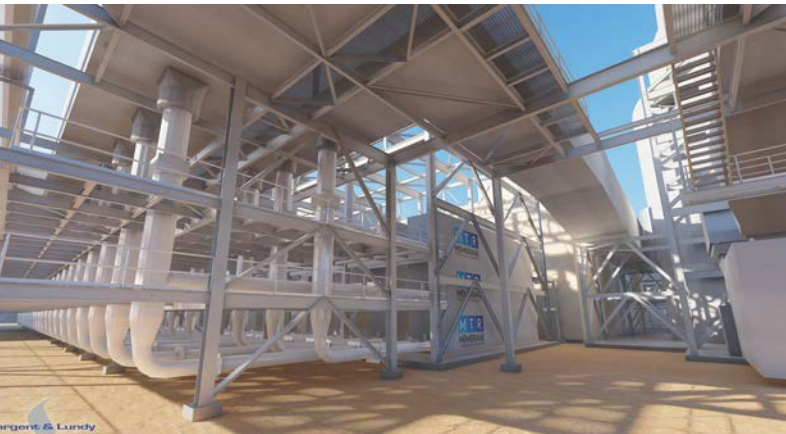


WYOMING INTEGRATED TEST CENTER TENANTS

The Wyoming Integrated Test Center (ITC) is one of a few facilities in the world where researchers can pull power directly from a coal-fired power plant for testing. This allows tenants to test real-world applications of carbon capture, utilization and storage (CCUS) technology. Each individual test bay is fed with flue gas directly from Basin Electric Power Cooperative's Dry Fork Station. The current tenants at the ITC include:



Membrane Technology & Research

Membrane Technology & Research (MTR) is currently constructing a large pilot CO₂ capture system utilizing their proprietary Polaris™ membrane technology. This novel technology is easily retrofit to existing emissions sources since it does not require steam integration with the host unit. Instead, the technology relies on off the shelf rotating equipment and electric power to facilitate the separation of CO₂ from flue gas utilizing a diffusion mechanism through their membrane. The technology is also modular, which allows it to be scalable to treat a larger volume of gas by adding additional modules and rotating the equipment accordingly.

Kawasaki Heavy Industries, Ltd. (KHI) completed construction on their solid sorbent carbon capture technology at the ITC in 2023 and began operations. The State of Wyoming and Japan have been working together since 2016, when Governor Mead and Osamu Tsukamoto, President of Japan Carbon Frontier Organization (JCOAL), signed a Memorandum of Understanding committing to cooperation in coal research and development of technologies and coal trade. JCOAL operates under the supervision of the Ministry of Economy, Trade and Industry of Japan and is supported by more than 120 member coal-related businesses.



Kawasaki Heavy Industries, Ltd.

Gas Technology Institute (GTI) in partnership with the Ohio State University (OSU) is currently finalizing the design of a facilitated transport membrane system for CO2 capture. The membrane material has been manufactured at OSU and will be integrated into a skid system scheduled to arrive at the ITC in the fall of 2024. This unique technology can capture up to 70% of CO2 with a single membrane stage and aims to capture over 90% of the CO2 with two stages at a scale of over 20 tons of CO2 per day with less energy consumption and lower operating cost than amine based solvents.



Gas Technology Institute

The ITC welcomed TDA Research, Inc. (TDA) to the facility in the fall of 2019. TDA completed its first round of testing in 2022, but will complete a second round testing in the fall of 2023. TDA develops cutting-edge chemical processes, materials and hardware for customers in the defense, aerospace, energy and chemical industries.

TDA has a novel hybrid carbon capture system, which incorporates membrane and solid sorbent technologies to remove carbon dioxide from flue gas. TDA's system is sized to capture carbon dioxide from flue gas at about the emission rate from a plant generating 50 kilowatts of electricity, or about a ton of carbon dioxide per day.



TDA Research, Inc.

“Our solid sorbent technology has been tested and proven on a smaller scale, as has the membrane technology proved by MTR. Our two technologies have also been tested as a hybrid model successfully as well. Through our testing at Dry Fork Station, we hope to show improvements in operational cost and efficiencies.” – David Gribble, TDA senior scientist

Wyoming's ITC will host a new \$2.5 million project with Colorado State University, the University of Wyoming and Living Ink Technologies to convert an industrial source of carbon dioxide into high-value materials through an algae-based carbon transfer process. The project, also supported by the U.S. Department of Energy, began its initial phase in 2023. The research will run for three years, with approximately six months of testing at the facility.



Colorado State University

INTEGRATED TEST CENTER

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