

Grant Funding Success Stories: Engineering

Since 2007, Innovate UK has invested around **£2.5bn** to help businesses across the country to innovate, with match funding from industry taking the total value of projects above **£4.3bn**.

Innovate UK has helped **8,500** organisations create around **70,000** jobs and added an estimated **£18bn** of value to the UK economy. In the period 2019/2020, Innovate UK received **5,794** applications for grant funding and made **949** awards. **£645,886** was awarded in terms of grant funding, **24%** of the total amount applied for.

Fibreforce Composites Limited **Industry Sector: Pultrusion composites**

Fibreforce Composites Limited, a pultruder based in Runcorn, Cheshire, applied to Innovate UK for funding under the Small Business Research Initiative to engage in HIPAC (High Performance pultrusion for advanced composites).

Fibreforce says that using pultrusion to manufacture wind turbine (WT) components, such as spar caps, will make operations significantly more efficient and will enable the development of much larger WT blades.

Wind energy continues to grow in importance, generating **3.5%** (960TWh) of the total electricity produced worldwide in 2018 – up from **0.8%** in 2008.

The UK, with **57TWh (17%)** of total electricity generated, is a leading figure in the industry. In 2018 the UK started running the world's largest offshore wind farm – the **£1 billion** Walney wind farm off the coast of Cumbria, which generates enough energy to power **600,000** homes.

Fibreforce states that advanced composites

technologies are becoming critical in wind turbine blades production. Pultrusion is a continuous manufacturing process for polymer composites where the part/profile formed is pulled through a heated die.

Pultrusion improves the efficiency of manufacturing blade components, lowers costs and improves composite quality. Weight savings and stronger parts have a positive knock-on effect as it allows other components such as gear boxes, the nacelle and tower to be downsized. The spar cap is a key structural element inside a WT blade. They run along both sides of the blade to provide crucial reinforcement and take-up most of the mechanical load.

HIPAC aims to improve the spar cap pultrusion process by developing a digital tool to allow for the rapid design of the pultrusion line prior implementation, in-line quality control and improved process control in a tailored and original way.

This will enable the production of more cost-effective stronger and lighter parts.

The application was successful and the project has received **£295,161** by way of funding

CLARITAS

Tribosonics Limited **Industry Sector: Embedded sensing technology**

Tribosonics Limited, a Sheffield based company that specialises in embedded sensing technology, applied to Innovate UK for grant funding for a collaborative R&D project.

The company is innovation-led and it drives transformation by using its unique ultrasonic sensing technologies to address challenges in tribological contacts (wear, friction and lubrication).

Using its unique Technology Stack, it provides data of unmatched information density at an embedded component level with core measurement competencies in stress, lubricant film thickness, wear, fluid properties, contact pressure and non-destructive testing.

Tribosonics have developed a pump monitoring system using their ultrasonic measurement technology.

The company's existing monitoring product, the BD002, works very well for situations where there is almost pure gas or pure liquid. However, in-field applications, the fluid flow inside the pump may be considerably more complex and Tribosonics are currently unable to accurately interpret measurements achieved outside the situations of almost pure gas or pure liquid.

Improving the current product through improved signal processing as a result of



carrying out this project and correlating their measurements with measurements of the various states in the pump will result in several benefits including reduction in time spent commissioning the product, reduction in time spent by in-house engineers supporting field engineers, an increase in the number of products sold due to improved capabilities and improved processes due to better monitoring technology.

Additionally, and significantly, improving the measurement science will open up new opportunities in new markets, especially in fluid process monitoring.

Tribosonics was successful in the application for funding and received **£98,167** for the project.

CLARITAS

Pinweld Limited **Industry Sector: Plastic welding**

Pinweld Limited, an expert in precision polymer welding technology, applied to Innovate UK for grant funding for a study into an innovative technology to repair cracks in plastics.

The aim of the project is to "repair" damaged plastic rather than "replace" it and make a positive impact on the environment and help other countries to do the same.

Many engineering and structural components are made of plastic, when previously they would have been made from metals or even wood. A potentially vast and multi-sector marketplace, this is particularly true for the automotive sector, where plastics are increasingly used for panels, components and bumpers.

The focused challenge Pinweld is addressing is that it is currently virtually impossible to repair cracks in most plastics without damaging them further due to the excessive heat required in existing repair processes.

Pinweld's unique solution maintains the high value of these components by quickly and discretely 'removing' almost all trace of a crack. A completely novel method of plastic welding, it has been met with great enthusiasm by automotive repairers and insurers alike.

The overall project has received **£378,898** by way of funding.



Meet the Claritas Team:

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