



## **2020 Proof of Concept R&D Competition Winners:**

### **BoScoot E Scooter Proof of Concept Prototype Development (Grant £147,833)**

Lead: CHESTER 32 LTD

Technology area: Electric Vehicle Development

Following a successful NVN-funded Feasibility Study, the innovative BoScoot personal mobility product is progressing to Proof of Concept. The aim is to deploy the best of UK design and engineering innovation to deliver a combination of mule and prototype E-Scooters which significantly raise the bar for low emission micro-mobility hardware.

Based on route-to-market understanding developed through the Feasibility Study, BoScoot Proof of Concept will prove out the technical and commercial concepts for a new generation of desirable, high-quality BoScoot micro-mobility products. The BoScoot is positioned to move sector emphasis away from ultra-low cost, low quality design and manufacture.

Total Project Cost: **£295,666**

Location of Project: Oxford

### **MUSTReCaB (Morris Ultralight Structural Thermoplastic Recycled Carbon Body Project) (Grant £149,996)**

Lead: MORRIS COMMERCIAL LTD

Technology area: Lightweight body structures

The MUSTReCaB project builds upon previous successful feasibility study and proof of concept research projects to deliver an ultra-lightweight solution for producing complex, feature-rich load bearing structural panels in reinforced recycled thermoplastic carbon fibre.

The project will develop a material and production process for cost effectively manufacturing lightweight thermoplastic matrix recycled carbon fibre panels capable of being used in structural and semi-structural applications. Production approaches catering for one off parts through niche to high volume requirements will be considered, with the technology being demonstrated with prototype components manufactured and integrated onto a prototype zero emission Morris Commercial delivery vehicle.

Total Project Cost: **£312,856**

Location of Project: Mappleborough Green, Warks.

## **Moke Lightweight Sustainable Body (Grant £150,000)**

Lead: ARC V LTD

Technology area: Electric Vehicle Development

MOKE International is a UK Company that has been manufacturing virtually the same vehicle for over 60 years - that is about to change! MOKE, with its partners, will develop a new MOKE vehicle utilising the world's most cutting edge materials used in the niche vehicle segment to create a class leading sustainable, safe and light weight monocoque used with a new Electric powertrain option. This is part of a whole vehicle redesign that will deliver a next generation MOKE capable of being the foundation on which the companies continuing journey can be built.

Total Project Cost: **£300,000**

Location of Project: Coventry / West Midlands

## **FAST: Full 4-quadrant Active Suspension Technology (Grant £149,740)**

Lead: DOMIN FLUID POWER LTD

EV Enabler – Lightweight suspension / Additive Manufacturing

In this project the consortium will develop, simulate and test a prototype lightweight active suspension system featuring dynamic ride height, spring rate and damping control to reduce drag and improve vehicle efficiency. Aston Martin Lagonda will set requirements, Cranfield University will carry out CAE simulation and optimisation, and Domin Fluid Power will design, manufacture and test an integrated, Additive Manufactured active suspension unit to TRL5.

Total Project Cost: **£299,479**

Location of Project: Bristol

## **RIFT 64 (Grant £149,924)**

Lead: RIFT TECHNOLOGY LTD

Technology area: Electric motor development

RIFT64 is a 64-120kW traction motor development that builds on our existing 10-30kW (TRL8) project to bring the market a high-powered ultra-efficient electric drive with advantages of: significant weight reduction, lower cost and efficiencies that result in a range increase of up to 75%, plus other benefits. The consortium of RIFT Technology, MCP and BradshawEV brings together innovation, production expertise, customer knowledge and route to market. This leads to a strong project to prove the concept of the RIFT64 motor and its suitability for the Electric Utility Vehicle market. Collaboration is expected to nurture existing commercial relationships between the parties.

Total Project Cost: **£299,848**

Location of Project: Malvern, Worcs.

## **Solid State Storage Heat Exchanger 'S3HE' (Grant £126,695)**

Lead: [SUNAMP LTD](#)

Technology area: [Electric vehicle ancilliary systems](#)

The ability to provide suitable levels of passenger comfort in electric vehicles in cold conditions, whilst minimising the reduction in zero emission range, continues to be an industry challenge. Sunamp, Bergstrom and Horiba MIRA will develop an efficient cabin heating solution for electric vehicles. Our solution is to use advanced high temperature solid state Phase Change Material (PCM) integrated into the vehicle HVAC air handling system to provide a more efficient solution to electrical heating or heat pumps. Additional benefits would be to speed up the immediate cabin heating and windscreen demisting giving drivers improved comfort and safety.

Total Project Cost: **£253,390**

Location of Project: East Lothian, Scotland

## **Lightweight composite structures for hydrogen storage systems (Grant £147,963)**

Lead: [ARCOLA ENERGY LTD](#)

Technology area: [Hydrogen Fuel Cell Electric Vehicle ancilliary systems](#)

Hydrogen and fuel cell engineering specialist Arcola Energy will work with composites manufacturer Permali and the National Composites Centre to develop lightweight systems for on-board hydrogen storage. As well as helping to unlock zero-emission heavy-duty transport the project will form the basis of a UK supply chain for hydrogen storage systems.

Total Project Cost: **£295,926**

Location of Project: London

## **Enabling Simulation for Niche Vehicle Manufacturers (Grant £149,201)**

Lead: [TOTALSIM LTD](#)

Technology area: [Electric vehicle simulation tools](#)

Niche Vehicle Manufacturers (NVMs) are presented with significant barriers when trying to adopt simulation into their design processes. The 'Enabling Simulation' project will work towards allowing SME automotive manufacturers to undertake best practice electric motor thermal management and aerodynamic simulations using cloud-based software. Project partners TotalSim and Electrical Cooling Solutions will take their respective Computational Fluid Dynamics and electric motor simulation software and develop them for deployment on the cloud for use by Niche vehicle manufacturers. The combined platform will be tested and validated by Ariel Limited as part of the development of their next generation vehicle platform.

Total Project Cost: **£298,402**

Location of Project: Brackley, Northants.

## **Niobium enhanced lightweight vehicle chassis and suspension systems (Grant £149,334)**

Lead: BRIGGS AUTOMOTIVE COMPANY (BAC) LTD

Technology area: Lightweight body structures

Niobium is a naturally occurring element (no.41), readily available, reliable, soft metal that is ductile, malleable and highly resistant to corrosion. Because it enhances structural properties and functionality, Niobium is used in a wide range of materials and applications in the Aerospace, Architectural and Energy sectors.

Based on successful completion of a recent Feasibility Study into the use of Niobium enhanced metals for automotive light-weighting, the consortium has established the technical feasibility of their concept for a Niobium enhanced lightweight vehicle chassis and suspension systems and aims to develop and produce structural prototype systems demonstrated on a BAC Mono vehicle.

Total Project Cost: **£298,667**

Location of Project: Liverpool

## **LandGlider (Grant £149,927)**

Lead: CARSTEN ASTHEIMER LTD

Technology area: Electric Vehicle Development

LandGlider is a road-legal electric concept car, with efficiency driving it's design, in order to maximise the range of an electric vehicle through weight reduction, drivetrain efficiency, aerodynamics and low rolling resistance all optimised to demonstrate real world capability. The objective is that the car will run for over 400 miles on a single charge.

Total Project Cost: **£399,124**

Location of Project: Solihull, West Midlands