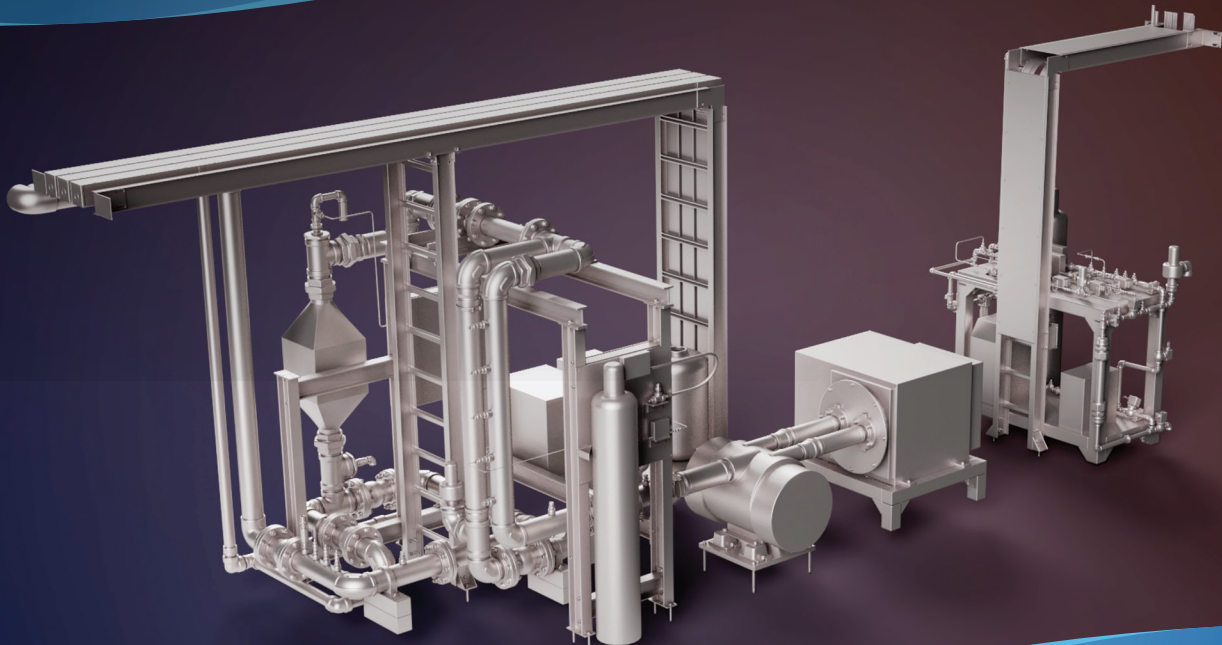


# NETL DIRECT AIR CAPTURE (DAC) CENTER



NETL DIRECT AIR  
CAPTURE CENTER

R&D235, December 2024



## SUPPORTING RAPID TECHNOLOGY DEVELOPMENT FOR ATMOSPHERIC CO<sub>2</sub> CAPTURE

The NETL DAC Center is a one-of-a-kind facility dedicated to supporting private sector technology maturation by leveraging National Laboratory competencies and knowledge through collaborative research efforts.

The DAC Center aims to accelerate the commercialization of innovative DAC technologies that are technically and economically viable to achieve our Nation's goal of net-zero emissions by 2050.

Albany, OR • Morgantown, WV • Pittsburgh, PA • Houston, TX



## NETL's DAC Center supports rapid development and commercialization pathways for technologies that remove carbon dioxide (CO<sub>2</sub>) from the atmosphere.

Featuring one-of-a-kind facilities that empower innovators from government, academia and the private sector, the DAC Center tests emerging technologies that have achieved proof-of-concept but have not reached full pilot scale (technology readiness levels 3 to 6) to expedite development.

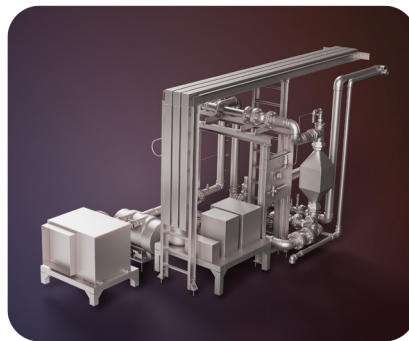
### DAC CENTER CAPABILITIES



#### LAB SCALE

**Systems for novel material assessment  
(~0.1 kg CO<sub>2</sub> /day)**

- Focused on material properties and longevity
- Mixed-gas measurements with sample sizes greater than typical lab scale
- Able to accommodate all common materials (powder, granular, fiber, structured)
- Automated for extended, multi-cycle testing



#### BENCH SCALE

**Test beds with flexible reactor designs  
(~10 kg CO<sub>2</sub> /day)**

- Focused on module capture and flow measurements
- Sized for modules at typical scale: 12" X 12" X 12"
- Able to accommodate common form factors: granular solid, fiber mat, or monolith
- Instrumented to provide measurements of all parameters needed for prototyping models



#### SMALL PILOT SCALE

**Bays for evaluating developer-built DAC skids  
(~100 kg CO<sub>2</sub> /day)**

- Focused on testing of small pilot scale prototype DAC units
- Able to accommodate a wide variety of technology types
- Testing under conditions representative of many climates
- Automated for extended, multi-cycle testing
- Instrumented for measurement of all parameters needed for assessment of field deployment at NCCC or a DAC hub

## Working together to accelerate technology deployment for atmospheric CO<sub>2</sub> capture.

NETL has created a comprehensive center to help partners—universities, research institutions and businesses developing DAC technologies—leverage NETL’s facilities and expertise to test innovative DAC technologies. Partners will have access to:

- Nationally recognized center supporting DAC technology development and testing from invention to commercialization
- Inclusive, state-of-the-art testing facilities
- Collaborative access to NETL’s world class expertise
- Standardized and bespoke testing options representing the “gold standard” in technology validation

## BENEFITS TO PARTNERS

- Affordable, accessible, high-quality performance testing of DAC materials, modules, and prototypes
- Versatile, full-cycle systems able to conduct difficult-to-execute tests
  - Broad ranges of capture temperature and relative humidity
  - Steam and vacuum regeneration
  - Full automation allowing extended testing
  - Prototype testing under fully controlled atmospheric conditions
- Access to NETL capabilities built during two decades of carbon capture R&D
  - Engineering design and prototyping
  - Technoeconomic and lifecycle analysis
  - Computational fluid dynamics
  - Cycle and process optimization (CCSI2/IDAES)

**Testing began in 2023 with all capabilities expected to be online in 2025.**

Located in Pittsburgh, PA, near major international airports and key NETL infrastructure

***Partner with us!***



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for more information visit [NETL.DOE.gov/DAC](https://www.NETL.DOE.gov/DAC)





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NETL is a U.S. Department of Energy national laboratory that drives innovation and delivers solutions for a clean and secure energy future by advancing carbon management and resource sustainability technologies. Through its expertise and research facilities, NETL is advancing innovations to enable environmental sustainability for all Americans. Using the power of workforce inclusivity and diversity, innovators at NETL's research laboratories in Albany, Oregon; Morgantown, West Virginia; and Pittsburgh, Pennsylvania, conduct a broad range of research activities that support DOE's mission to ensure America's security and prosperity by addressing its energy and environmental challenges through science and technology solutions.

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#### Contacts

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