

Raychem Heat Management Solutions Provide Critical Operational Reliability for Major Refinery to Capture Over One Million Metric Tons of CO₂ Per Year

Mission Critical Solutions in Carbon Capture & Storage



PROJECT DETAILS



Applications:

- Pipe Freeze Protection
- Process Temperature Maintenance
- Longline Heating
- Instrument Winterization



Location:

Scotford, Alberta Canada



Contract scope:

Product Supply and Instrument Winterization



Technology:

- Raychem Skin-Effect Longline Tracing (STS)
- Self-Regulating (BTV, XTV)
- Mineral Insulated (XMI)
- Advanced Control & Monitoring



Completion Date:

2015

KEY CHALLENGES

A major refinery/upgrading facility in Northern Alberta has built Canada's first world class Carbon Capture and Storage (CCS) facility at a project cost of \$1.36 billion. The CO₂ is captured from the refinery's hydrogen Steam Methane Reforming (SMR) plants, concentrated and purified using an amine absorption process and then compressed and injected at an underground storage facility 40 miles (65 kms) north of the upgrader facility. Funding for this project comes from the owner, plus the provincial and federal governments. The project is designed to capture and store 1 million metric tons of CO₂ per year – the equivalent of the annual emissions from 250,000 cars.

The customer's mission critical objectives for the heat management solution include ensuring plant operational reliability, managing northern climate freeze protection and process temperature maintenance, and optimizing energy efficiency. If for any reason the CCS plant shuts down, the captured CO₂ is immediately released to the atmosphere defeating the benefits of CCS.

SOLUTION

A major Engineering, Procurement and Construction (EPC) firm in Alberta engineered most of the heat tracing design with input from Raychem design experts. Raychem engineers designed the longline skin-effect tracing system (STS) heating solution that was ideal to maintain temperatures of the amine product lines that route from the refinery to the new CCS plant. Raychem design engineers also designed and built the instrument winterization enclosures to protect instruments and ensure operational reliability.

Raychem self-regulating and mineral insulated heating cables proved ideal throughout the CCS plant for lines that required process temperature maintenance and freeze protection. Finally, to ensure optimum plant reliability, we installed our advanced Raychem NGC-40 controllers and RAYCHEM Supervisor Software to minimize operational risk and maximize productivity, and to communicate with the operation staff.

PROJECT FACTS

To meet the mission critical needs of this world class Carbon Capture facility, our Raychem heat management solution included:

- Engineering design experts providing optimized design and support using TracerLynx 3D HMS Software
- Raychem STS Skin-effect longline tracing system
- Raychem BTV, XTV self-regulating heating cable (52,000 feet)
- Raychem XMI mineral insulated heating cable (19,300 feet)
- Instrument winterization
- Raychem NGC-40 control and monitor skids including power distribution and RAYCHEM Supervisor Software (7)

BENEFITS

We met the customers' mission critical objective for operational reliability with our optimized designs, proven complete heat trace systems including STS, BTV, XTV, XMI heat cables and instrument winterization. Our STS system is ideally suited for long transfer lines. Our Raychem NGC-40 advanced control & monitoring solution delivers energy savings and full connectivity that minimize operational risk and maximize productivity. The facility recently celebrated capturing over 7 million tons of CO₂ and are expanding with a new world class CCS facility in Northern Alberta.

This new project is designed to capture an additional 750,000 metric tons of CO₂ per year from the upgrader, refinery and chemical plants. Chemelex was awarded the heat management system engineering and product supply for this project and looks forward to working closely with the owners to meet their mission critical requirement for the start up in 2026.

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