ALBERTA INNOVATES

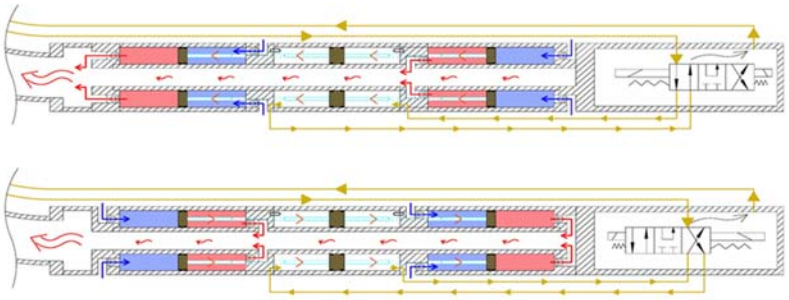
CLEAN RESOURCES

ADVANCED HYDROCARBONS

CLEANER HYDROCARBON PRODUCTION - RECOVERY TECHNOLOGIES

Next Generation Downhole Green Quad-Pump System With 60% Lower Energy Consumption and Reduced Life-Cycle Costs for SAGD and Conventional Oil Production

PMC has developed its metal on metal Green Downhole Quad-Pump System (PMC Quad Pump), tailored to reduce life-cycle costs and improve reliability in Alberta's steam assisted gravity drainage (SAGD) and conventional oil production. Having completed successful lab-scale testing, PMC will design, manufacture and test production pump units at CFER's testing facility and in field well deployments to reconfirm its performance against incumbent lifting technologies. PMC's Quad-Pump will contribute to Alberta's clean energy targets by reducing wellhead electrical power consumption by an estimated 60% and will help reduce operational and maintenance costs due to its reliable design.



FUNDING DETAILS

RECIPIENT:

PMC Pumps Canada Inc

PARTNERS:

Pending SAGD partner, Pending Conventional Oil partner

TOTAL BUDGET:

$7,665,000

AI FUNDING:

$1,900,000 (TIER- ERP)

PROJECT DATES:

JAN 2021 – DEC 2023

PROJECT TRL:

Start: 6

End: 9

APPLICATION

PMC Pump will target both electrical submersible pump (ESP) market and Rod-pump markets, bringing significantly higher energy efficiency and higher reliability as well as much higher pumping capacity than rod pumps. The PMC Quad-Pump will simultaneously compete into both conventional oil production and SAGD high-temp oil production segments in Canada, with a different variant of the products in each segment.

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PROJECT GOALS

The key goals of the project are:

- Further improve the design of the first PMC prototype pump system that has been tested in the state-of-art PMC pump test lab
- Manufacture and assemble the pilot production units according to the improved design.
- Validate and de-risk PMC's Quad Pump initial production units at C-FER Technologies' test lab as a simulated downhole environment of oil field applications
- Validate the Quad Pump system performance and reduced energy usage in conventional and SAGD production wells through pilot field deployments in partnership with leading producers.

BENEFITS TO ALBERTA

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

- Job creation and enhanced manufacturing skills for PMC and local manufacturing contractors, suppliers, and supporters in Alberta
- Reductions in electrical energy consumption at the wellhead resulting in up to 350 tons/year fewer GHG emissions for each typical SAGD well or other conventional well implement with a PMC Pump System
- Reduced operational and maintenance costs for producers' oil production wells

2 New Products/Services

9 Project Jobs

150 Future Jobs

3.5 kT/yr Project GHGs Reduced

1400 kT/yr Future GHGs Reduced

CURRENT STATUS

MAY 2023

PMC completed pump system manufacturing, assembling, initial in-house testing and another additional design upgrades of the SAGD pump configuration in advance of sending the pump for more comprehensive testing at C-FER. In-house testing results to date suggest operational performance of the pump is on track to meet or possibly exceed efficiency increase and GHG reduction targets during field subsequent deployment.