

Pivot into Space Awarded Grants

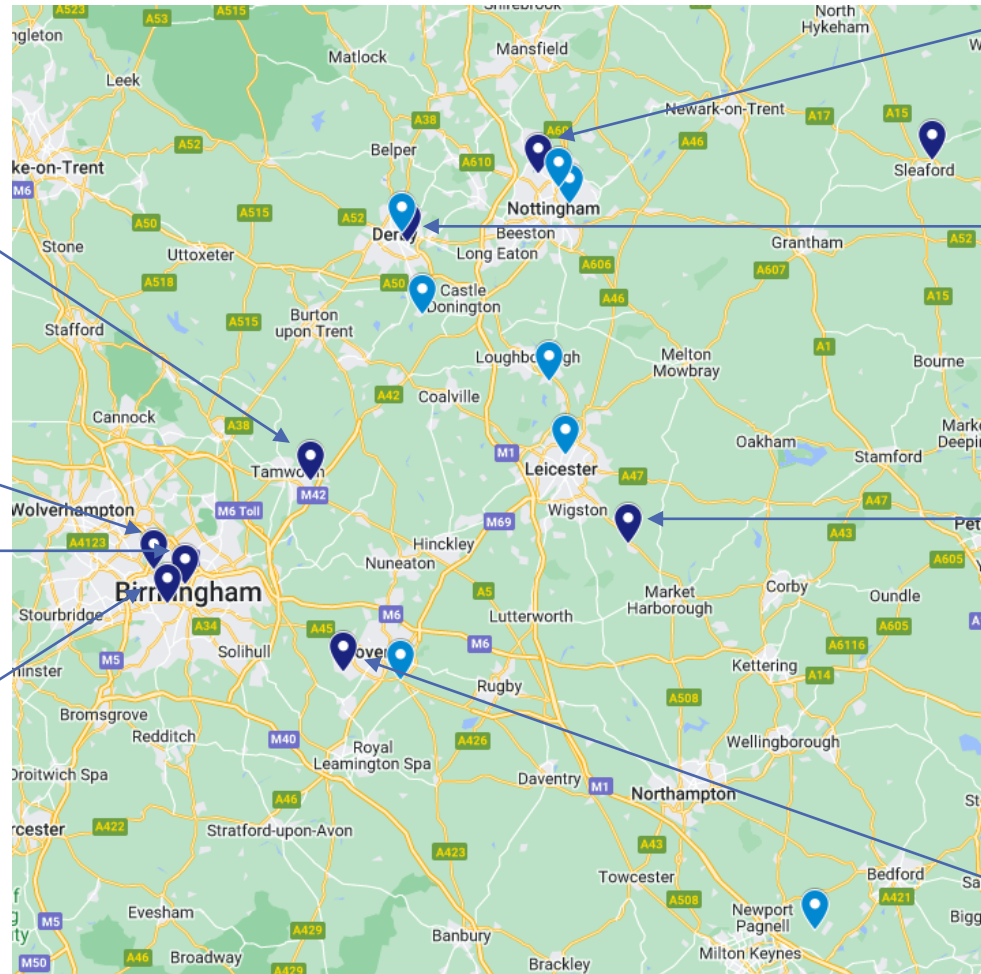


PAK Engineering
3D Printed Heat Exchanger with Active Thermal Management

Burcas
Manufacture of high precision propulsion components

C. Brandauer & Co
Advanced Manufacturing for space motors

Novocomms
Antenna demonstrator for a new LEO-PNT receiver terminal



Texture Jet
Surface finish technology for composites

Geospatial Ventures
Definition of a CubeSat constellation for infrastructure monitoring

European Thermodynamics
Thermo-Electric Cooler for Space Instruments

Penso Consultancy / SHD Composites
Sustainable Flame-Retardant Composite Structures

Satellite-BaHX

❑ PAK Engineering Ltd

❑ Project Overview

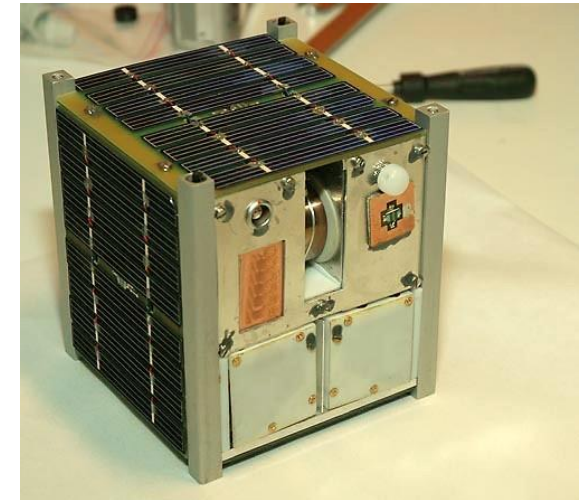
Spacecrafts require rechargeable batteries powered by sunlight exposed solar panels, with energy harvested and stored then used in shadowed periods. It crucial to harvest energy needs in short periods, while ensuring batteries don't degrade while operating in the extreme near-space conditions (-30+80°C).

This problem is critical in small satellite classes (i.e. CubeSat), where limited space constrains thermal management.

Satellite-BaHX will improve reliability to enable future more advanced applications, through developing a dynamic thermal management system capable to map the battery temperature three dimensionally, and include an optimised heat addition control system. This will keep battery pack operation temperature homogeneous at target set points in space operation

❑ **Grant Awarded** : £18,478

❑ **Project Duration** : 9 months



[Ncube-2](#)

SpaceTEC Project –

Develop, build and test of a 2 stage Thermo-Electric Cooler for Space instruments



Company: European Thermodynamics Ltd

"Pivot Into Space": SpaceTEC Project: *To develop, build and test a multi-stage thermoelectric device for temperature control suitable for space instruments such as Star-Trackers.*

Project Overview: The SpaceTEC project underscores European Thermodynamic Limited's commitment to developing and building in the UK, high-integrity devices. At its core is the development, construction, and testing of a multi-stage thermoelectric device designed to meet the demanding requirements of space instruments, but with technical challenges to overcome to be able to demonstrate the company's technology to the sector.

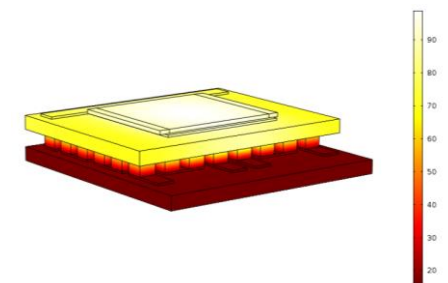
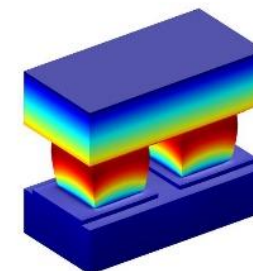
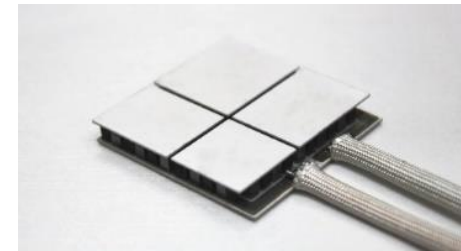
SpaceTEC project signifies ETL's commitment to innovation, reliability, and long-term business value. Stakeholders and the wider community are invited to follow the journey and share in the success of this pioneering endeavor.

Grant Awarded: £42,936

Date: January 1st to 31st December 2024



European Thermodynamics Limited
Intelligent Thermal Management



Sustainable Flame-Retardant Composite Structures



❑ **Penso Consultancy Limited / SHD Composite Materials Ltd**

❑ **Project Overview**

Penso and SHD will jointly develop a flexible architecture for producing sustainable, flame-retardant press-formed composite panels that is scalable in both structural loading capacity requirements and production volumes, concluding with a validated, production ready material strategy and a proven manufacturing process suitable for space applications.

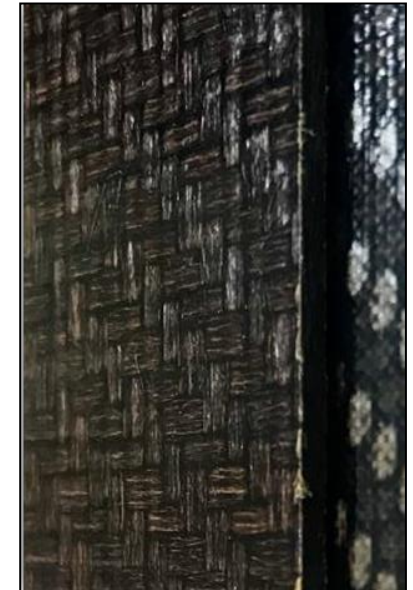
❑ **Grant Awarded : £45,924.80**

❑ **Project Duration : 9 months**

PENSO



Hydraulic Press / Aluminium Tool



PFA + Flax fabric / PFA + Carbon fabric

ArcSlice – Next generation composite preparation

- ❑ **Company: Texture Jet Ltd**

- ❑ **Project Overview**

The aim of project is to develop ArcSlice from the initial prototype into a robotized cell solution, and further validate the performance and viability of ArcSlice to start the development journey from TRL 3 to 6, with the ultimate goal of creating a new innovation within the UK manufacturing sector.

ArcSlice® is an entirely new technology which will deliver scalable surface processing of non-conductive materials in-situ to prepare the surface prior to bonding or coating. Through this Pivot into Space project, ArcSlice will be directly developed to target space applications, whilst validating the performance through benchmark studies against the current state of the art.

- ❑ **Grant Awarded: £50,000**

- ❑ **Project Duration: 12 months**



TextureJet^{LTD}



Motors in Space

❑ C Brandauer & Co

❑ Project Overview

This project sets out to exploit Brandauer's existing expertise in rotor and stator laminations to provide the space sector with more efficient electric motors of varying sizes.

Brandauer's ability to stamp ultra thin electrical steels, along with infra-red and in-die glue bonding technology can be exploited to improve temperature management , temperature resistance and efficiency in motor designs. Their bonding method also has the advantage of not requiring secondary stamping lubricants which reduces the risk of lubricant particles remaining post-processing and causing outgassing.

Brandauer have several existing customers who already supply into the space sector and are supporting them with this project.

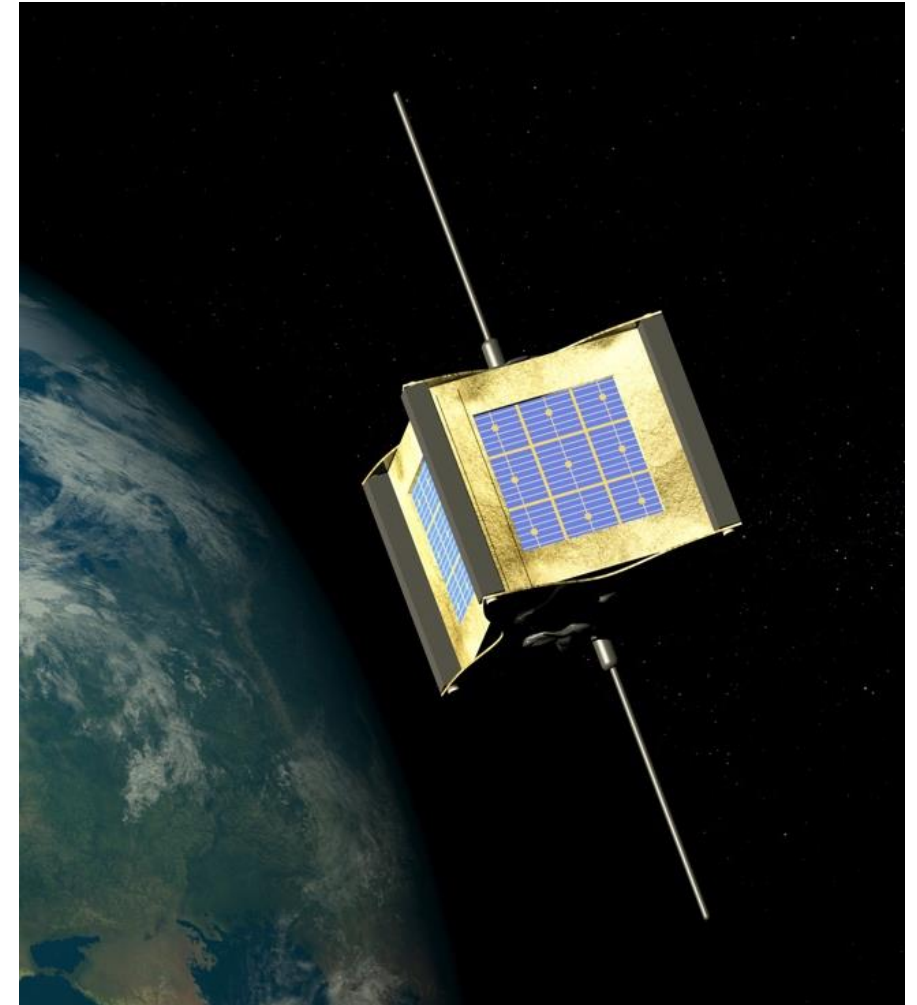
Grant Awarded : £31,424

❑ **Project Duration : 10 months**





- ❑ **Geospatial Ventures Ltd**
- ❑ **SPRITE:** Space-based RTK for Infrastructure, Transport, and Environmental Monitoring
- ❑ Definition of a CubeSat constellation to provide Real Time Kinematic corrections to ground based sensors enabling remote monitoring of infrastructure. SPRITE will create a proof-of-concept physical "FlatSat" prototype to TRL 3:
 - Using Commercial Off The Shelf (COTS) components to minimise cost, and maximise flexibility
 - Defining a payload that provides communication capabilities to cast RTK corrections from space
- ❑ **Grant Awarded : £45412**
- ❑ **Project Duration : 8 months**



Manufacture of high precision propulsion components

❑ Burcas Ltd

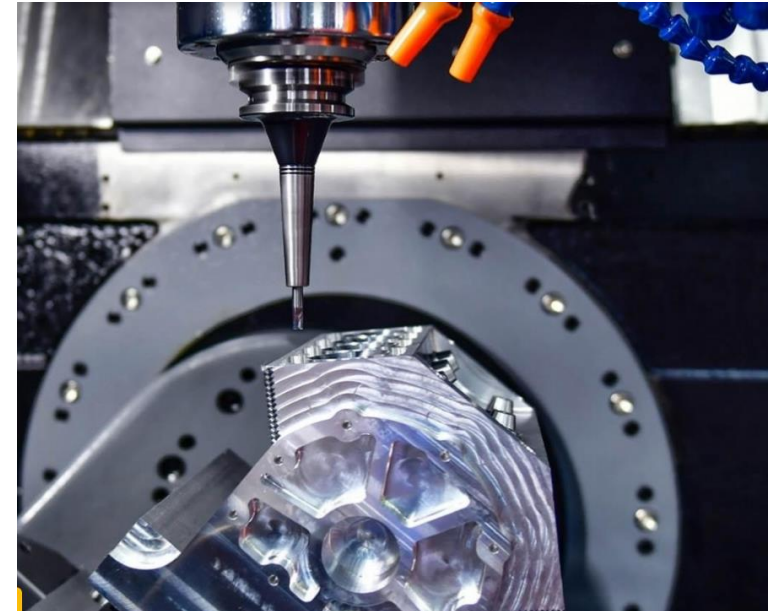
❑ Project Overview

Burcas have an opportunity to manufacture cryogenic turbo pump parts for LENA Space, the pump designer. The pumps will be used on a Portuguese launcher for an ESA programme. Longer term this will leverage LENA's design IP and heritage into a state-of-the-art cryogenic turbopumps, suitable for TASA's next generation Mk. 2 Satellite Launch Vehicle. TASA are the national space agency for Taiwan, realising their respective government's space strategy with over 30 years of successful space mission heritage.

This project will assist Burcas in developing the necessary capability including CNC programming, tooling and fixturing design and manufacture, allowing it to bid confidently for future production opportunities.

❑ **Grant Awarded : £45,412**

❑ **Project Duration : 10 months**



PNT Ground Terminal

❑ Novocomms Ltd

❑ Project Overview

This project looks to exploit IP from Novocomms existing antenna technology portfolio to develop a Proof-of-Concept demonstrator for a new Positioning, Navigation and Timing (PNT) system specifically tailored to ground based mobile terminals. The system will consist of two antennas, primary and secondary, responsible for different tasks.

Novocomms has support from a UK based space prime who will provide requirements and whose modem will be integrated into the prototype system.

Having a demonstrable solution will help Novocomms to access space sector opportunities and bid for commercial contracts.

Grant Awarded : £45412

❑ **Project Duration : 8 months**

