ALBERTA INNOVATES

CLEAN RESOURCES

ENVIRONMENTAL INNOVATION

WATER INNOVATION

ibex™ - Step-Change Pad-Based Steam and Solvent Bitumen Surface Technology Improves Environmental and Economic Sustainability

The ibex™ process is designed for in-situ bitumen producers to materially reduce their water disposal, GHG, land use footprint and capital and operating costs. The process receives emulsion from a Steam or Solvent Assisted Gravity Drainage (SAGD) reservoir, adds heat, removes gas, removes solids, converts the water into steam and recaptures solvent for reservoir re-injection, treats the bitumen for sale, and optionally converts bitumen into a partially upgraded semi-finished product. The project will complete bench scale testing (TRL4) in 2021, validate brownfield and greenfield economics, and design a 4 barrel per day field ready unit for testing in 2022.

FUNDING DETAILS

RECIPIENT:
ARCHER Business Development Inc

PARTNERS:
Oil and Gas Industry Partner

TOTAL BUDGET:
$835,357

AI FUNDING:
$570,000

PROJECT DATES:
JAN 2021 – DEC 2021

PROJECT TRL:
Start: 4
End: 5

APPLICATION

ibex™ is designed to be located at or near the in-situ bitumen producing well pad to optimize energy use and approach the ideal heat cycle by directing all heat into steam generation or bitumen processing. ibex™ replaces significant sections of traditional water treatment at SAGD facilities resulting in reduced capital and operating costs along with improved GHG and environmental performance.

ALBERTA INNOVATES

CLEAN RESOURCES

ENVIRONMENTAL INNOVATION

WATER INNOVATION

PROJECT GOALS

The key goals of the project are:

- Validation of process design through successful testing of technology to meet ongoing steam handling requirements at bench scale with prototype and in-situ fluids
- Developing subsurface modeling to understand impacts of technology on subsurface environment and oil recovery
- Completion of scale-up design including front-end engineering design and cost estimate
- Development of brownfield and greenfield technology installation and operational cost estimates and market assessments

BENEFITS TO ALBERTA

The successful implementation of this technology or use of the knowledge generated could result in:

- Improvements in water use and GHG production through complete recycling of water and elimination of process - related disposal water, and reduced energy consumption compared to baseline operations
- Improvements in economic performance for SAGD facilities through reduced capital and operational expenses related to up to a 60% reduction of land footprint requirements and much of the above ground infrastructure connecting well pads to central processing facilities
- Potential for increased pipeline capacity through partial upgrading to produce higher-valued bitumen products

2 Students Trained

1 Patent

205kt Future GHGs Reduced

FINAL STATUS

NOV 2021

Demonstrated ability to safely control boiling with prototype fluids and condition and produce specification steam. Test results provided confidence to proceed to the next development phase with continuous processing of actual fluids at commercial conditions. TRL 5-7 Front End Engineering and cost estimates were completed for the next development phases. Brownfield commercial scale cost estimates and a market competitive assessment indicated a compelling value proposition.

Disclaimer • Alberta Innovates (AI) and Her Majesty the Queen in right of Alberta make no warranty, express or implied, nor assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information contained in this publication, nor that use thereof infringe on privately owned rights. The views and opinions of the author expressed herein do not necessarily reflect those of AI or Her Majesty the Queen in right of Alberta. The directors, officers, employees, agents and consultants of AI and the Government of Alberta are exempted, excluded and absolved from all liability for damage or injury, howsoever caused, to any person in connection with or arising out of the use by that person for any purpose of this publication or its contents.