

Canadian Enhanced Coalbed Methane Recovery for Zero Greenhouse Gas Emissions



Supported by the IEA Greenhouse Programme and led by the Alberta Research Council, this Canadian project is looking at the commercial viability of coalbed methane (CBM) in Alberta through enhancement of CBM recovery factors and production rates in low permeability CBM reservoirs by injection of carbon dioxide-rich waste streams; and reducing greenhouse gas emissions by subsurface injection (and storage) of carbon dioxide into coalbeds with added value from production of CBM.

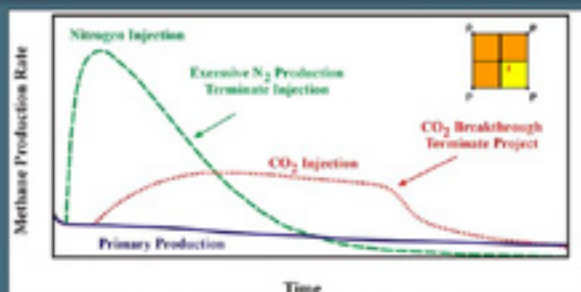


Gas Production Monitoring



1. Landfill Gas
2. Ethanol Plant
3. Ethane Plant, Ethylene Oxide Plant, Refinery, Ammonia Plant, Cogeneration Plant, Fort Saskatchewan
4. Coal-Fired Power Plant
5. Coal-Fired Power Plant
6. Ethylene Oxide Plant
7. Acid Gas Plant

- **Phase I** of the Canadian project was the initial assessment and feasibility of injecting pure CO₂ into deep Mannville coals.
 - **Phase II** was the design and implementation of a micro-pilot test for injection of pure CO₂ in an existing CBM well located at Fenn-Big Valley in Alberta following Amoco Production Company procedures.
 - **Phase III** was the assessment of reservoir response to different compositions of injected flue gases and the design and implementation of a multi-well pilot project.
 - **Phase IV** is the matching of 11 novel combustion and separation technologies to produce a CO₂ waste stream with CBM reservoirs to carry out additional multi-well ECBM pilot tests.
- To date, all testing undertaken in Phases I-IV has been successful and the economics of the process is being assessed.



Forecast Full-Field Development Production Numerical Modelling - 5-Spot Pattern

Objectives of the Canadian ECBM Project:

- Improving commercial viability of coalbed methane (CBM) recovery in Alberta through enhancement of CBM recovery factors and production rates in low permeability CBM reservoirs by injection of carbon dioxide-rich waste streams;
- Reducing greenhouse gas emissions by subsurface injection (and storage) of carbon dioxide into coalbeds with added value from production of CBM.

Partners:

(This CSLF recognized project was nominated by Canada and the United States)

Alberta Research Council (lead), Environment Canada, Canadian Climate Change Action Fund, Alberta Innovation and Science, Alberta Geological Survey, Geological Survey of Canada, Saskatchewan Energy and Mines, USDOE, Natural Resources Canada, UK Department of Trade and Industry, TNO, CSIRO Petroleum, Japan Coal, EPCOR, TransAlta, Air Liquide Canada, Suncor Energy, BP Amoco, Burlington Resources, Gas Technology Institute, Gulf Canada Resources, Husky Energy, MDV Energy, ExxonMobil Canada, Enersys, TransCanada Pipelines, Sprole International, BJ Services, Tesatek Corporation, University of Alberta, IEA Greenhouse Gas R&D Programme

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