

# Innovate UK

**Results of Competition: Energy Catalyst - Late Stage - Round 3**

**Competition Code: 1504\_CRD\_EGS\_ENCATLSR3**

**Total available funding for this competition was £10M from Innovate UK and EPSRC (over all strands)**

**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
Syngas Products Group Ltd Cranfield University	Pre-commercial technology validation of a clean cold renewable syngas production plant.	£1,019,203	£352,937
<b>Project description - provided by applicants</b>			
<p>Syngas Products Group Limited has developed and built a full scale prototype Advanced Thermal Treatment(ATT) plant to thermally recycle the non-recyclable residual fraction of household and commercial waste into usable clean pure synthetic gas. This technology will (1) reduce transportation emissions, the technology is designed at a small modular scale to be placed locally where the waste arises or where there is a need for fuel.(2) enhance energy security by displacing the fossil fuel sources of the above components; and utilising the energy within the non-recyclable fractions of waste that is being sent abroad (2.6Mt of RDF was exported from the UK in 2014 - Defra). (3) reduce the cost of energy by utilising the raw fuel stock that the UK currently pays to export and displace the fossil fuel that is imported to operate such industries as the brickworks, lime producers, ceramics producers where there is a need for clean fuel to prevent the contamination of their products. This proving process will accelerate the achievement of commercial deployment and unlock further investment. Within the gas market it will provide a renewable baseload fuel source.</p>			

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<b>Recycling Technologies Ltd</b> University of the West of England	Commercialisation of plastic waste derived fuel for generating electricity	£1,892,496	£1,051,741
<b>Project description - provided by applicants</b>			
<p>In the UK, 3.6 MT of plastic waste was generated in 2010 out of which only 0.8 MT was recycled and 2.8 MT was sent to landfills and Energy from Waste [EfW] plants. This is a loss of a valuable resource. Recycling Technologies aims to utilise this potential opportunity. We have developed a technology, the Warwick FBR, to process end-of-life plastic waste, even when it is mixed, and turning it into a hydrocarbon product called Plaxx. Plaxx is an Ultra Low Sulphur [<math>&lt;0.01\%</math>] alternative to crude oil derived Heavy Fuel Oil. A Warwick FBR can be taken to the site where plastic waste is generated and the Plaxx produced can be used to generate cleaner electricity at the same site by running it in a generator set. The engine trials carried out so far have shown promising results and now we need to scale up to demonstrate the use of Plaxx at a commercial scale. The aim of this project is to conduct industrial trials of Plaxx and develop a partnership with an engine manufacturer to establish pathway to market. Success of this project will reduce the plastic waste going to landfills and EfW plants, make plastics a more sustainable material and provide a domestic source of energy.</p>			

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D&D Armstrong Ltd (T/A North Sea Logistics) Denley Hydraulics Ltd	Pivoting Deck Vessel prototype construction	£3,704,394	£1,666,977
<b>Project description - provided by applicants</b>			
<p>The project aim is to build a prototype Pivoting Deck Vessel (PDV) ready for trial by utilities, in which the PDV will demonstrate that it increases offshore wind electricity generating revenues by reducing turbine downtime, thereby decreasing the cost of offshore wind electricity and lowering UK consumer electricity bills. By increasing renewable electricity generation, the amount of fossil fuel generation required reduces, thus also lowering carbon emissions and increasing security of supply. Utilities require vessels to transfer crew and cargo to offshore wind turbines for maintenance, as well as for wind farm construction. The problem is that current vessel designs do not allow for safe and cost-effective access to turbines in rougher seas and so when seas are high, turbine downtime increases, electricity generating revenues are lost and the costs of offshore wind generation rise. The innovative pivoting deck design of North Sea Logistics' PDV addresses this problem, allowing safe access to turbines in higher seas for crew and cargo. The PDV was a 2011 finalist in the Carbon Trust's Offshore Wind Accelerator Access competition.</p>			

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Swift TG Energy (Scotland) Ltd University of Edinburgh Autarke (UK) Ltd	WindSurf- Smart energy for the 21st century	£1,135,712	£619,990
<b>Project description - provided by applicants</b>			
<p>Conventionally designed wind turbines only operate efficiently in steady, uninterrupted air. For this reason, most sites are away from customers to take advantage of areas with constant clean wind. Our commercial partner ( autarkE) reports that many customers want to site turbines close to light industrial operations. However, they advise them not to, because conventional designs do not work efficiently with the swirling, variable nature of wind at such sites. We present a radical re-design of vertical axis wind turbine, with key technological improvements that will allow efficient operation in small-footprint, urban sites. Such sites have the added advantage that they are close to consumers, minimising transmission losses. WindSurf is a vertical axis, active pitching wind turbine. Our patented control technology uses servomotors to continually alter blade pitch. This allows self-starting in windspeeds as low as 3m/s. We seek funding to build a 16.4kW prototype, certify our design and device, establish a production facility and launch it commercially.</p>			

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