ALBERTA INNOVATES

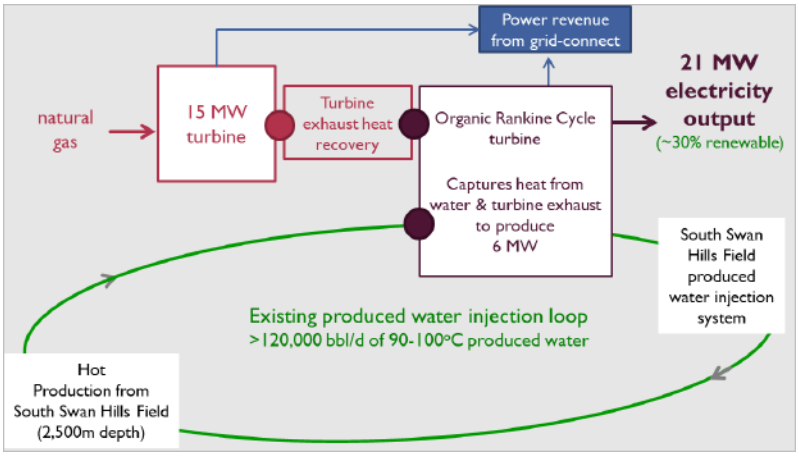
CLEAN RESOURCES

CLEAN TECHNOLOGY

RENEWABLE AND ALTERNATIVE ENERGY – ELECTRICITY GENERATION

FutEra Power Geothermal Co-Production from an Active Legacy Oil Field in Swan Hills, Alberta

FutEra Power in partnership with Razor Energy is deploying a commercial-scale project to produce economic, geothermal power with co-produced hydrocarbon fluids in the South Swan Hills oil field in Central Alberta. This project will prove the thermal co-production concept on a commercial scale, opening the doors for widespread deployment of such systems by hydrocarbon producers throughout the Western Canadian Sedimentary Basin. Expertise and experience gained through deploying geothermal co-production technology in Alberta will lead to significant global export opportunities for Alberta-based know-how. Results from this project will support the entire hydrocarbon value chain, while simultaneously providing FutEra, as a subsidiary of Razor, with a sustainable energy income stream and competitive advantage in a rapidly changing upstream production market.



FUNDING DETAILS

RECIPIENT:

FutEra Power (subsidiary of Razor Energy)

PARTNERS:

Natural Resources Canada

Emission Reduction Alberta

University of Alberta

TOTAL BUDGET:

$15,500,000

AI FUNDING:

$2,000,000

PROJECT DATES:

FEB 2019 – JUN 2023

PROJECT TRL:

Start: 7

End: 9

APPLICATION

FutEra Power is targeting applications for both geothermal heat and power. On the power side, the power generated will be sold directly to the Alberta electricity grid. The establishment of a commercial geothermal power industry opens a new type of energy for the Alberta energy story, and will entice new business to participate. Power revenue provides an additional revenue stream to FutEra Power and will solidify the company mandate to develop a sustainable energy mix. On the heat side, the geothermal heat generated could be sold to industrial or agricultural heat users, with FutEra developing new business outcomes. The geothermal energy target audience is vast and new business can be envisioned anywhere oil and gas is produced.

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PROJECT GOALS

- Design, implementation and continuous operation of the geothermal heat transfer system to validate the heat exchange model, the heat exchanger maintenance and water treatment costs, while demonstrating safe operation and regulatory compliance.
- Validation of the thermodynamic, energy production and economic modeling to illustrate cost-competitive geothermal energy generation
- Design, construction and operation of a 5-7 MW geothermal co-production power plant.
- Confirmation of neutral to improved hydrocarbon production.
- Significant GHG emissions reduction for FutEra Power/Razor Energy, and Alberta, over the life of the project

BENEFITS TO ALBERTA

- Initiation and development of the geothermal power industry in Alberta with Razor deploying this technology throughout its Western Canadian assets.
- Improved sustainability of Alberta's energy industry through co-produced geothermal energy with traditional hydrocarbon operations.
- Local economic diversification and job creation through all project phases including development, construction and operations.
- Demonstrate that good business is green business through improved operating returns at the field level and reduction in GHG emissions.
- Extended life of existing oil and gas wells with some of the additional revenue supporting lower economic thresholds for aging infrastructure and addressing well-life reclamation.
- Creation of new business ventures aimed at geothermal heat and power offtakes.

5 Publications

3-5 Students Trained

11-100 Project Jobs

101-1000 Future Jobs

2-3 New Products/Services

1-2 Spinoff Companies

10-100 kt/yr Project GHGs Reduced

>1000 kt/yr Future GHGs Reduced

CURRENT STATUS

DEC 2021

Detailed engineering for the power plant and procurement of long lead equipment are substantially complete. Execution phase of the project started in early 2021. Organic Rankine Cycle (ORC) equipment were successfully and safely decommissioned and transported from vendor site. Waste heat recovery unit, pressure vessels were successfully relocated at the plant site and set on piles. Grid power export contracts with AESO and ATCO completed. Final field construction slated to begin in Q1 2022.

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