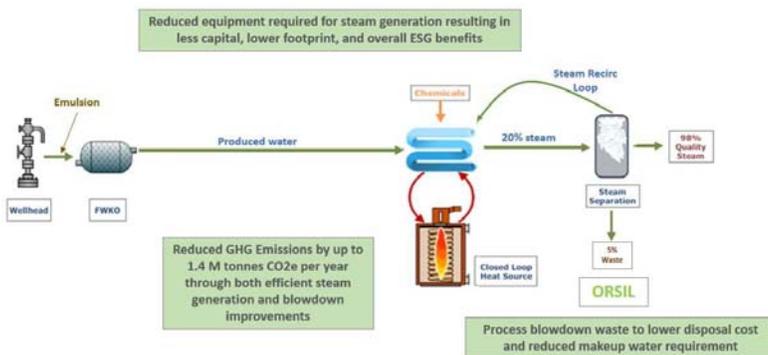


HipVap IFSG Commercialization Prototype Demonstration

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:

\$8,891,000



AI FUNDING:

**\$4,251,000
(TIER - ERP)**



PROJECT DATES:

**JAN 2021 –
FEB 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.



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
- 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 1.2 M tons CO2e 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

MAR 2021

Front-end engineering and design (FEED) is nearing completion and early-stage detailed engineering has commenced. Procurement of long lead equipment is underway with critical pumps and heating equipment on order. The process design for the IFSG exchanger, the key technology piece, is complete; mechanical design has commenced ahead of kicking off fabrication.