

The Water Technology Development Centre (WTDC)

The Water Technology Development Centre (WTDC) is a live fluid test facility constructed at Suncor Energy Inc.'s Firebag Steam Assisted Gravity Drainage oil sands facility. The vision for the WTDC is to safely develop water technologies that reduce environmental impact, reduce capital and operating costs, increase reliability, and improve the sustainability performance of Alberta's thermal in situ oil sands projects so they can be competitive in a low oil price and low greenhouse gas (GHG) intensity environment. The WTDC is designed to develop technologies to the on-site commercial piloting scale, which is currently a challenge for the industry.



RECIPIENT:
Suncor Energy Inc.



PARTICIPANTS:
Husky
CNOOC
Canadian Natural



TOTAL BUDGET:
\$29,250,000



AI FUNDING:
\$7,000,000 AH-CHP
\$1,000,000 WIP



PROJECT DATES:
FEB 2019 –
NOV 2021



PROJECT TRL:
Start: 4 – 6
End: 7 – 9

APPLICATION

The WTDC participants (member companies) will be primary facility users to optimize existing processes, pilot new technology, and test the technical operating envelopes of key equipment. The participants have agreed to a minimum five years of piloting during which time vendors and technology suppliers will be engaged. The participants constitute approximately ~40% of Alberta's thermal in situ oil sands market and will share learnings with COSIA, who represent ~80% of the market. Therefore, future technology deployment will be material.



ALBERTA INNOVATES CLEAN RESOURCES

ENVIRONMENTAL INNOVATION

WATER INNOVATION PROGRAM

PROJECT GOALS

- Develop water technologies that reduce environmental impact, reduce capital and operating costs, and increase reliability to improve environmental performance and enable thermal in situ oil sands projects to become competitive with other unconventional sources.
- Develop technologies that reduce impacts of water use and pilot test cost-effective environmental technologies, developed through Canada’s Oil Sands Innovation Alliance (COSIA), to meet COSIA Environmental Objectives, which also include reducing land footprint and GHG emissions.
- Through commercial implementation, the project could:
 - Increase steam production at existing assets
 - Reduce surface facility operating costs
 - Reduce water intensity and GHG emissions on a per-barrel basis
 - Reduce facility land footprint
 - Improve management of water treatment waste residues

BENEFITS TO ALBERTA

- The WTDC can contribute to maximizing the value of existing thermal in situ oil sands in Alberta, resulting in many benefits:
 - Risked Bitumen production uplift of 100,000 barrels per calendar day.
 - Risked Royalty and tax uplift of \$2.4 billion.
 - ~270 permanent positions created (risked).
 - The equivalent of 4,390 temporary 1-year duration engineering, fabrication, and construction jobs created (risked).
- Technologies developed at the WTDC will result in environmental performance improvements in water, waste, and land use. For example, an 8% reduction in direct emissions and 9% reduction in indirect emissions (both are 70% risked) are expected. When taken across existing industry assets, and assuming 100% uptake, this equates to a 2.2 MT/year GHG reduction.



10 – 50
Publications



100+ Students
Trained



20 – 80 Patents



270 Project Jobs



1 – 14 New Products



20 Future Jobs



10,000 -200,000 kT/yr
Future GHGs Reduced

CURRENT STATUS

JUL 2020

Construction of the \$140 million WTDC facility is complete and pilot operations were underway before COVID-19 forced a shut down in March 2020. The WTDC partners have adapted their annual test plans for the first two years of operation, and a facility restart plan is in place. It is anticipated that pilot operations resuming in August 2020. By the end of 2020, seven pilots are expected to be operational. In addition, the WTDC partners continue to prepare future pilots for 2021 and beyond.