ALBERTA INNOVATES

CLEAN RESOURCES

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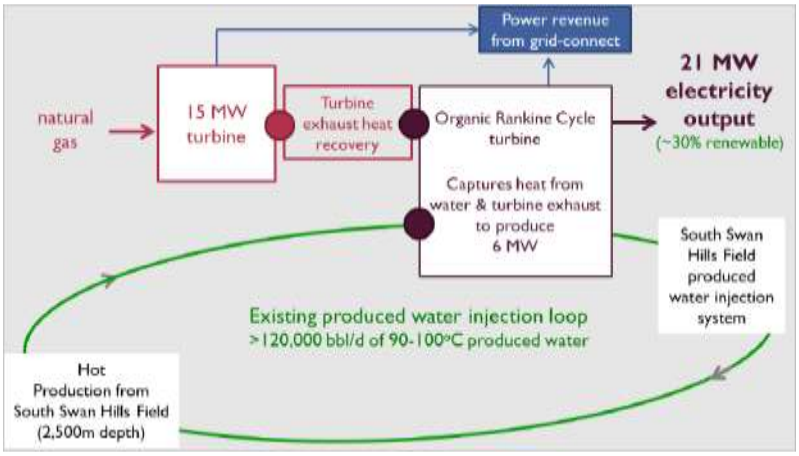
RENEWABLE AND ALTERNATIVE ENERGY PROGRAM

Razor Energy Geothermal Co-Production from an Active Legacy Oil Field in Swan Hills, Alberta

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 through 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 simultaneous providing Razor with a robust secondary income stream and competitive advantage in a rapidly changing upstream production market.



FUNDING DETAILS

RECIPIENT:
Razor Energy

PARTNERS:
Natural Resources Canada
University of Alberta

TOTAL BUDGET:
$15,500,000

AI FUNDING:
$2,000,000

PROJECT DATES:
Feb 2019 - Dec 2020

PROJECT TRL:
Start: 7
End: 9

APPLICATION

Razor 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 Razor Energy 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 Razor 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 heat exchange system to validate the heat exchange maintenance and water treatment costs and demonstrate safe operation.
- 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 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 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

NOV 2019

Razor Energy completed the engineering design for the power plant, reservoir and hot water supply analysis, design and field deployment of the heat exchange technology, full regulatory review, and full stakeholder engagement. The project received an Alberta Utilities Commission approval for the power plant and grid connection in October. A detailed economic model was prepared and verifies that the geothermal co-production pilot project is commercially viable and aligns with shareholder expectations. Razor is now proceeding with the execution phase of the project.

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