ALBERTA INNOVATES

CLEAN RESOURCES

ENVIRONMENTAL INNOVATION

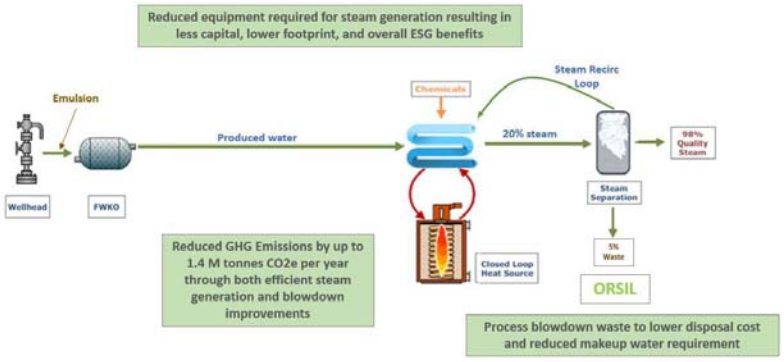
WATER INNOVATION

HipVap IFSG Commercialization Prototype Demonstration

FUNDING DETAILS

Scovan Innovations is leading the design, fabrication, installation, and operation of the HipVap Indirect Fired Steam Generator (IFSG) commercial prototype in Alberta. The HipVap commercial pilot will be a single production-scale IFSG unit, providing innovative produced water steam generation, coupled with the ORSIL disposal water treatment system. The unit will be installed and operated at a Steam Assisted Gravity Drainage (SAGD) facility near Bonnyville, Alberta. Once commercialized, the IFSG will reduce water consumption, water disposal rates, direct greenhouse gas (GHG) emissions, land use, and the cost per barrel of oil produced.

HipVap IFSG Technology



RECIPIENT:
Scovan Innovations

PARTNERS:
Scovan Engineering, Gemini Fabrication, Strathcona Resources, Orsico

TOTAL BUDGET:
$12,443,585

AI FUNDING:
$5,126,000 (TIER - ERP)

PROJECT DATES:
JAN 2021 – SEPT 2023

PROJECT TRL:
Start: 6
End: 8

APPLICATION

The IFSG eliminates the need for conventional SAGD water treatment processes for produced water, including produced water-cooling systems, to generate steam from produced water. As these systems are maintenance intensive, their removal offers operational cost savings, capital costs savings and more importantly significantly improves plant up-time. The IFSG is transformative technology deployment for the oil sands industry and is well suited for both conventional greenfield and brownfield SAGD application as well as small scale, well pad based, steam generation.

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PROJECT GOALS

The key goals of the project are:

- Design-build a commercial sized IFSG heat exchanger and test in an operating SAGD environment with variable produced water quality to determine the best design parameters
- Engineer, install and operate the IFSG balance of plant equipment, including a hot oil heater, steam separator, flash tanks, pumps and associated blowdown system to validate the produced water steam generation process design, validate CAPEX and OPEX, and identify any challenges for commercial development
- Develop Artificial Intelligence (AI) and Machine Learning to optimize operations
- Evaluate and measure the effectiveness of the ORSIL technology to reduce blowdown waste, disposal cost and environmental impacts of produced water waste

BENEFITS TO ALBERTA

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

- Reduced water consumption and disposal rates compared to conventional SAGD technologies by over 25%
- Reduced direct greenhouse gas (GHG) emissions by up to 1.4 M tons CO_2e per year
- Reduced land footprint requirements by 50% due to the IFSG replacing most of the water treatment equipment at conventional SAGD facilities; with pad-based deployment of the technology, land footprint impacts may be further reduced
- Improvements in capital and operational expenditures related to water steam generation

2 New Products/Services

59 Project Jobs

1000+ Future Jobs

2,654 kT/yr Future GHGs Reduced

CURRENT STATUS

MAY 2023

The HipVap unit has been successfully commissioned and started up in 2022. The unit is producing steam on produced water and the planned tests are underway. Data generated from various tests are being gathered, analyzed, and documented. Lessons learned are captured and incorporated into the commercial design. Development of a cloud-based data visualization dashboard and analytical tool has been completed while development of artificial intelligence for predictive analysis and controls is in progress.