

Innovate UK

Results of Competition: Cleaner, more efficient conventional fuels FS
Competition Code: 1503_FS_ENRG_CF

Total available funding for this competition was £1M from Innovate UK

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
M-Flow Technologies Ltd Cranfield University	Hydrodynamic Oil Sample Extraction' (HOSE)	£149,750	£119,814
Project description - provided by applicants			
<p>M-Flow Technologies Limited develops metering solutions for the oil industry using innovative and novel composite materials for sensor construction which, combined with built-in microwave sensing elements, provides a robust and economical solution but one that would be even more valuable to the industry if it were more accurate. To increase the accuracy of this type of meter, adjustments must be made to the interpretation of the meter output to cater for different types of oil that may be metered. Currently the only fully reliable way of making these adjustments is by off-line analysis of manually or automatically collected oil samples, a costly and time-consuming process leading to delays in final information being available. This in turn leads to inefficiencies in processing and commercial activities for bulk oil handling in pipelines and tanks, particularly when ownership of the oil is changing hands. This project will explore the feasibility of new methods of obtaining real-time correction factors to allow M-Flow's meters to provide immediate metering results up to 30x more accurately, greatly increasing their value to the oil industry and helping it become more efficient.</p>			

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Lucideon Ltd	Contactless Field Enhanced Processing	£149,325	£89,594
Project description - provided by applicants			
The ceramic sector is an energy-intensive process industry dependent on high temperature kilns to make its products. Manufacturers are seeking breakthrough innovations to yield significant changes in their environmental impact having exhausted the benefits from best available technologies. This study will assess an innovative energy efficient process of ceramic manufacture using a prototype rig. It will verify the potential reduction in CO2 emissions and provide reliable evidence to support further investment by industry.			

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Process Systems Enterprise Ltd University of Leeds Wood Group Kenny Ltd	Corrosion prediction in CO2 transport - A new paradigm	£149,352	£105,768
Project description - provided by applicants			
<p>A complete Carbon Capture and Storage (CCS) system requires safe, reliable and cost effective solutions for the transmission of CO2 from the capture facility to the location of permanent storage. Carbon steel pipelines are considered to be the most cost effective solution for this purpose, however, they are susceptible to corrosion when water is present in the CO2 stream, particularly if anthropogenic impurities are present. This feasibility study aims to establish the importance of the liquid phase composition and pH on corrosion susceptibility across a test matrix aligned with likely CO2 transportation conditions in the UK. As such, the project represents a key building block towards the development of a unique corrosion prediction tool for supercritical CO2 transport. An experimental framework will provide the necessary inputs for the corrosion-related aspects of the model with ; predictions of corrosion rates and mechanisms will be possible. Combining this with state of the art modelling of the phase equilibria and measurement of the liquid pH takes the correlation modelling to a new paradigm: allowing us to understand much more about the conditions susceptible to corrosion.</p>			

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Ketonex Ltd Energy Technology Centre Ltd	High Temperature Resistant Polymer Seals (HyperSeal)	£149,842	£115,283
Project description - provided by applicants			
<p>The primary outcome of the project is the development and demonstration of an advanced thermoplastic polymer system (Ketonex-HT) which is designed for operation as a seal material at higher temperatures and pressures than existing thermoplastic materials. This addresses the technology gap identified in the oil and gas industry for improved seals for operation in the high pressure, high temperature domain which currently limits access to recovery of certain classes of deep fields. The main outcome is the maximisation of recovery and improving production efficiencies and by enabling safe, reliable operation of systems operating in the high pressure high temperature (and aggressive chemical environment) with adequate lifetime. This allows economic operation of field at pressures and depths which have hitherto been discounted, and contributes to an increase in recoverable reserves initially in the UK.</p>			

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Safeguard Nautica Ltd University of Plymouth Exeter Fabrication Ltd	Subsea Decommissioning Pile Cutting System - Embedment Cutting Head	£149,630	£123,065
Project description - provided by applicants			
Within the North Sea Oil & Gas sector, decommissioning of oil field inventory is set to become a major sub-sector in it's own right. The logistical and environmental challenges present a unique and discernable opportunity for the development of reliable, repeatable and cost effective techniques which have strong market potential regionally and globally for many years to come. To address these needs, a consortium led by marine consultants Safeguard Nautica Ltd, will perform a Technical Feasibility Study for a subsea cutting system optimised for piled foundation removal. The project is supported by an expert design engineering knowledge base from Plymouth University and will include experimental testing facilitated by specialist marine and offshore fabrication company, Exeter Fabrication Ltd.			

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Process Systems Enterprise Ltd	Feasibility study for Advanced Real-time Production Optimisation (ARPO) of Integrated Oil & Gas Production Facilities	£149,880	£104,916
Project description - provided by applicants			
<p>Maximising the exploitation of the UK Continental Shelf's (UKCS's) remaining oil & gas reserves is critical to UKtax revenues, security of energy supply, balance of payments and competitiveness of manufacturing industries. This feasibility study proposal is for pre-commercial development of an Advanced Real-time Production Optimisation (ARPO) tool to enable UKCS Oil & Gas operating companies to optimise production in integrated oil & gas production assets in real time in order to maximise revenue and increase extraction efficiency. It uses well-to-facilities mathematical models of the production system combined with operational data within a rigorous mathematical optimisation framework to determine, for example, which wells to deploy, optimal gas lift flow rates for each operating well and other operational settings. The unique technology addresses well-known deficiencies of currently-deployed tools, draws on extensive existing PSE technology and experience, transfers and adapts well-established existing technology and expertise from other sectors, and involves engagement of key stakeholders to develop requirements and validate the pre-commercial development.</p>			

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Wilson Bio-chemical Ltd University of Leeds The Biorenewables Development Centre Ltd North Energy Associates Ltd Sol Environment Ltd	Co-firing waste-derived torrefied biogenic fibre with coal	£140,966	£115,425
Project description - provided by applicants			
<p>The UK has had to develop a national strategy to meet EU targets for reducing the amount of biodegradable municipal solid waste (BioSW) going in to landfill. By next year, the UK must have reduced levels of BioSW going to landfill by 35% compared to 1995 levels. This will mean a maximum of 6.9 million tonnes BioSW going to landfill. The UK has performed well but further reductions are still required, and BioSW currently accounts for 55-75% of the municipal solid waste going to landfill. This resource of lignocellulosic material (such as paper, cardboard, wood, and natural fibre) has a value. This project aims to develop a technology that can separate and upgrade the BioSW into a commodity fuel that can be sold to solid fuel users, such as coal-fired power stations and domestic users. Both the commercial feasibility and the greenhouse gas emissions savings will be evaluated. Successful completion will deliver an alternative technology to landfill or "energy-from-waste" which will help the UK to deliver its national strategy on waste, meet EU targets, and reduce the environmental impact of waste use and power production.</p>			

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