

# OGIC Project Case Study: Cavitas Energy with University of Strathclyde

## Computational Fluid Dynamics / Design Analysis of Mechanical Fluid Heater

**Founded in 2015, Cavitas Energy are a new entrant to the international oil and gas service industry. They invest heavily in R&D, introducing innovative new technologies in flow assurance, enhanced production and decommissioning.**

Cavitas Energy are developing a downhole deployable device that will produce heated fluid or steam within the wellbore of injection wells, or could be used as a bypass fluid heater in production wells. The device has enhanced oil recovery applications in primarily heavy oil environments.

The device is based around the rotation of a specially designed rotor within a housing. It could solely be run on downhole power devices such as, Electrical Submersible Pumps or Hydraulic Downhole Pumps. This technology is a unique offering, as downhole Enhanced Oil Recovery (EOR) devices utilising mechanical heating mechanisms are not currently offered within the market. This device will fit neatly into the oil industry's requirement for technology innovation.

This project brings with it many benefits to the oil and gas sector, including the ability to allow thermal EOR to be undertaken in wells previously thought not suitable for such an EOR technique. Furthermore, the device has the ability to increase recoverable reserves, production rates and flow assurance, whilst also reducing costs and improving the efficiency of recovery.

Cavitas Energy engaged with OGIC and selected the University of Strathclyde as their academic partner. The University of Strathclyde has a strong track history of engaging with industry partners. Furthermore, the Department of Mechanical

and Aerospace Engineering Industrial Fluid Mechanics (IFM) Group has extensive experience in experimental and computational fluid mechanics.

**“I am more than impressed with the partnership between Cavitas Energy, University of Strathclyde and OGIC, with all parties collaborating effectively. The benefits from this project are vast, and may lead to further research in this area.”**

Steven Johnstone,  
Cavitas Energy

**“The University of Strathclyde's Oil and Gas Institute supported Cavitas Energy by using computational fluid dynamics to model what was happening to the fluids heated within the rotor, which allowed the design of the rotor to be optimised. The project's outcomes potentially lead to a unique offering which would be incredibly advantageous to the market. We are delighted with the successful project outcome with Cavitas Energy, and hope for further opportunities to work together in the future.”**

Martin Walkinshaw,  
University of Strathclyde



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