ALBERTA INNOVATES

CLEAN RESOURCES

ADVANCED HYDROCARBONS

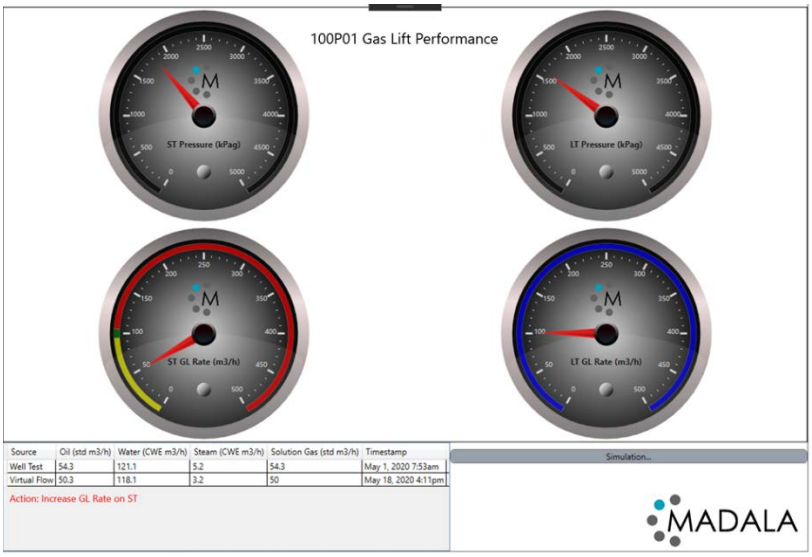
CLEANER HYDROCARBON PRODUCTION – RECOVERY TECHNOLOGIES

FUNDING DETAILS

Online Optimization and Surveillance of SAGD Production Wells

Madala has developed advanced software for full-physics SAGD wellbore modeling, used by Production Engineers for completion designs and offline production optimization for the last three years. The objective is to apply these models in an online environment for automated surveillance and advisory applications to increase production and reduce GHG footprint.

The project requires development of an automated, cloud-based model run-time service, connections to the production data system, dashboards and KPI screens, further development and hardening of the physics models for online-deployment and an optimization and parameter-estimation system for the physics models.



RECIPIENT:
Madala Software

PARTNERS:
Suncor Energy

TOTAL BUDGET:
$278,425

AI FUNDING:
$111,370

PROJECT DATES:
SEP 28, 2020 – MAY 3, 2021

PROJECT TRL:
Start: 2
End: 7

APPLICATION

The initial target market is in-situ oilsands producers and operators. However, the technology platform and physics models are not specific to in-situ production. Madala's technology can effectively model any onshore or offshore well completion, reservoir fluid and artificial lift system. The longer-term objective is to expand the surveillance capabilities to other conventional and non-conventional production systems. Many calculations and workflows will be directly deployable across different resource types.

ALBERTA INNOVATES

CLEAN RESOURCES

ADVANCED HYDROCARBONS

CLEANER HYDROCARBON PRODUCTION – RECOVERY TECHNOLOGIES

PROJECT GOALS

The key goals of the project are:

- Develop a parameter estimation and calibration platform consistently capable of aligning physics-based wellbore models to within +/- 10% of actual production data.
- Enhance the performance of the platform and models to calibrate and forecast performance in real-time.
- Deploy these capabilities in a cloud-based platform that requires minimal human interaction.
- Deliver a 2% increase in production volume.

BENEFITS TO ALBERTA

The primary benefit to the Province is through increased royalties and secondarily through reinvestment by Producers. Producers have used Madala's software to find production increases of 2% per well by optimizing individual well performance.

- A 2% increase across a 100,000 bbl/d field is 2,000 bbl/d or 730,000 bbl/y.
- In a stable market with bitumen revenue of $27 CDN/bbl, a 2% production increase generates $19.7 MM/y on 100,000 bbl/d. This provides $788,000/yr in royalties and almost $19MM for reinvestment by the producer. If 10% is invested in STEM personnel, at least ten more jobs can be created.

A tertiary benefit is expanding leading-edge knowledge and technology development within the Province. Advanced Digital Oilfield technology can be developed here, without being licensed from international companies.

1 Publications

2-3 Students Trained

1 New Products/Services

2-3 Project Jobs

90 Future Jobs

CURRENT STATUS

DEC 2020

The optimization engine has been developed and tested. The Calibration and Optimization workflows have been developed and tested and exceed project performance targets. The connections to Suncor's Plant Information System are complete and a simple charting interface has been developed to visualize well operating data from the historian. The Project is on schedule.