modified Oct. 8, 2025), https://www.uspto.gov/patents/ptab/decisions/director-review-process (“Requests for Director Review . . . shall be limited to decisions presenting (a) an abuse of discretion, (b) important issues of law or policy, (c) erroneous findings of material fact, or (d) erroneous conclusions of law.”).

B. The Litigation History of the Challenged Patent Does Not Require Reversal of the Director's Decision.

Petitioner also argues that the challenged patent is a "known invalid" patent. Paper 23 at 3. That is also plainly wrong. As to the substance of the asserted grounds, Patent Owner already explained the weaknesses of those grounds in its Preliminary Response. And as Petitioner acknowledges, the only final decision adjudicating the validity of this patent is the Delaware Court's grant of JMOL of no invalidity. Petitioner's effort to avoid that fact is highly misleading.

Patent Owner commercialized the patented invention decades ago. In 2019, it filed a patent infringement lawsuit against its major competitors (refined coal suppliers), and some of its current and potential customers (power plant operators). While it was hesitant to do so, it concluded that this strategy was necessary to protect its rights. Nonetheless, it began signing license and supply agreements with the power plant operator defendants before any IPRs were even instituted.[2] While some agreements were signed after the institution decision, Patent Owner should not be faulted for resolving its disputes in a way that conserved resources for the parties, courts, and the Board.

After Patent Owner resolved its claims with the power plant operators, it

---

[2] *See, e.g.*, *Midwest Energy Emissions Corp. and Vistra Announce Fleetwide License and Supply Agreement*, Birchtech (Aug. 4, 2020), https://ir.birchtech.com/press-releases/detail/574/midwest-energy-emissions-corp-and-vistra-announce-fleetwide-license-and-supply-agreement.

continued to litigate its claims against refined coal suppliers. Those suppliers raised the very same priority date issue and primary prior art references that Petitioner contends are so strong, but the Court denied their motion for summary judgment of invalidity. *Midwest Energy Emissions Corp. v. Arthur J. Gallagher & Co.*, No. CV 19-1334-CJB, 2023 WL 7411160, at *1 (D. Del. Nov. 3, 2023). At trial, Defendants continued to challenge the validity of the patents. Ex. 2004, Trial Tr. at 218:3–8 (Defendants' opening statement: "And it's CERT's burden, the defendants' burden to prove this by clear and convincing evidence that at least one of these applications in the chain lacks the written description, and then if it does, and that breaks the priority chain, then prior art would come in, and we will show why that would invalidate the patents."). Ultimately, inventor John Pavlish explained the history of these patents, and the Court granted JMOL of no invalidity. The fact that these invalidity theories were so weak that they did not reach the jury is a factor that weighs *against* institution, not in favor of forcing Patent Owner to defend yet another resource intensive challenge to its property rights.

C. Petitioner's Public Policy Arguments Are Meritless.

Petitioner raises vague concerns about public policy, but public policy strongly favors enforcement of patent rights. That is particularly true here, where Patent Owner already obtained a judgment of infringement against Petitioner's

suppliers, and it is merely seeking a similar ruling against Petitioner covering a broader time period. To be clear, the Delaware jury was instructed that it could find the refined coal supplier defendants (who have indemnity agreements with Petitioner) liable only if they found that specific power plants directly infringed. The list of power plants found to directly infringe included Petitioner's power plants.

D. The Fact that Petitioners May File Additional Petitions Does Not Mean that the Director Must Institute Them.

Petitioner cites *Olympus Corp. v. Optimum Imaging Techs., LLC*, for the proposition that different petitioners may file different petitions. But this does not mean that the petitions must be instituted, nor does it explain why Petitioner failed to file a timely motion for joinder. Moreover, Petitioner fails to mention its significant relationship to the petitioners in the 2025 IPRs.[3] *See, e.g.*, *Valve Corp. v. Elec. Scripting Prods., Inc.*, IPR2019-00062, Paper 11 at 9-10 (PTAB Apr. 2, 2019) (denying institution of serial petition filed by a co-defendant). These various proceedings all involve petitioners that are, or have been, co-defendants in pending patent infringement litigation that stems from their use of refined coal from the Chem-Mod parties at issue in the prior Delaware litigation. *See generally* Patent

[3] For clarification, the "2025 IPRs" refers to petitions filed by Petitoner's co-defendants (the "2025 Petitioners") and carries the same meaning here as in Petitioner's Request for Director Review.

Owner Preliminary Resp. at 79–85. If Petitioner wanted to participate in their co-defendants' petitions, they could have filed a timely motion for joinder. They made a tactical decision to *not* do that, and now they need to stand by that decision. Accordingly, Petitioner has failed to justify reversal of the Director's decision.

E. Petitioner's Request for a Stay Is Unwarranted.

Alternatively, Petitioner requests a contingent institution decision and indefinite stay of the petition, but it identifies no authority by which the Director may grant this relief. 35 U.S.C. §§ 314 and 316 provide specific deadlines for IPRs, and Petitioner fails to show how their requested relief can be reconciled with those requirements. Nor do they explain why a Patent Owner should be forced to defend this sort of serial IPR process that could potentially extend indefinitely if more petitioners request the same result.

Indeed, such a scenario could create perverse incentives. For example, suppose Patent Owner and the 2025 Petitioners wished to settle the pending district court and PTAB proceedings. If Petitioner's request for a contingent institution were granted, Patent Owner would know that resolving its disputes with the 2025 Petitioners would begin a new IPR proceeding with Petitioner. Thus, Patent Owner may be incentivized to continue the 2025 IPRs. This would be a tremendous waste of resources for the parties and the Board.

F. Petitioner's Request for Joinder Is Untimely and Procedurally Improper.

"Any request for joinder must be filed, as a motion under § 42.22, no later than one month after the institution date of any *inter partes* review for which joinder is requested." 37 CFR § 42.122. Petitioner admits that this request is untimely under the rule, and it identifies no authority by which the request may be granted. Indeed, it does not even offer a cursory excuse for its untimeliness.

Even if the request was timely, it must be denied. 35 U.S.C. § 314 limits the Director's joinder authority to petitioners of *instituted* IPRs. *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1332 (Fed. Cir. 2020); *see also, e.g.*, *Code200, UAB v. Bright Data Ltd.*, IPR2022-00861, Paper 17 at 10 (PTAB July 25, 2022) ("Under 35 U.S.C. § 315(c), the statutory provision governing joinder, the discretion to join a party to an ongoing IPR is premised on the determination that the petition warrants institution under § 314."). Because the present petition was not instituted, joinder is not permitted.

More generally, the Board has warned that, when a petition is denied institution, that is no reason to allow the petitioner to join other proceedings, *e.g.*, by filing an additional copy of an instituted petition. In the precedential decision *Apple Inc. v. Uniloc 2017 LLC*, it explained:

> Petitioner's understudy argument is not persuasive here where the copied petition is Petitioner's second challenge to the patent, and should

> Microsoft settle, Petitioner would stand in to continue a proceeding that would otherwise be terminated. In effect, it would be as if Apple had brought the second challenge to the patent in the first instance. This is the kind of serial attack that *General Plastic* was intended to address.

IPR2020-00854, Paper 9 at 4 (PTAB Oct. 28, 2020); *see also Valve*, IPR2019-00062, Paper 11 at 9–10 (PTAB Apr. 2, 2019) (denying institution of serial petitions filed by a co-defendant).

Finally, joinder would be extremely prejudicial to Patent Owner. Patent Owner already deposed the 2025 Petitioners' expert Dr. Niksa for some of the 2025 IPRs, and its deadlines for Patent Owner Responses are quickly approaching. Furthermore, the Director recently directed the Board to allow the parties to the 2025 IPRs additional discovery and briefing regarding real-party-in-interest and privity issues. Patent Owner likewise has alleged in this matter that the petition is time-barred based on Petitioner's relationships with defendants to the 2020 Delaware Litigation, which would require discovery and briefing wholly separate from that at issue in the 2025 IPRs. Petitioner offers no realistic plan as to how to address these issues in a way that is fair to both sides and that accounts for the Board's statutory deadlines.

III. Conclusion

For the reasons above, Patent Owner requests that the Director deny Petitioner's Request.

Dated: December 9, 2025

Respectfully submitted,

Birchtech Corp.

/Hamad M. Hamad/
Hamad M. Hamad, Reg. No. 64,641
Justin T. Nemunaitis (*pro hac vice*)
Richard Cochrane (*pro hac vice*)
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 9th day of December, 2025, a copy of the foregoing document was served via electronic mail, as consented to by Petitioner upon the following counsel of record:

Robert M. Evans, Jr., Reg. No. 36,794
LEWIS RICE LLC
600 Washington Avenue, Suite 2500
St. Louis, Missouri 63101
T: 314-420-2748
E: revans@lewisrice.com

Michael J. Hartley, Reg. No. 67,230
LEWIS RICE LLC
600 Washington Avenue, Suite 2500
St. Louis, Missouri 63101
T: 314-444-7869
E: mhartley@lewisrice.com

Kathleen M. Petrillo, Reg. No. 35,076
LEWIS RICE LLC
600 Washington Avenue, Suite 2500
St. Louis, Missouri 63101
T: 314-374-6623
E: kpetrillo@lewisrice.com

Date: December 9, 2025

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