



# CELTIC-EUROGIA Proposers Day



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## Data-Driven Real-Time Wellbore Flow Monitoring Using Hybrid Distributed Acoustic and Temperature Sensing



Colby Sutton, Business Development Manager  
RGL Reservoir Management  
[csutton@rglinc.com](mailto:csutton@rglinc.com)



# Teaser



- *Develop a platform for prognostic prediction of flow regime/profile in the wellbore from the subsurface data measurement including fiber optic sensors, and pressure/temperature measurements.*
- *Partner companies could test sensors and optical equipment using the developed highly equipped flow loops, under the production conditions assigned by major operators.*
- *Integrated completion/DHM program seeks to develop state of the art AI/ML technologies to reduce environmental footprint of thermal wells taking into account of downhole information, intergranular mechanics, erosion/scaling characteristics, well completion/production strategy, and reservoir characteristics.*

# Organization Profile

- *RGL is a privately-owned international oil and gas engineering, manufacturing, and service company specializing in sand control and flow control technologies and solutions.*
- *The company has a worldwide footprint, with manufacturing locations in Canada, the United States, Colombia, and Oman, as well as licensed partners in Scotland and Dubai.*
- *RGL has invested significantly in R&D projects internally and via joint projects with 14 professors worldwide.*
- *+30 patents and +150 highly prestigious research papers published.*



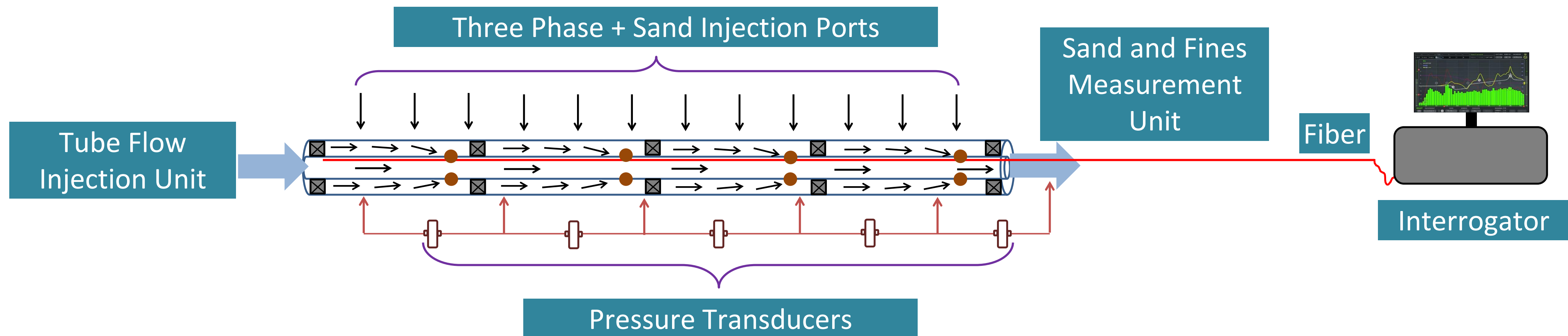
# Proposal: Objective & Deliverables



- *Develop a wellbore hydraulic monitoring system to better understand the complex flow dynamics in a wellbore and use real-time monitoring for decision making to minimize energy consumption, reduce GHG emissions, maintain well integrity, optimize completion designs, and simplify production operations.*
- *Data-driven DAS and DTS software combined with reservoir simulator and wellbore hydraulic simulator is the main deliverable.*
- *Flow regime, flow velocity, and sand ingress along the horizontal and vertical wells is predicted using the developed software/database.*

# Proposal: Introduction

- RGL's DHM project uses a wellbore simulator flow loop equipped with optical sensors and transducers.*



# Proposal: Outcome



## Downhole/Lab DAS/DTS System

Continuous implementation of the DHM system and wellbore management will result in reservoir conformance and improved productivity with less GHG emission and energy/water consumption.

**Wellbore and Flow Control Device Management**

**Developed Platform/Software**

**Flow Regime, Velocity, Pressure Temperature along the Well**



# Partners



Brent Fermaniuk Vahid Fattahpour, PhD Colby Sutton  
Mahdi Mahmoudi, PhD Morteza Roostaei, PhD



Michael Melnychuk Daniel Keough Nathan Frederick



CU  
WVU  
U of A



- JIP of Major Canadian Operators
- Operators in North America and the Middle East

# Contact Info



**For more information or interest to participate, please contact:**

Colby Sutton – BD manager - RGL Reservoir Management Inc.  
csutton@rglinc.com  
D +1 (403) 930.0370 | C +1 (403) 305.0435  
610, 700 - 2nd Street SW, Calgary, AB, Canada, T2P 2W1  
rglinc.com



**Presentation available via:**

