

CHALLENGE

The management of greenhouse gas emissions, including CO₂, is a major challenge for Alberta industries. In response, industrial emitters, including those in the oil and gas sector, are exploring technology options to produce low- or net zero-carbon oil and gas.

Carbon capture, utilization and storage remains one of the most promising approaches to reduce the carbon output from industrial emitters, enabling CO₂ to become an asset rather than a liability.

Validation of new technologies requires large scale facilities with continued access to a reliable source of CO₂ to test and de-risk prototypes for future deployment.



One of ACCTC's six bays occupied by a tenant.

ALBERTA CARBON CONVERSION TECHNOLOGY CENTER (ACCTC)

The Alberta Carbon Conversion Technology Centre (ACCTC), owned and operated by InnoTech Alberta Inc., is a unique facility built to demonstrate and de-risk CO₂ capture and utilization technologies. The site is fully equipped for the provision of required utilities and has experienced operational staff to ensure steady services for technology innovators.

The ACCTC is located next to the Shepard Energy Centre, an 860 megawatt (MW) natural gas-fuelled power generation facility jointly owned by ENMAX and Capital Power. Innovators have the opportunity to evaluate new carbon capture and utilization technologies at demonstration scale using flue gas from Shepard or concentrated CO₂ from the capture unit, which is also available for R&D.



Flue gas delivered from Shepard Energy Centre to ACCTC

SPECIFICATIONS

The ACCTC consists of six outdoor gravel pads, four of which measure 25 x 93m and two of which measure 25 x 46m.

Each bay is equipped with the following services:

- Power 25kV/600V, 2MVA;
- Utility Water – supply pressure 345 kpag;
- Natural Gas – supply pressure range 207-552 kpag;
- 400 BBL Waste Water Tank – heat traced, tie in connection 2", outlet by truck only;
- Flue Gas (4-6% CO₂) – supply pressure range 30-40 kpag;

Office space (approximately 250 sq.ft.) is available for each bay and is equipped with land line phone access, internet service and Wi-Fi connection;

Carbon capture capabilities providing concentrated CO₂ (~90%, up to 6 tonnes/day for the site) available to all six test bays.



Inside the Amine CO₂ Capture Unit at ACCTC.

GAS COMPOSITION

Composition of flue gas and concentrated CO₂ from natural gas-fired power plant

Parameter	Flue Gas	Concentrated CO ₂
Temperature	70°C	37°C
Pressure	20.7 kpag	100 kpag
H ₂ O	8.25 Vol%	3.2 mol%
CO ₂ (dry)	4 - 6 Vol %	96.8 mol%
NO ₂ (dry)	15-18 Ppmv	0.000013 mol%
N	-	0.019 mol%
SO ₂	0 Vol %	0 Vol%
O ₂ (dry)	10-12 Vol %	0.0048



Tower installation on the capture unit.



ADDITIONAL AVAILABLE SERVICES

Engineering Support for Technology Optimization

- Mechanical engineering (rotational equipment and pressure vessel expertise);
- Chemical engineering (process simulation, process control, and process and reactor design expertise);
- Instrumentation, electrical and power engineering;
- Chemists for assisting with process kinetics improvements.

Laboratory and Analytical Services

- Feedstock and product analysis;
- Material characterization;
- Bench scale testing and optimization support;
- Customizable analysis and recommendations for specific needs.

CO₂ Capture Unit R&D

- Capture Unit is fabricated from stainless steel to accommodate novel solvents;
- Capture Unit modular design and fabrication allows InnoTech to test and evaluate novel processing units which can be integrated into the system;
- The existing delta reclaimer at the Capture Unit allows for experimentation involving recovery and recycling of different solvents.

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InnoTech is a leading Applied Research & Technology Development Services Organization serving the needs of industry, entrepreneurs and the public sector. Our leading-edge expertise and industrial-scale research and demonstration facilities accelerate and de-risk technology development and deployment with a focus on industrial solutions and commercial application. We are Alberta's innovation engine with 100 years of bold ideas that feed, grow, fuel, and build Alberta's agriculture, energy, environment, and forestry sectors.

**FOR MORE INFORMATION,
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