



NRCan CanmetENERGY Ottawa

CanmetENERGY Ottawa leads the development of energy science and technology solutions for the environmental and economic benefit of Canadians.

AVAILABLE RESOURCES

CCUS Development and Pilot-Scale Demonstration Facilities

- 1 MWth pressurized oxy-combustion pilot plant complete with CO₂ processing system (max 15 barg) for gasification, fluid-bed or chemical looping;
- 1 MWth pressurized oxy-combustion steam generation pilot-plant (max 85 barg) for SAGD or tailings utilization;
- 0.3 MWth scale oxy-fuel combustion facility with integrated CO₂ capture, purification and compression; 50 kWth oxy-fluidized bed combustor;
- Dual-fluidized bed system for solid sorbent post-combustion capture (up to 950°C)
- Cold flow fluidized bed system for hydrodynamic characterization of solid sorbents for post-combustion CO₂ capture & chemical looping, including x-ray tomography;
- Trailer-mounted CO₂ capture, purification and compression unit (CanCO₂) for multiple CO₂ capture systems;
- Post-combustion CO₂ capture unit (PCU) using liquid solvents (amines/ionic liquids);
- Catalytic CO₂ conversion test facility for CO₂ utilization;
- High pressure/temperature CO₂ separation and flue gas processing unit for supercritical CO₂ combustion power cycles; Supercritical CO₂ corrosion test unit;

Laboratory Capacity

Full in-house chemical analytical laboratory with CCUS related capacities including: pressurized thermogravimetric and differential thermal analysers for sorbent and oxygen carrier reaction kinetics characterization; agglomeration and fouling detection; solid sorbent characterization; high-pressure cell for VLE studies of CO₂ mixtures; CO₂ storage capacity, wellbore and caprock integrity evaluation; evaluation of interaction between reservoir rocks, fluid, and injected gases; NMR imaging for rock core analyses.

COST OF SERVICES

Cost-shared R&D activities possible subject to negotiations; non-profit cost recovery approach for access to expertise and facilities.

CONTACT INFORMATION

Location: Ottawa, ON

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Website: <https://canada.ca/canmetenergyottawa>

SERVICES

We use our expertise to assist Canadian and international stakeholders in developing and utilizing CCUS to reduce GHG emissions and facilitate coordination amongst stakeholders via established CCUS communication networks across Canada.

EXPERTISE



Capture

Post-combustion (solvents, sorbents, MOFs), pre-combustion (gasification), oxy-combustion (supercritical CO₂, fluid bed, chemical looping, multiphase, BECCS) at ambient or high pressure.



Conversion

CO₂ conversion to fuels and/or chemicals at ambient or high pressure; direct carbon fuel cells.



Storage and Transport

Geological reservoir analyses, characterization, and modeling; injectivity and wellbore integrity analyses; CO₂ pipelines.



Other

Advanced modeling capabilities with machine learning and data visualization to optimize design and operation of experimental R&D and facilitate industrial scale-up; technology gap analysis and technology development planning with risk, techno-economic and life cycle analyses; engineering capacity to custom build new R&D process facilities with full instrumentation, control, and material consideration.

TRL

Novel technology development at TRL 2-7.

Canada

Natural Resources Canada,
CanmetENERGY Ottawa