

**NATEP**



**MAKING  
IDEAS  
HAPPEN**

Directory of  
NATEP Projects

# NATEP

## National Aerospace Technology Exploitation Programme

Funding new technologies and new manufacturing  
productivity in the aerospace supply chain

MANAGED BY



delivered by



Advanced Manufacturing  
Supply Chain Initiative



# Foreword

Welcome to this directory of over 100 exciting R&D projects supported by NATEP, the National Aerospace Technology Exploitation Programme.

The NATEP programme came about through the Aerospace Growth Partnership, a joint industry / government initiative dedicated to supporting the future of the aerospace sector in the UK. The programme, which commenced in October 2013 and runs until September 2017, has brought together more than 250 aerospace supply chain companies in technology collaborations. It continues to support their projects with grant funding and expert mentoring by experienced aerospace engineers. Most of these companies are micro, small or medium sized.

These technologies will be used on current and new aircraft programmes, and will increase productivity, create jobs and inject new R&D capabilities into the supply chain. NATEP supported companies will be better able to win work with existing customers and with new customers, particularly in export markets as well as in new cross sectors markets such as the automotive, energy or rail sectors.

Their experience of NATEP will also better equip companies to apply for support from other UK or European grant funded programmes in the future.

I hope that you will be interested to read about these exciting projects. If you would like to learn more about them, please contact the companies directly through the contacts given.



**Jeff Taylor**

NATEP Programme Director



## Project

### 3D Moulded Circuits

#### Supply chain partnership

- Laser Optical Eng. Ltd
- Moulded Circuits Ltd
- MBDA UK Ltd (industrial supporter)

#### Contact

John Tyrer  
johntyrer@laseroptical.co.uk

Develop a laser writing system capable of producing 3D copper tracks or circuits on 3D aerospace lightweight structures.

Create the ability to produce fully functional circuitry directly onto 3D parts, enhancing functionality and enabling them to become part of a larger product or system, thereby reducing size, weight and cost.

NATEP Grant

**£145,727**

## Project

### A20X Surface Treatments Development

#### Supply chain partnership

- Aeromet
- Poeton Industries
- Boeing (customer)

#### Contact

Steve Ashworth – Technical Director  
steve.ashworth@aeromet.co.uk

The project will develop and verify the performance on a range of metal finishing treatments (anodic and chemical conversion coatings) for Aeromet's A20X family of casting alloys without using hexavalent chrome compounds (which have a limited life under REACH legislation).



NATEP Grant

**£35,000**

## Project

### Active Rapid Thermal-Transfer System (ARTS)

#### Supply chain partnership

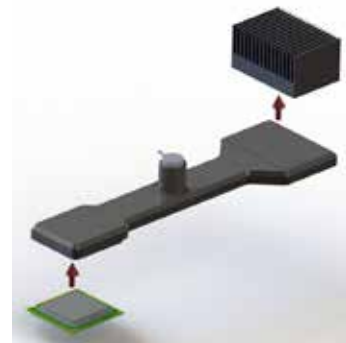
- TCS Micropumps Ltd
- Electrobase RP
- BAE Systems (customer)

#### Contact

Richard Weatherly – Director  
richard@micropumps.co.uk

The Innovative ART System (Active Rapid Thermal-Transfer) provides a super-efficient method of transferring heat.

It can be fully integrated into electronic systems and will help maximise electronic performance for the aerospace industry.



NATEP Grant

**£150,000**



## Project

### Additive Aero Valve Optimisations (AAVO)

#### Supply chain partnership

- Meggitt Aerospace Ltd
- Ashton & Moore Ltd
- GE Aviation (customer)

#### Contact

Scott Lathrope – Meggitt PLC Engineer  
[Scott.Lathrope@meggitt.com](mailto:Scott.Lathrope@meggitt.com)

A program to design, manufacture and test a functional aircraft component that is fully optimised for additive layer manufacture.

A standardised optimisation capability will be generated by capturing process "lessons learned".



NATEP Grant

**£142,500**

## Project

### Advanced UAV Thermal Imaging and Video Analytics for Search and Rescue Missions (TIVA)

#### Supply chain partnership

- Remvox Limited
- RNC-Avionics Ltd
- Lancashire Fire & Rescue (customer)

#### Contact

Steve Pearson – CEO Remvox Ltd  
[steve@remvox.com](mailto:steve@remvox.com)

The overall objective of the project is to develop and implement an all-encompassing system to aid search and rescue missions by automatically detecting body heat through the video analytics of thermal imaging and the incorporation of the analytics results in conjunction with the on-board navigation system to deploy resources directly to area of high potential for rescue/retrieval of personnel.

NATEP Grant

**£150,000**

## Project

### Aerospacespecial processes.com

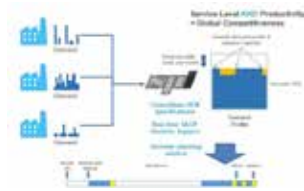
#### Supply chain partnership

- Valuechain.com Ltd
- Stainless Plating Ltd
- Blackprint Ltd t/a "Alloy Heat Treatments"
- Bombardier (customer)

#### Contact

Tom Dawes – Director  
[tdawes@Valuechain.com](mailto:tdawes@Valuechain.com)

Aerospacespecialprocesses.com is a cloud-based platform which aims to develop a collaborative on-line platform that streamlines communication between aerospace manufacturers and special process houses by optimising complex planning variables, sharing 2-way information with customers and co-operative partners and consolidated logistics planner providing intuitive decision support to improve service levels, productivity and therefore increase the competitiveness of aerospace special process houses.



NATEP Grant

**£150,000**

Project

**Aircraft Ditching Loads Prediction Tool**

Supply chain partnership

- Stirling Dynamics
- University of Southampton
- Bombardier (customer)

Contact

Dr Simon Hancock – Research & Development Manager  
shancock@stirling-dynamics.com

This project will produce a method and tool to predict the loads experienced by an aircraft when ditching in water. This will cover a range of aircraft configurations and could be used by any aircraft manufacturer.



NATEP Grant

**£166,850**

Project

**ALFLEX**

Supply chain partnership

- 3D Metal Printing Ltd
- University of Bath
- AgustaWestland (customer)

Contact

Alberto Casonato – Managing Director  
alberto@3dmetalprinting.co.uk

The objective of this research is to investigate the capability of manufacturing in ALM a Tail Driveshaft Flexible Coupling for an AW helicopter.

The expected results are to improve damage tolerance, inspectability and eliminate the presence of fasteners and ultimately to reduce component complexity.

Because this is a flight critical part, AW will also be working with and supporting the partners on a less critical Fan Impeller to enable more testing that will improve and influence the Coupling design.

NATEP Grant

**£88,200**

Project

**AssystMe**

Supply chain partnership

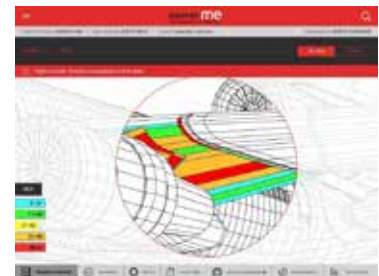
- Assystem UK Ltd
- Mosquito Digital Limited
- Spirit AeroSystems
- Airbus (customer)

Contact

Graham Younger – Head of Business Development UK - Aerospace  
GYounger@AssystemUK.com

The AssystMe tool is a portable, SMART tool that can be applied in a manufacturing environment to increase quality and reduce cost of non-conformance.

Providing route cause analysis and manufacturing process trends in a closed-loop solution, it reduces concessions and repairs utilising the engineering skills from Assystem.



NATEP Grant

**£150,000**

## Project

### asureSign Aero

#### Supply chain partnership

- Test and Verification Systems Ltd
- University of Bristol
- Rolls-Royce plc (customer)

#### Contact

Dr Michael Bartley – CEO  
[mike@testandverification.com](mailto:mike@testandverification.com)

The funding supports the development of a tool (asureSign™) to support Requirements Based Verification for DO-178 & DO-254 compliance in aerospace software and hardware development.

Both standards mandate that developers demonstrate key safety requirements have been fully tested and that test coverage targets have been met.

#### NATEP Grant

**£92,000**

## Project

### Automated Manufacture of Slot Liners (AMSL)

#### Supply chain partnership

- MEP Ltd
- Jackson Design Ltd
- SAFRAN Labinal Power Systems (customer)

#### Contact

Phil Hart – Managing Director  
[phil.hart@mep.co.uk](mailto:phil.hart@mep.co.uk)

Aerospace power generators operate at high temperatures; moulded components which act as insulators must cope with demanding electrical output, stresses and strains.

This technology delivers high quality, safe products whilst retaining manufacturing in the UK in the long term.



#### NATEP Grant

**£150,000**

## Project

### Automated Testing of SPARK Ada Contracts (ATSAC)

#### Supply chain partnership

- Altran UK Ltd
- University of Oxford
- Rapita Systems Ltd
- MBDA UK Ltd (industrial supporter)
- Rolls-Royce plc (customer)

#### Contact

Stuart Matthews – SPARK development team manager  
[stuart.matthews@altran.com](mailto:stuart.matthews@altran.com)

Software verification is an expensive and time consuming activity. In this project, Altran, University of Oxford and Rapita will combine SPARK specifications with automatic test vector and test harness generation thus reducing cost, risk and timescales for verification of aerospace software.

#### NATEP Grant

**£150,000**



Project

**Biocomposites for Aerospace Interiors (BAIT)**

Supply chain partnership

- Net Composites Ltd
- AIM Composites
- Composites Evolution
- AIM Cabin Interiors (customer)

Contact

Elliott Fleet - Project Manager  
 elliott.fleet@netcomposites.com

The project will develop pre-impregnated ("Prepreg") composite materials for aerospace interior applications that are based on a novel 100% bio-based fire-safe resin system that provides an alternative to conventional petrochemically-derived phenolics



NATEP Grant

**£146,570**

Project

**BOXARR - Supply Chain Risk Analysis**

Supply chain partnership

- BOXARR Ltd
- i3 Works
- P3ec

Contact

Alasdair Pettigrew – CEO  
 alasdair.pettigrew@BOXARRplanning.com

The project is developing an automated supply chain risk alert system - further strengthening BOXARR's industry leading supply chain modelling, analysis and optimisation solution.

NATEP Grant

**£150,000**

Project

**Collaborative Knowledge Management for Aerospace Operations Improvement**

Supply chain partnership

- Agile Business Improvement Ltd
- Pentangle Internet Ltd
- Gardner Group Ltd (customer)
- Unilathe (customer)
- Packaging Automation (customer)
- Clwyd Compounders (customer)

Contact

Helen Jackson  
 hjackson@dna-agile.com

The development and deployment of persuasive technology (captology) to drive behavioural and cultural change supported by an innovative cloud-based collaborative problem solving platform to support UK aerospace supply chain companies disseminate best practice and embed standardised continuous improvement solutions.

This is further supported by utilising semantic search capability and access to a shared collaborative knowledge repository with the aid of industry experts.

NATEP Grant

**£150,000**

## Project

### Combustion Chamber Process Innovation

#### Supply chain partnership

- Nasmyth Technologies Ltd
- Hucknall Sheet Metal Ltd
- GE Aviation Czech (customer)

#### Contact

Adrian Hill – Engineering Manager  
adrian.hill@chinnltd.com

Nasmyth Technologies Ltd will develop innovative processes for the manufacture of combustion systems in aircraft engines and support long term growth of jobs in the high value-added aerospace sector.

#### NATEP Grant

**£150,000**

## Project

### Composite Electrostatic Transport Elements (CompETE)

#### Supply chain partnership

- AGC Aero Composites
- Element Materials Technology
- ENL Ltd
- Technical Fibre Products Ltd
- Airbus Operations (customer)

#### Contact

David Conway – Materials Technology Director  
dave.conway@agcaerocomposites.com

The development of lightweight, shaped and damage resistant composite fuel pipe assemblies that by virtue of their tightly controlled electrical properties can be used safely in composite aircraft fuel tanks

#### NATEP Grant

**£131,090**

## Project

### Composite Pipe Bending

#### Supply chain partnership

- Sigma Precision Components Ltd
- e-Mould (UK) Ltd
- Rolls-Royce plc (customer)
- Bentley Motors (customer)

#### Contact

Michael Andreae – Director of Technology and Improvement  
michael.andreae@sigmacomponents.co.uk

The composite Pipe bending project will develop a repeatable, cost effective method to bend composite pipes using CNC pipe bending equipment

#### NATEP Grant

**£44,015**

*"We find Airbus most helpful and very amenable to direct access to engineers and shop-floor personnel; this access and feedback has accelerated our development and test program. They are impressive in the way they structure testing and development in a very practical way; the feedback from the real end-user – the guys putting the wings together – has been invaluable. What has also impressed us with having Airbus as our NATEP end-user is the level of engagement and access to staff at all levels of their business: from shop floor, support engineers, through to senior management."*

*Guy Williams, MD – FE Robinson*

## Project

### Configurable Double Sided Cooled Integrated Power Module

#### Supply chain partnership

- Semelab Ltd
- Pre-Met
- Rolls-Royce plc (customer)

#### Contact

Julian Thomas  
Julian.Thomas@ttelectronics.com

Significantly improve power module reliability, performance and cost, increase the options for standardisation and integration whilst significantly reducing the size and weight.

Deliver a demonstration of a configurable power module that comprises a double sided cooled plug-in single switch element integrated with gate drive and control circuitry that allows for maintenance



NATEP Grant

**£127,200**

## Project

### Cooled Core Die Blocks

#### Supply chain partnership

- Gardner BTC Ltd
- Material Solutions
- Invest Tech Ltd (customer)

#### Contact

Keith Fulford – Project Manager  
kfulford@gardner-aerospace.com

Gardner BTC Ltd., manufacturer of Injection dies is developing new technologies to produce core dies using alternative advanced manufacturing methods, specifically focused on providing better injected parts and reduced non-conformance.



NATEP Grant

**£52,150**

## Project

### Creating an Understanding of ILS Specifications

#### Supply chain partnership

- Aspect Supportability Consultants
- Showcase Graphics
- UK Council for Electronic Business (customer)

#### Contact

Nick Coles – Technical Publications Manager  
Nick.Coles@aspect-support.co.uk

Aspect Supportability Consultants Limited intend to investigate the use of complex data sets to model the transition to the S-Series Integrated Logistics Support standards



NATEP Grant

**£149,750**

Project

**Cryogenic Research of Efficiency on Structural Titanium (CREST)**

Supply chain partnership

- Hyde Aero Products Ltd
- Starrag UK Ltd
- Walter GB Ltd
- BAE Systems (customer)

Contact

**Paul Mellor – Technical Director**  
[pmellor@hydeaero.co.uk](mailto:pmellor@hydeaero.co.uk)

The objective of this project is to determine and understand the benefits of Cryogenic rough machining strategies when applied to prismatic Titanium Structural Airframe components in comparison to the traditional emulsion application

NATEP Grant

**£101,670**

Project

**Cure Capable Mandrels**

Supply chain partnership

- CTES Ltd
- Retrac Composites Ltd
- GKN Aerospace (customer)

Contact

**Liam Moloney – Director**  
[liam@ctesltd.co.uk](mailto:liam@ctesltd.co.uk)

To develop solutions for structural composite fibre placement tooling that is cure-capable and CTE-matched to the component, for use in the automated production of composite wing spars and other large composite aerospace structures



NATEP Grant

**£149,770**

Project

**Detection, Neutralisation and Investigation of Threat UAVs (DeNI of Threat UAVs)**

Supply chain partnership

- RNC Avionics Ltd
- Saher (UK)
- West Yorkshire Police (customer)
- Eurocontrol (customer)
- PNL D (customer)
- Airbus DS Ltd (customer)

Contact

**Natasha McCrone – Project Manager**  
[natasha@rinicom.com](mailto:natasha@rinicom.com)

The overall objective of the project is to develop and implement a scalable system capable of detecting, neutralising and investigating threat UAV's.

The existing Duplex PTZ (dual optical and video) will be enhanced to include a novel detection, classification and tracking module enabling the police and relevant authorities to apply the appropriate countermeasures to neutralise the UAV and a framework of operational and legislative procedures will be implemented to support all high risk scenarios with the aim of identifying and prosecuting the perpetrator.

NATEP Grant

**£150,000**

## Project

### Developing a compression moulding process to reduce the cost of aerospace components using composites

#### Supply chain partnership

- Creative Composites Ltd
- Crossen Engineering Ltd
- Bombardier (customer)

#### Contact

Jonathan Holmes – Commercial Director  
j.holmes@creativecomposites.co.uk

Developing a compression moulding process to reduce the cost of aerospace components using composites.



R&D Grant

**£80,840**

## Project

### Digital High Performance Servo Valve

#### Supply chain partnership

- Moog Controls
- 4C Electronics
- Moog Inc. (customer)
- Embraer Commercial Aviation (customer)

#### Contact

Dr Phil Elliott – R&D Manager  
Pelliottz@moog.com

The execution of electronic closed loop control within a small flight control serv valve has many benefits at the system level including: digital interface, reduced internal leakage, faster dynamic response, higher accuracy and smaller size.



NATEP Grant

**£134,700**

## Project

### Distortion and Residual Stress Control for Manufacture

#### Supply chain partnership

- Silcoms Ltd.
- The AMRC with Boeing
- Sandvik Coromant
- Craftsman Tools Ltd
- Rolls-Royce plc (customer)

#### Contact

Andy Morris – Engineering Manager  
andrew.morris@silcoms.co.uk

The partnership is working on a collaborative project looking to utilise the latest in FE analysis, residual and distortion stress management to optimise the engineering of high value, thin walled aerospace components. The project is aiming to keep the UK at the forefront of this highly skilled and competitive market.



NATEP Grant

**£120,000**

Project

**Dry Drilling of Aluminium Alloys**

Supply chain partnership

- Teer Coatings Ltd
- Kyocera Unimerco Tooling Ltd
- Airbus (customer)

Contact

Dr Kevin Cooke – R&D Technology Centre Manager  
[kevin.cooke@miba.com](mailto:kevin.cooke@miba.com)

Dry, in-situ drilling of aluminium alloys, with no significant loss of performance, will reduce costs while improving the work place environment. The project facilitates dry-drilling with newly designed tools exploiting the latest high performance solid lubricant coatings



NATEP Grant

**£105,670**

Project

**Enhanced Safety for Small to Medium-Size Helicopters**

Supply chain partnership

- Helitune
- Prosig
- University of Bristol
- Castle Air (customer)
- AgustaWestland (customer)
- MD Helicopters (customer)

Contact

Peter Morrish – Technology Manager  
[peter.morrish@helitune.com](mailto:peter.morrish@helitune.com)

The goals of this project bring the safety and cost-saving benefits of Health & Usage Monitoring (HUMS) to the small and medium-sized helicopter market. New hardware and data processing technologies will be combined and applied, resulting in a cost-effective 'Mini-HUMS' prototype for exploitation through the UK aerospace supply chain.

NATEP Grant

**£150,000**

Project

**Enterprise Bio-Interiors Project**

Supply chain partnership

- SHD Composite Materials Ltd
- AIM Aviation Ltd
- Ipeco Composites (customer)

Contact

Nick Smith – Technical Director  
[nsmith@shdcomposites.com](mailto:nsmith@shdcomposites.com)

The innovative technology to be developed is a water based resin pre-impregnated glass fibre composite material (prepreg) giving good Fire Smoke and Toxicity (FST) properties for the aircraft interiors market.

NATEP Grant

**£74,500**

## Project

### EyeQuad-T (Miniature Thermal/Optical Camera for UAV/UAS)

#### Supply chain partnership

- Rinicom Limited
- HW Communications
- Eurocontrol (customer)
- THALES (customer)
- Trimvale Aviation (customer)
- German Aerospace Centre (DLR) (customer)
- ALTUS (customer)

#### Contact

Natasha McCrone – Project Manager  
natasha@rinicom.com

The overall objective of the project is to produce a small, lightweight imaging system with pan, tilt and zoom functionality that captures optical and thermal video. The miniature camera will be able to support surveillance operations from small Unmanned Autonomous Systems; potentially presenting a high market value, applicable to the robotics, security and defence markets. This is an opportunity to deliver the operational capabilities of more automated and intelligent Unmanned Autonomous Systems, through a novel offer in the area of on-board surveillance. EyeQuad-T will deliver enhanced capability to build basic situational awareness and detection that is essential for decision-making.

#### NATEP Grant

**£149,810**

## Project

### Fastener & Stress Attenuator

#### Supply chain partnership

- Adhesion Technologies Ltd
- ENL Ltd
- Dopag (UK) Ltd
- Loop Technology Ltd
- Pressavon
- AgustaWestland (customer)
- Jaguar Land Rover Automotive PLC (customer)

#### Contact

Colin Wood – General Manager  
colin.wood@adhesiontec.com

Adhesion Technologies Ltd is developing a 'Fastener and Stress Attenuator' to replace rivets and underperforming laminate in aerospace structures. This will enhance payload capability and lifetime operating costs across the aerospace sector.



#### NATEP Grant

**£150,000**

## Project

### Fastening Forms in Composite Technology

#### Supply chain partnership

- Rotite Technologies
- Sigmatex
- University of Manchester
- Airbus Operations Ltd (customer)
- Aircelle Ltd (customer)
- Ejot UK Ltd (customer)

#### Contact

Caterina Silva – Technical Project Manager  
cat.silva@rotite.com

Lightweight structures and assemblies are essential for fuel efficiency and sustainable design. This project will develop, for the first time, integrally formed Rotite fasteners in composites, providing structural and weight saving solutions in contemporary materials.



#### NATEP Grant

**£139,500**





*Representatives of the NATEP Team at the Midlands National Showcase*

## Project

### Featherlite Aircraft Seat

#### Supply chain partnership

- Magnesium Elektron
- Mettis Aerospace
- Kenard Engineering(Tewkesbury) Ltd
- Geven SPA (customer)

#### Contact

Martyn Alderman – Director of Technology  
[martyn.alderman@magnesium-elektron.com](mailto:martyn.alderman@magnesium-elektron.com)

Magnesium Elektron has joined forces with a forging company, machinist and aircraft seat OEM to develop a lightweight forged magnesium aircraft seat component. The object of the NATEP project is to reduce the barriers to an OEM using UK sourced magnesium. This will be achieved by optimising the supply chain value of the forged magnesium component by maximising the fly to buy ratio and to minimise the material cost through full economic recovery of all process scrap arisings. The project aims to produce a lightweight magnesium forged & machined demonstrator component in a finished condition that can be retrofitted to an existing design or incorporated in a newly designed aircraft seat that gives at least a 15% weight saving by component

#### NATEP Grant

**£134,500**

## Project

### Finite Measurement

#### Supply chain partnership

- Powerkut Ltd
- Coventry University
- Winbro Group (customer)

#### Contact

Peter Everitt – Director  
[pete@powerkut.co.uk](mailto:pete@powerkut.co.uk)

The project will build and market a new machine that is capable of processing gauge block calibration in an automated environment. This will address a market need for measurement results to improve at the same rate as materials technology in the aerospace sector and meet an increasing demand for consistent quality of results accessible for the whole supply chain.

#### NATEP Grant

**£150,000**

## Project

### Flexible Air distribution ducting

#### Supply chain partnership

- AVS-SYS Ltd
- Arville Textiles
- Raytheon (customer)

#### Contact

Andrew Whitehead – Engineering Director  
[awhitehead@avsupport.org.uk](mailto:awhitehead@avsupport.org.uk)

The project is to design weight-saving and cost saving flexible aerospace ducts which will support the development of a new manufacturing facility in the North West of England providing employment opportunities and increased exports.



#### NATEP Grant

**£127,850**

## Project

### Flight Guardian

#### Supply chain partnership

- The Great Circle Ltd
- University of Central Lancashire
- McLaren Applied Technologies (customer)

#### Contact

Adam Berrington – Director  
adam@thegreatcircle.co.uk

Flight Guardian is a first of a generation disruptive cockpit technology to improve the safety of aircraft. It uses body worn sensors and computing devices to act, in many respects, as a virtual co-pilot, providing a pilot with an extra pair of eyes to monitor the aircraft instruments, spotting and even predicting problems before they occur. It will produce warnings for the pilot and offer advice on a course of mitigating action to take to prevent accidents.



NATEP Grant

**£126,800**

## Project

### GOCOM - Ground Operations Control Monitoring

#### Supply chain partnership

- HW Communications Ltd
- NEDEAS Ltd
- Rinicom Ltd
- Airbus Operations Ltd (customer)
- Ultra Electronics Controls (customer)

#### Contact

Michael Szczygiel – Research Projects Manager  
mszczygiel@hwcomms.com

GO-COM is a collaborative R&D project to identify airport impact incidents between aircraft and external ground objects (aircraft, equipment and structures) using wireless sensor networks on board the aircraft. Its aim is to immediately alert airline maintenance and airport ground services that an impact has occurred: where, when and with what force. It will also provide visual evidence via airside cameras.



NATEP Grant

**£149,790**

## Project

### Graphene Composites Evaluated in Lightning Strike (GraCELS)

#### Supply chain partnership

- Haydale Composite Solutions Ltd
- SHD Composites Ltd
- Cobham Antenna Services
- Airbus UK(customer)
- BAE Systems plc (customer)

#### Contact

Gerry Boyce – Managing Director  
gerry.boyce@haydalecs.com

The addition of functionalized graphene nanoparticles into the epoxy resin matrix of composite materials will greatly enhance the electrical conductivity thereby making them much more resistant to lightning-strike damage.

NATEP Grant

**£150,000**

## Project

### Graphene-Enhanced adhesive Technology through Functionalisation

#### Supply chain partnership

- Haydale Composite Solutions Ltd
- SHD Composites Ltd
- Element Materials Technology Hitchin Ltd
- Aerospace Prime
- GE Aviation Systems (customer)

#### Contact

**Dr Quentin Fontana – Collaborative R&D Manager**  
[quentin.fontana@haydalecs.com](mailto:quentin.fontana@haydalecs.com)

Addition of functionalized graphene to epoxy adhesives will allow them to act as electrical conductors rather than as insulators allowing for an electrically unified structure

#### NATEP Grant

**£150,000**

## Project

### Hands Free Inspection Interface

#### Supply chain partnership

- Muretex Ltd
- University of Coventry
- Cranfield Aerospace (customer)
- Rolls-Royce (customer)

#### Contact

**Dr J T Platts – Managing Director**  
[jtplatts@muretex.com](mailto:jtplatts@muretex.com)

This project will develop an infrastructure and delivery system based on an optical head mounted display to reduce both the inspection time and the burden placed on inspection staff.



#### NATEP Grant

**£73,800**

## Project

### Heavy Fuel for UAVs

#### Supply chain partnership

- Rotron Group
- General Engine Management Systems
- CybAero (customer)

#### Contact

**Alex Head – Group Technical Director**  
[alex.head@giloindustriesgroup.com](mailto:alex.head@giloindustriesgroup.com)

This project is to research and develop novel methods for employing heavy fuels in high specification UAV rotary engines. If successful, the project will completely alter the market's perception of this engine category.

#### NATEP Grant

**£150,000**

Project

## High Strength Aluminium Alloy Failure Modelling

Supply chain partnership

- Cabot Design Ltd
- Gingerneering Ltd
- Airbus Operations (customer)

Contact

Mervin Davidson – Director  
[merv.davidson@cabotdesign.com](mailto:merv.davidson@cabotdesign.com)

An advanced material model which facilitates the accurate analysis of high strength aluminium alloys under complex loading conditions, with specific application to the prediction of the initiation of failure under load.



NATEP Grant

**£150,000**

Project

## HoleGun+

Supply chain partnership

- Third Dimension
- Insphere Ltd
- Airbus (customer)
- GKN Aerospace (customer)

Contact

Dr Tim Monks – Chief Technical Officer  
[tim.monks@third.com](mailto:tim.monks@third.com)

The development of Third Dimension's "Optical Countersink Hole Inspection Solution" will dramatically improve manufacturing of complex aerospace components by simplifying inspection, reducing rework time, improving cycle time and significantly reducing overall cost of manufacture.

NATEP Grant

**£147,760**

Project

## Hot spot heat detection system

Supply chain partnership

- Photon Fire Limited
- Leigh Speciality Cables
- Meggitt PLC (customer)

Contact

Bill Shepherd – Managing Director  
[Bill.Shepherd@PhotonFire.com](mailto:Bill.Shepherd@PhotonFire.com)

Development of an in-flight temperature monitoring system for aircraft - that localises hot-spots before an emergency incident occurs.

NATEP Grant

**£85,480**

Project

## Hoversafe

Supply chain partnership

- Autonomous Technologies Limited
- Snelflight Limited
- Newcastle University School of Agriculture, Food and Rural Development (customer)
- West Midlands Fire Service (customer)

Contact

Nick Gillett  
nick.gillett@hoversafe.co.uk

Hoversafe is a reliable, inexpensive UAS that anyone can fly safely. It's being designed and built in the North East and is a Great British product.



NATEP Grant

**£150,000**

Project

## Hybrid Aircraft Thrust-Vectoring Propulsion System

Supply chain partnership

- V-TOL Technologies
- Flow HD
- Beagle Technology Group Ltd
- Scotia Gas Networks (customer)

Contact

Ashley Bryant – Managing & Technical Director  
ashley.bryant@vtol-technologies.com

This project will directly support the development of an optimised thrust-vectoring propulsion system targeted at delivering Beyond Visual Line Of Sight capabilities for the inspection of network industry based assets and infrastructure using a breakthrough Remotely Piloted Aerial System (RPAS) VTOL aircraft concept.



NATEP Grant

**£150,000**

Project

## Hydraulic Hand Tool Development

Supply chain partnership

- F E Robinson Ltd
- Klauke UK Ltd
- Airbus Operations (customer)

Contact

Guy Williams – Managing Director  
guy.williams@ferobinson.co.uk

UK SME F.E. Robinson is leading the design and development of a range of light weight "Smart" Hydraulic hand tools tailored for use in the Aerospace sector. For the first time, the customer will be enabled in achieving substantial efficiency improvements in certain manual operation wing production processes.



NATEP Grant

**£150,000**



## Project

### Improved Harness Technology (IHT)

#### Supply chain partnership

- Trackwise Designs Ltd
- Boston Design Consultants
- Fokker Elmo BV (customer)
- Messier-Dowty Ltd (customer)

#### Contact

Philip Johnston – Managing Director  
[philip.johnston@trackwise.co.uk](mailto:philip.johnston@trackwise.co.uk)

Trackwise has developed a means of producing length-unlimited multilayer flexible printed circuit boards. This project will accelerate the adoption of this technology as a weight saving replacement for conventional wiring harnesses with associated carbon reduction benefits for aerospace platforms and payloads.



NATEP Grant

**£84,000**

## Project

### Inhibiting Delamination in CFRP Composites

#### Supply chain partnership

- M Wright & Sons Ltd
- Composite Innovations Ltd
- GKN Aerospace (customer)

#### Contact

Simon Marshall – 3d Development Manager  
[simon@mwright.co.uk](mailto:simon@mwright.co.uk)

Delamination is a primary source of failure for composites, leading to over engineered parts. This project will investigate ways to inhibit delamination by three dimensional textile fibres in reinforced plastic composites



NATEP Grant

**£150,000**

## Project

### Inkjet Printed Graphene Composite Materials

#### Supply chain partnership

- Applied Graphene Materials Limited
- SHD Composite Materials Limited
- The Boeing Company (customer)

#### Contact

Dr Tim von Werne – Technical Director  
[tim.vonwerne@appliedgraphenematerials.com](mailto:tim.vonwerne@appliedgraphenematerials.com)

This project seeks to produce lighter and more damage tolerant composites by optimising the application of new graphene materials and processing techniques. Successful demonstration will enable composites to achieve a step further towards their full potential. In practical terms: tougher composites means lighter composites which leads to significantly lower operating costs for the aerospace industry.

NATEP Grant

**£150,000**



Project

**In-loom splicing for aerospace applications**

Supply chain partnership

- AVoptics
- TT Electronics
- BAE Systems
- MOD - UK Chinook project team (customer)

Contact

Andrew Voizey – Managing Director  
andy.voizey@avoptics.com

To develop a simple to use, novel in-loom mechanical splicing technology to enable the repair of fibre optic harnesses on aircraft.

NATEP Grant

**£149,760**

Project

**Innovative Aerospace Transport Tooling**

Supply chain partnership

- Datum Tool Design
- Fleet Maintenance
- Bombardier Aerospace (customer)

Contact

Michael Maguire – Joint Managing Director  
michael@datum-design.com

The project is to gain understanding of cost effective and re-configurable tooling to permit the manufacture of multiple transport systems for aerospace assemblies

R&D Grant

**£47,640**

Project

**Integrally Bladed Rotor (IBR) – Abrasive Barrel Milling Cutter**

Supply chain partnership

- ITP Engines UK Ltd
- Technicut Ltd
- Geo Kingsbury
- Industria de Turbo Propulsores, SA (customer)

Contact

Carlos Cenal – Project Engineer  
Carlos.Cenal@itp-engines.co.uk

Industrial research to develop the capability to manufacture gas turbine integrally bladed rotors (IBR's) using barrel milling tools thereby reducing manufacturing time and improving quality.



NATEP Grant

**£131,650**

## Project

### Integrally Bladed Rotor (IBR) – Abrasive Flow Machining

#### Supply chain partnership

- ITP Engines UK Ltd
- Extrude Hone Ltd
- Brunel University
- Industria de Turbo Propulsores, SA (customer)

#### Contact

Carlos Cenal – Project Engineer  
[Carlos.Cenal@itp-engines.co.uk](mailto:Carlos.Cenal@itp-engines.co.uk)

Industrial research to model the effects of an Abrasive Flow Machining polishing process on aerofoil profiles and the development of predictive process controls which will lead to a reduction in manufacturing time and an improvement in quality.



NATEP Grant

**£107,350**

## Project

### Large Deployable Antenna for Space

#### Supply chain partnership

- Oxford Space Systems
- Reliance Precision Ltd
- MDA Corporation UK Ltd (customer)
- VTOL-Technologies (customer)

#### Contact

Mat Rowe – Project Manager  
[mat.rowe@oxfordspacesystems.com](mailto:mat.rowe@oxfordspacesystems.com)

Oxford Space Systems will design & develop a reflector surface for attachment to their existing scalable large deployable antenna.



NATEP Grant

**£150,000**

## Project

### Lead-Free Detonating Cords

#### Supply chain partnership

- Chemring
- Brunel University
- Martin Baker Aircraft (customer)

#### Contact

Andrew Bentley – BD Technology & Innovation Executive – Devices  
[andrew.bentley@chemringenergetics.co.uk](mailto:andrew.bentley@chemringenergetics.co.uk)

The identification of suitable alloys and manufacturing processes to replace lead in the explosive detonating cords used in aircraft and space launch vehicles.

NATEP Grant

**£128,890**

Project

**Lightweight Pipe End-Fittings**

Supply chain partnership

- Sigma Precision Components UK Ltd
- 3T RPD Ltd
- Customer

Contact

Mike Andreae – Director of Technology and Improvement  
[michaelandreae@sigmacomponents.co.uk](mailto:michaelandreae@sigmacomponents.co.uk)

The Lightweight Pipe End-Fittings project will design rigid pipe end-fittings for minimum mass, suitable for additive manufacture technology and test them in accordance with aero engine operating conditions.



NATEP Grant

**£143,000**

Project

**Long/continuous Fibre Reinforced Thermoplastic (CFRTP) Composite Processing**

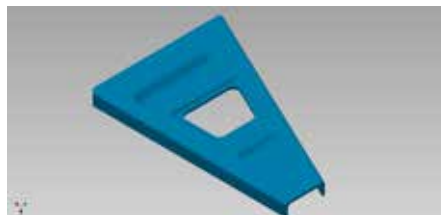
Supply chain partnership

- CCP Gransden Ltd
- Comco
- Bombardier (customer)

Contact

Robert McConnell – Director  
[robert@ccp-gransden.com](mailto:robert@ccp-gransden.com)

This project will seek to develop a flexible and adaptive system for proof of concept processing continuously reinforced thermoplastic composites for aerospace applications.



R&D Grant

**£91,850**

Project

**LoVar for aerospace and space applications**

Supply chain partnership

- Aerospace Metal Composites Ltd
- ExoTec Precision
- NASA Goddard Space Flight Centre

Contact

David Tricker – Technical Manager  
[david.tricker@materion.com](mailto:david.tricker@materion.com)

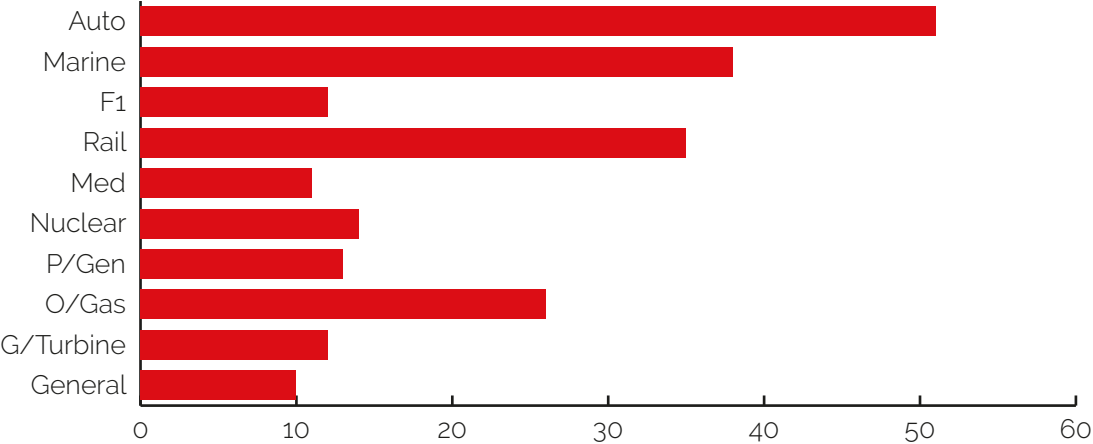
This project will develop a Fe-36Ni metal matrix composite (MMC) material. Specifically this composite material will have reduced density and improved thermal expansion properties compared to more conventional Invar® type systems



NATEP Grant

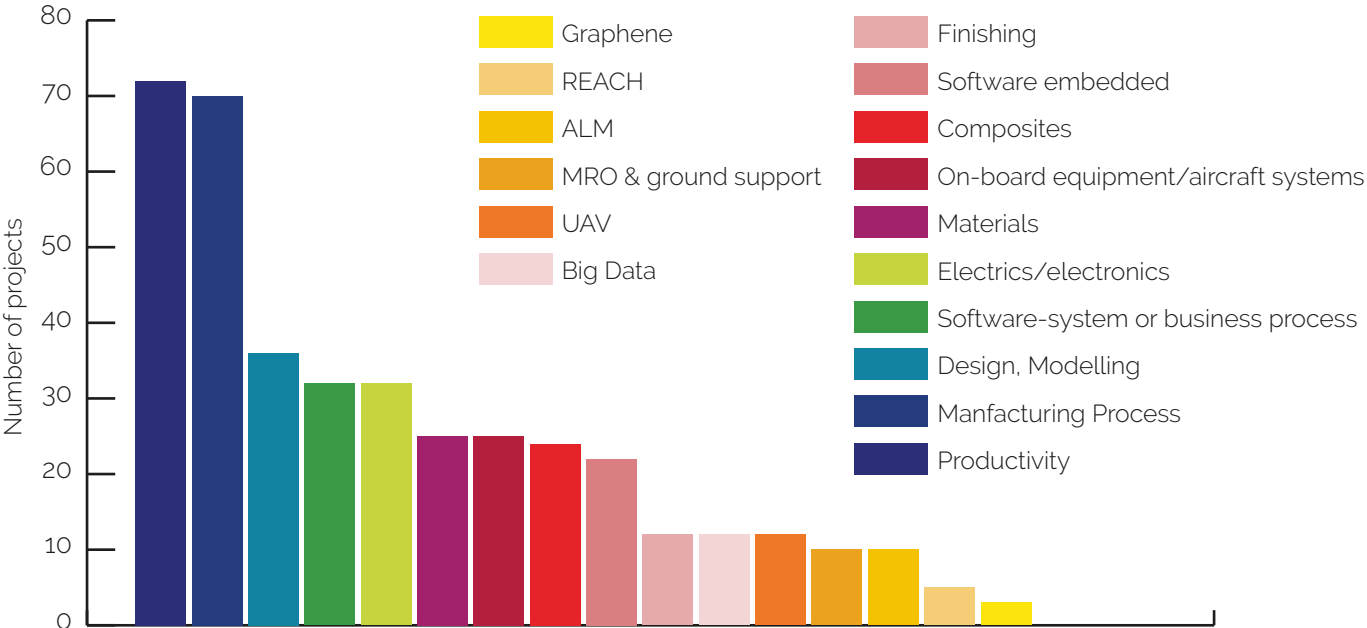
**£120,000**

## Project Analysis of cross-sector opportunities

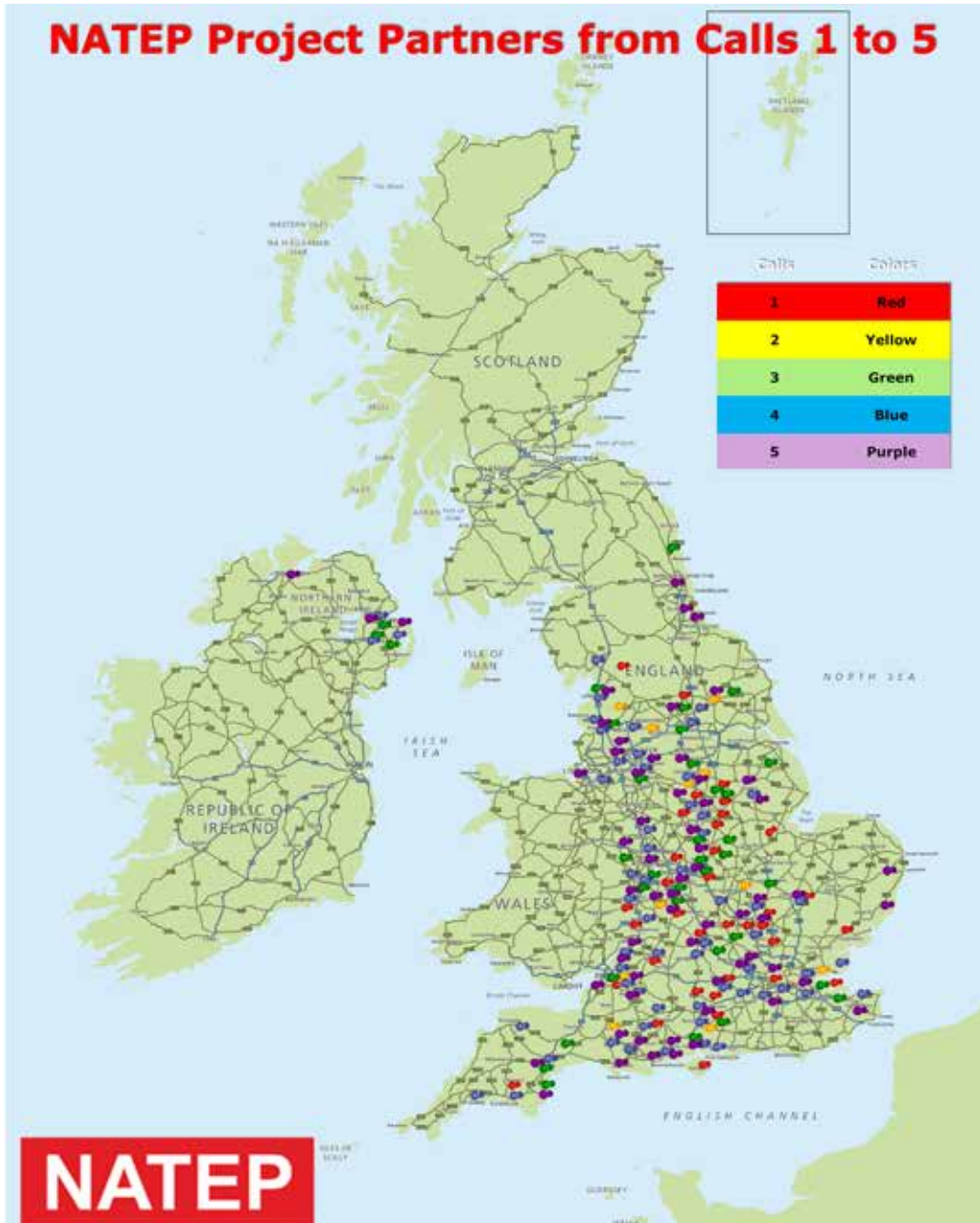


## NATEP Project technologies

(some projects have more than 1 focus)



# NATEP Project Partners from Calls 1 to 5



## Project

### Low Mass Composite Mould Tool (LMCMT)

#### Supply chain partnership

- KAMAN Tooling Ltd
- KAMAN Composites Ltd
- Hexcel Composites
- Ten Cate Advanced Composites
- BAE Systems (customer)

#### Contact

Paul Barrett – Technical Director  
[paul.barrett@kaman.com](mailto:paul.barrett@kaman.com)

The LMCMT project will revolutionise Composite tooling strategies across the Aerospace and Automotive sectors, delivering lower cost, lower energy and lower carbon footprint tooling to all of the major aerospace manufacturers making composite components. The objective of this R & D project is to Design, manufacture and test 2 off Proof of concept Low Mass Composite Mould tools.



NATEP Grant

**£146,560**

## Project

### Machine Connectivity & Manufacturing Intelligence

#### Supply chain partnership

- ATS UK
- Hitex Ltd
- Arrowsmith Engineering (Coventry) Ltd (customer)

#### Contact

Martin Kelman – Senior MES Consultant  
[martin.kelman@ats-global.com](mailto:martin.kelman@ats-global.com)

The project will create a highly cost effective Machine Connectivity Module (MCM) which connects and monitors manufacturing processes using the latest technology in the fields of; embedded sensors, wi-fi communications and android based data processing & display platforms



NATEP Grant

**£150,000**

## Project

### Metal Matrix Composites for Helicopter Applications

#### Supply chain partnership

- Aerospace Metal Composites Ltd
- Mettis Aerospace
- AgustaWestland (customer)

#### Contact

Dr Stuart Godfrey – Business Development Manager  
[stuart.godfrey@materion.com](mailto:stuart.godfrey@materion.com)

This project will develop both an aluminium and Silicon Carbide (SiC) metal matrix composite (MMC) material and create a forging supply chain specifically for helicopter applications. The funding will thus create a UK source (for the first time) for this high performance material which is required in the aerospace market.



NATEP Grant

**£150,000**



## Project

### Metrology for Additive Manufacturing

#### Supply chain partnership

- Insphere Limited
- Renishaw
- Airbus Group Innovations (customer)

#### Contact

Ben Adeline – Chief Executive  
ben@insphereltd.com

This project will develop an innovative and highly sought after metrology verification method for additive manufacturing processes. This will enable unique techniques for additive manufacturing process control supporting the certification of AM parts for production aerospace use.

NATEP Grant

**£122,800**

## Project

### Modular Galley for Assembly

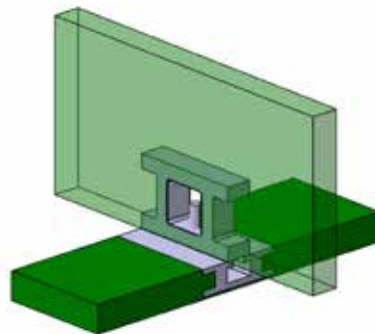
#### Supply chain partnership

- Belfast Aircraft Stress Engineers Ltd
- Moyola Precision Engineering Ltd
- Denroy Plastics Ltd
- SR-Technics (customer)

#### Contact

Peter Hinds – Strategic Business Director  
Pete.Hinds@basegroup.co.uk

The project collaborators will develop a modular design concept for an aircraft galley. The modular concept is to enable a simplified manufacturing and assembly process



R&D Grant

**£95,025**

## Project

### Mouldable Liners

#### Supply chain partnership

- SKF
- WMG HVM Catapult
- AgustaWestland (customer)

#### Contact

Grant Dennis – Project Manager  
grant.dennis@skf.com

This project will develop greater flexibility and customisation to plain bearings technologies, permitting them meet the changing and demanding requirements of the aerospace market.

NATEP Grant

**£150,000**



**Project****Multifab- A Multifunctional composite fabric concept****Supply chain partnership**

- Diversus Ltd
- University of Bath
- AgustaWestland (customer)

**Contact**

Chris Brill – Director  
[info@Diversus.Technology](mailto:info@Diversus.Technology)

The main objective of this project is the development of a multifunctional fabric to be embedded as an additional layer in conventional helicopter blades. Intrinsic functionalities include anti and de-icing properties, damage detection and lightning strike protection.

**NATEP Grant****£148,000****Project****New Muffler Ducting for Air Distribution****Supply chain partnership**

- AVS-SYS Ltd
- Arville
- Foam Techniques Ltd
- Raytheon (customer)

**Contact**

Andrew Whitehead – Engineering Director  
[awhitehead@avsupport.org.uk](mailto:awhitehead@avsupport.org.uk)

The project is to design weight-saving and cost saving aerospace muffler ducts which will support the development of a new manufacturing facility in the North West of England providing employment opportunities and increased exports.

**NATEP Grant****£123,320****Project****New Photonic Architectures using GaAs Modulators****Supply chain partnership**

- aXenic Limited
- University of Bedfordshire
- Selex ES (customer)

**Contact**

Steve Clements – Managing Director  
[steve.clements@axenic.co.uk](mailto:steve.clements@axenic.co.uk)

The project will develop a novel photonic architecture to allow hi fidelity, high bandwidth, remoting of microwave sensing in harsh avionics environment. Photonic signal pre-processing will also be used to produce a better performance than from pure electronics.

**NATEP Grant****£143,000**

## Project

### Next Generation Single Crystal Helix

#### Supply chain partnership

- Investment Casting Systems Ltd
- C&M Mould Tools Ltd
- Resinex UK Ltd
- Rolls Royce (Precision Casting Foundry) (customer)

#### Contact

David Granados Alcala – Programmes Manager  
David@investmentcastingsystems.co.uk

Design and production of an innovative feature which will increase the production yield of the casting process for single crystal turbine blades & structures.



NATEP Grant

**£142,600**

## Project

### Novel contra-rotating propellers for electric aircraft

#### Supply chain partnership

- Hercules Propellers Ltd
- Contra Electric Propulsion Ltd
- Falcomposite Ltd (customer)

#### Contact

Rupert Wasey – Managing Director  
rupert@hercprops.com

This collaboration between a propeller manufacturer and electric aircraft innovator will investigate novel contra-rotating blade designs.

NATEP Grant

**£130,000**

## Project

### Novel Miniature Actuator

#### Supply chain partnership

- CNR Services International
- Midland Aerospace
- BE Aerospace, Florida (customer)

#### Contact

Chris Reckless – Managing Director  
creckless@cnrdesign.co.uk

CNR have designed a concept self-contained Novel Miniature Actuator (NMA) specifically for the aircraft passenger seat actuation market. This NMA is expected to provide cheaper manufacturing costs per actuator, lower mass, more reliability, greater efficiency and quieter and smoother performance than current seat actuators.



NATEP Grant

**£148,500**

Project

**Novel training through virtual reality**

Supply chain partnership

- Invirt Reality
- University of Exeter
- FlyBe (customer)

Contact

Mark Lewis – Technical Lead  
 Mark.lewis@marchdynamics.co.uk

This project is a close collaboration between a leading software engineering company, a University and an airline. It will seek to develop a novel, immersive environment utilising the latest in technology enhanced learning.

NATEP Grant

**£150,000**

Project

**Optical Brake Temperature Sensor**

Supply chain partnership

- Oxsensis
- Meggitt Sensing Systems
- Airbus Operations SAS (customer)

Contact

Conrad Langton – Engineering Director  
 Conrad.langton@oxsensis.com

Oxsensis is working with Airbus and Meggitt Sensing Systems to demonstrate that a novel fibre optic temperature sensor can monitor the temperature of aircraft braking systems. This is a truly harsh environment in which the aircraft mounted sensors will be exposed to temperatures in range of -55°C to 1300°C.

NATEP Grant

**£150,000**

Project

**Piezoelectricity-enabled Aero Controls**

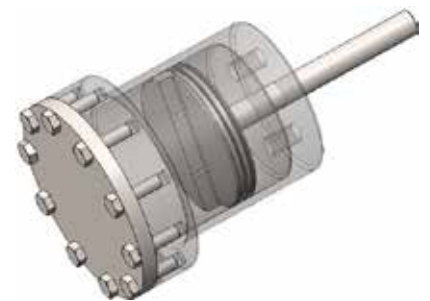
Supply chain partnership

- Ionix Advanced Technologies Ltd
- Linwave Technology
- Controls and Data Services (customer)

Contact

Dr Tim Comyn – Chief Technology Officer  
 tim.comyn@ionix.at

Using novel piezoelectric materials integrated into engine components, Ionix and its project partners, supported by NATEP aim to make a significant impact on the fuel efficiency of gas turbine engines through improvements to the cost, reliability, accuracy, and response time of electromechanical components operating in extreme environments.



NATEP Grant

**£127,170**

## Project

### Plane Sight

#### Supply chain partnership

- Blue Bear Systems Research
- Createc
- General Dynamics UK (customer)

#### Contact

Gavin Goudie  
gavin@bbsr.co.uk

Each year hundreds of aircraft are damaged during ground manoeuvre due to limited view of the operator/pilot when manoeuvring a large dynamic system within a complex and cluttered environment. Blue Bear Systems Research (BB), Createc and General Dynamics (GDUK) have teamed together to develop a novel situational awareness avionic system for commercial aircraft.



NATEP Grant

**£67,200**

## Project

### Plasma Cleaning in MCM Advanced Manufacture

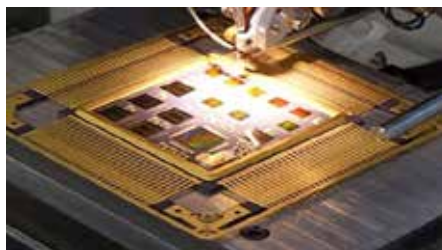
#### Supply chain partnership

- Welwyn Components Power & Hybrid
- Accelonix
- Controls and Data Services (customer)

#### Contact

Billy Shaw – Engineering Manager  
billy.shaw@welwyn-tt.com

This project will demonstrate that an innovative cleaning process can be introduced into the manufacture of advanced MCM (multi-chip module) devices for avionic engine controls, and automated to improve both yield and quality.



NATEP Grant

**£70,000**

## Project

### Polymeric Additive Manufacturing for Aircraft Interiors

#### Supply chain partnership

- Bristol Aero Ltd
- HIETA Technologies Ltd
- Ipeco Holdings (customer)
- Jet Aviation AG (customer)

#### Contact

Brett Peterson – Head of Engineering  
brett.peterson@bristol.aero

The use of recently developed, cost effective, polymeric additive manufacturing materials with sufficient levels of fire retardancy for use in high value aircraft interiors and systems is investigated through a full design-manufacture-test cycle.



NATEP Grant

**£145,500**



*“If it had not been for the NATEP funding, we would not have been able to have assembled the expert consortium nor engage upon this critical propulsion system development programme, which is delivering breakthrough results. We had challenges identifying a viable composites partner and the NATEP mentoring team were excellent at providing a list of high-quality possible partners, from which we were able to identify the eventual “right” consortium partner.”*

Ashley Bryant  
Managing & Technical Director  
VTOL Technologies Ltd

## Project

### Portable Pulse Oxygen Assembly (PPOCA)

#### Supply chain partnership

- Avia Technique
- Meditech Systems
- Air Liquide
- Airbus Operations (customer)

#### Contact

Barry Wood – Senior Design and Development Engineer  
barry.wood@airliquide.com

Using pneumatic pulse technology in on-aircraft portable oxygen cylinders.



NATEP Grant

**£150,000**

## Project

### Precision Back-up Navigation for UAVs

#### Supply chain partnership

- Forsberg Services Ltd
- VTOL Technologies Ltd
- Rockwell Collins (customer)
- Locanis (customer)

#### Contact

Charles Forsberg – Director  
charles.forsberg@forsbergservices.co.uk

Forsberg Services Ltd propose an enhanced air navigation system for safe operation of UAVs during critical parts of the flight envelop, in particular landing and take-off. These phases of low-level flight are subject to object avoidance and safe navigation.

NATEP Grant

**£150,000**

## Project

### Precision Deep Hole Boring

#### Supply chain partnership

- Perfect Bore Manufacturing Ltd
- Dickinson Legg Ltd
- Gemms Ltd
- Impcross Ltd (customer)

#### Contact

Jon Waghorn – Project Manager  
jon.waghorn@pbm-ltd.com

PBML and DLL are collaborating to produce more accurate, robust and enhanced geometric tolerance bore solutions to the aerospace industry



NATEP Grant

**£150,000**

Project

**Prep'ing Composite Moulds with Lasers For Enhanced Productivity and Quality**

Supply chain partnership

- Advanced Laser Technologies Ltd
- Collaboration partner
- Cobham Antenna System (customer)
- EPM Technology (customer)

Contact

**Roger Hardacre – Managing Director**  
[roger.hardacre@atllaser.co.uk](mailto:roger.hardacre@atllaser.co.uk)

The project will develop an advanced system that can clean, polish and repair moulds made of metal or composite used to produce composite parts. The intention is that a successful outcome will lower supply chain costs & improve productivity of skilled labour by developing an automated technology for cleaning composite material moulds. The system can be in a bureau format for low frequency users, or for high frequency users it can be a factory based solution.



NATEP Grant

**£150,000**

Project

**Process Control Software Tool [PCST]**

Supply chain partnership

- Line Business Services
- Amfax Ltd
- Cobham Mission Systems (customer)

Contact

**Stewart Long – Projects Director**  
[s.long@sovision.com](mailto:s.long@sovision.com)

This project will develop a new process control tool targeted at SMEs which will help ensure that agreed processes are followed systematically, consistently and transparently within projects to support the completion of manufacturing and development projects to agreed quality, time and budget parameters

NATEP Grant

**£100,130**

Project

**Process Optimisation for Aerospace Alloys**

Supply chain partnership

- Ant Industries
- Arrowsmith Engineering (Coventry) Ltd
- Technoset
- Pattonair Ltd (customer)
- ITP SA (Spain) (customer)

Contact

**Mark Harriott – Technical Manager**  
[mark.harriott@antindustries.co.uk](mailto:mark.harriott@antindustries.co.uk)

The project will:

improve manufacturing processes on exotic metals that will substantially increase capacity in the Aerospace supply chain.

Utilise the expertise of the Manufacturing Technology Centre, Coventry, to undertake research into specific machining processes.

Optimise production methods for machined aerospace parts to secure UK supply chain competitiveness and reputation for providing a world class service.

NATEP Grant

**£90,000**

## Project

### Project Fusion

#### Supply chain partnership

- AVPE Ltd
- South West Metal Finishing
- Airbus Innovations(customer)
- Airbus Group (customer)
- Renishaw plc (customer)
- LIMA (customer)

#### Contact

Chris Steel – Chairman  
[chris.steel@avpe.co.uk](mailto:chris.steel@avpe.co.uk)

AVPE is an SME supplying directly into Airbus' MRO business. Project Fusion will develop Airbus certified "Class 2" components manufactured using ALM technology with modified post ALM machining, NDT and surface treatment processes.

#### NATEP Grant

**£150,000**

## Project

### Proof of Systems Assurance & Certification

#### Supply chain partnership

- D-RisQ Ltd
- Abstract Solutions Ltd
- GE Aerospace (customer)

#### Contact

Nick Tudor – Business Director  
[njt@drisq.com](mailto:njt@drisq.com)

This project seeks to provide an automated, highly assured, systems design analysis capability tool which will enable faster and more cost effective development of constantly evolving complex systems for aerospace and other associated markets.

#### NATEP Grant

**£75,000**

## Project

### Pulse Passenger Service Unit (PPSU)

#### Supply chain partnership

- Avia Technique
- Meditech Systems
- Air Liquide
- Airbus Operations (customer)

#### Contact

Barry Wood – Senior Design and Development Engineer  
[barry.wood@airliquide.com](mailto:barry.wood@airliquide.com)

The project will use Pneumatic Pulse Technology to deliver oxygen through the passenger service unit.



#### NATEP Grant

**£150,000**



Project

**Rapid Development Compressor Component Manufacture**

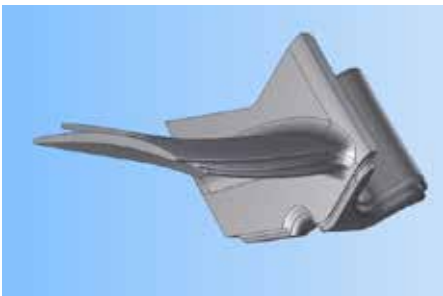
Supply chain partnership

- Centrax Turbine Components
- Mettis Aerospace
- West Country Tools (WCT)
- Rolls Royce plc (customer)

Contact

**Josh Sansom**  
[Josh.sansom@centraxtcl.com](mailto:Josh.sansom@centraxtcl.com)

Providing a full commodity manufacturing solution to the production of HPC components to meet cost, quality and delivery targets in a flexible design sphere



NATEP Grant

**£149,340**

Project

**Risk Aware Mission Planning (RAMP)**

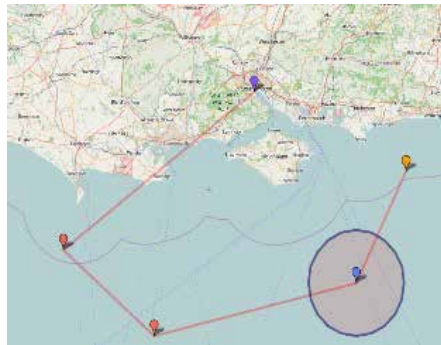
Supply chain partnership

- TEKEVER Ltd
- ROTRON Power Ltd
- Sovereign Global(UK) Ltd (customer)
- European Maritime Safety Agency, Lisbon (customer)

Contact

**Paul Webb – Managing Director**  
[paul.webb@tekever.com](mailto:paul.webb@tekever.com)

UAV market as applied to Search & Rescue, civil surveillance, environmental monitoring, Maritime vessels, land systems, planetary rovers.



NATEP Grant

**£150,000**

Project

**ROCA: RapiTime Object Code Analyser**

Supply chain partnership

- Rapita Systems Ltd
- University of York
- Controls and Data Services (customer)
- Airbus Defence and Space Madrid (customer)

Contact

**Dr Guillem Bernat – CEO**  
[bernat@rapitasystems.com](mailto:bernat@rapitasystems.com)

ROCA is a collaboration between Rapita Systems and the University of York, developing the next generation of software verification tools to reduce the cost and effort for current and future aerospace industry needs.



NATEP Grant

**£150,000**

## Project

### SafePilot Weather Watch

#### Supply chain partnership

- Blue Bear
- Met Office
- Hybrid Air Vehicles (customer)
- e-Go (customer)

#### Contact

Andrew Berry  
andrew.berry@bbsr.co.uk

SafePilot Weather Watch is an electronic decision aid for manned aircraft (and an automated planning tool for unmanned aircraft) that enhances tactical and strategic route planning to make operations safer and more fuel efficient



NATEP Grant

**£95,000**

## Project

### Secure Authentication & Flight Evidence Recorder (SAFER)

#### Supply chain partnership

- The Great Circle Ltd
- Distributed Management Systems Ltd
- University of Central Lancashire
- ProFlight UAV Suppliers (customer)

#### Contact

Adam Berrington – Director  
adam@thegreatcircle.co.uk

Project SAFER (Secure Authentication & Flight Evidence Recorder) exploits a number of recent innovations in encryption and authentication technology, together with the power of the 'cloud' to create a novel UAV pilot authentication system, which logs and communicates flight hours and flight data.

NATEP Grant

**£146,780**

## Project

### Single Stage Isolated AC/DC Power Supply

#### Supply chain partnership

- On-Systems Ltd
- Peregrine Semi-conductors UK
- Raytheon UK (customer)

#### Contact

Mike Harvey – Commercial Director  
mike.harvey@on-systems.co.uk

This project will deliver a single stage AC to DC power supply with power factor, and conversion efficiency greater than 95%. The power supply will work with single phase or three phase input from 80VAC to 264VAC, frequency from 40Hz to 800Hz, and give a regulated, isolated output from 12VDC to 400VDC.



NATEP Grant

**£150,000**



## Project

### SkyBike

#### Supply chain partnership

- Rotron Group
- Collaboration partner

#### Contact

Gilo Cardozo – Chief Technical Officer  
gilo@giloindustriessgroup.com

This project will work to develop a UAV platform with crop spraying capabilities. It will explore flight control systems and location integration with an experimental VTOL design.

#### NATEP Grant

**£150,000**

## Project

### Slave Fasteners for Automation

#### Supply chain partnership

- Kwikbolt Ltd
- izM
- Wesco Aircraft (customer)

#### Contact

Dean Carran – Operations Director  
dean@kwikbolt.com

To align with the future of aerospace manufacture this project aims to design and develop single sided temporary fasteners and their interfaces suitable for fully automated aerospace assembly processes.



#### NATEP Grant

**£150,000**

## Project

### Small Rotary Engine Technologies

#### Supply chain partnership

- A&M EDM Ltd
- Techteam Development LLP
- ASNU Corporation Europe Ltd
- A UAV customer

#### Contact

Tim Shires – Design Engineer  
tim@amedm.co.uk

Development of an innovative aerospace standard engine architecture to support production of small multi-fuel operation power units specifically aimed at the unmanned air vehicle (UAV) market.

#### NATEP Grant

**£95,000**

Project

**SMART Racking System**

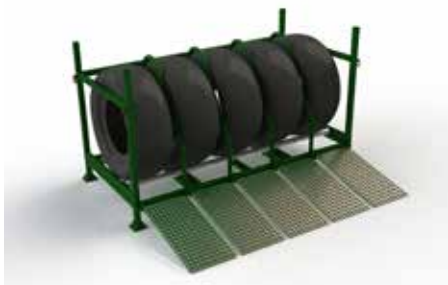
Supply chain partnership

- S2 Aerospace Ltd
- University of the West of England
- Airbus Military UK (customer)

Contact

Tim Shortman - Managing Director  
tim.shortman@s2aerospace.com

The funding supports the development of a SMART Racking System for high-value aircraft wheels in the aerospace MRO and the introduction of new development capability within S2 (currently "build-to-print") for innovative engineering design solutions.



NATEP Grant

**£154,750**

Project

**SmartHUD**

Supply chain partnership

- Artemis Optical
- Plessey Semiconductors Ltd
- BAE Systems (customer)

Contact

Stuart Allan – Technology Director  
stuart.allan@artemis-optical.co.uk

SmartHUD aims to use the recent proliferation in LED light sources and design unique and novel thin film coatings to enable their use in Head Up Display systems. The advantages sought are reduced weight, longer useful life of the light source and enhanced optical performance of the overall module.

NATEP Grant

**£102,890**

Project

**Software Defined Telemetry**

Supply chain partnership

- TBG Solutions Ltd
- G2 Communications
- Rolls-Royce plc (customer)

Contact

Neil Roddis – R&D Manager  
neil.roddis@tbg-solutions.com

Software controlled wireless communications system for reliable wide bandwidth remote monitoring of sensor data, initially aimed at improving efficiency and cost-effectiveness of aero engine development test

NATEP Grant

**£150,000**

## Project

### SPARCS Rotary Engine

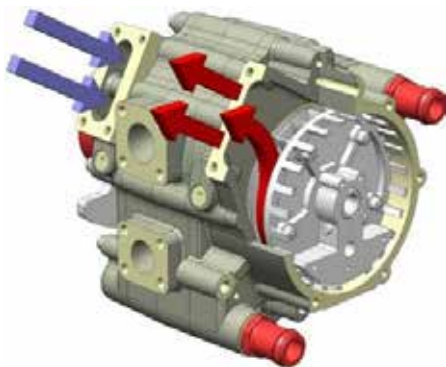
#### Supply chain partnership

- Advanced Innovative Engineering (UK) Ltd
- Vortex Exhaust Technology Ltd
- Aero Composites Innovations, France (customer)

#### Contact

Nathan Bailey – Managing Director  
nathan@aieuk.com

Design, development and testing of a SPARCS (Self-Pressurised-Air Rotor Cooling System) enabled rotary engine propulsion system for Unmanned Aerial Vehicles.



NATEP Grant

**£130,000**

## Project

### Supply Chain Excellence Data Streamlining (SCEDS)

#### Supply chain partnership

- Prion Cutting Edge
- Rule IQ
- Assystem UK Ltd (customer)

#### Contact

Mark Cella – Business Developer PLM  
mcella@prioncuttingedge.co.uk

SCEDS is the new affordable technology platform that shares aerospace project data, which is centrally located and secure, with an extended supply chain (SMEs), reducing the risk of costly design and manufacturing mistakes



NATEP Grant

**£150,000**

## Project

### Temperature Indicating Paints for Aero Engines (TIPTOE)

#### Supply chain partnership

- Sensor Coating Systems Ltd
- Indestructible Paint Ltd
- MAN Diesel and Turbo (customer)

#### Contact

Dr Jörg Feist – Managing Director  
jfeist@sensorcoatings.com

Thermal History Paint records temperature information by going through irreversible changes which can be detected non-destructively using specialised hand-held read-out equipment. This project will support the development of the technology to demonstrate its applicability in aerospace engine development.



NATEP Grant

**£122,500**

Project

**Textilub – a novel self-lubricating liner**

Supply chain partnership

- SKF
- Tiab Limited
- AgustaWestland (customer)

Contact

Michael Colton – Local Product Development Manager  
[Michael.Colton@skf.com](mailto:Michael.Colton@skf.com)

Textilub will deliver the next generation of novel plain bearings to meet the changing and demanding requirements of the aerospace market

NATEP Grant

**£150,000**

Project

**Thermoplastic Composite Fusion Welding (CoFusion)**

Supply chain partnership

- AGC Aero Composites
- The National Composites Centre
- Ten Cate Advanced Composites Ltd
- Rolls-Royce plc (customer)

Contact

David Conway – Materials Technology Director  
[dave.conway@agcaerocomposites.com](mailto:dave.conway@agcaerocomposites.com)

The CoFusion project builds on previous development work to optimise the efficiency and applicability of an innovative, rapid, low cost and flexible thermoplastic composite welding process to aerospace standards.

NATEP Grant

**£137,000**

Project

**TOGGLON a bonded Fixings Installation System**

Supply chain partnership

- Adhesion Technologies Ltd
- MEP Ltd
- Pressavon
- Loop Technologies
- GKN (customer)

Contact

Colin Wood – General Manager  
[colin.wood@adhesiontec.com](mailto:colin.wood@adhesiontec.com)

The Toggлон project enables us to deliver the world's first installation tool specifically designed to quickly, accurately and consistently install composite bonded fastenings on to most substrates at any angle.



NATEP Grant

**£150,000**

## Project

### Treatments The Safe Way

#### Supply chain partnership

- Ramp Industries Ltd
- NFF Ltd
- Thales UK (customer)

#### Contact

Derek Smith – Surface Coating Manager  
derek@ramp.co.uk

The development of a REACH compliant alternative to Alocrom 1200 for Aluminium alloys, with a compatible over-painting process, meeting the various aerospace technical requirements. Without these new treatments it is possible that Ramp will not be able to continue as a surface treatment provider, hence the large number of safeguarding jobs following the project's successful completion.



NATEP Grant

**£130,000**

## Project

### Triaging through NDT

#### Supply chain partnership

- Theta Technology Ltd
- Manufacturing Technology Centre
- Rolls-Royce plc

#### Contact

Julian Wright – Managing Director  
j.wright@thetatech.co.uk

This project will investigate a novel non-linear acoustic non-destructive testing (NDT) method for instant triaging of defective metal components in automated real-time go/no-go decision making. The state-of-the-art is too slow and too expensive for commercial applications but without NATEP funding this will remain an academic technology curiosity and industry will not benefit from the anticipated reduction in inspection times.

NATEP Grant

**£145,100**

## Project

### UAV Engine Durability

#### Supply chain partnership

- Rotron Power
- A&M EDM
- Boeing (customer)

#### Contact

Alex Head – Technical Director  
alex.head@giloindustriessgroup.com

This project has been devised to research novel methods for extending the flying durability of UAV rotary engines to a target of 1000 hours of Time Between Overhaul (TBO).



NATEP Grant

**£150,000**



# Midlands Call 1 Projects

## NATEP

### Visual Inventory Optimisation System

Partners:

- RLC Engineering Group
- Consultant



## NATEP

### Process Optimisation for Aerospace Alloys

Partners:

- ITP Spal
- Patton
- ANT I (lead
- Techn
- Arrow

Aerospace Growth partner

## NATEP

Working together to create technology for the UK



## Project

### Ultrasonic Assisted Machining of Aerospace Composites (USAMAC)

#### Supply chain partnership

- Teer Coatings Ltd
- Kyocera Unimerco Tooling Ltd
- BAE Systems (customer)

#### Contact

Susan Field – Collaborative Research Coordinator  
[sue.field@miba.com](mailto:sue.field@miba.com)

USAMAC will demonstrate a new generation of drills, where tool design and state of the art coatings will enable the full benefits of ultrasonic assisted machining technology to be realised in the drilling of advanced composite stacks.



NATEP Grant

**£137,600**

## Project

### Ultrasonic Ice Protection

#### Supply chain partnership

- Ultra Electronics – Controls
- Southampton University
- Morgan Advanced Materials
- BAE Systems (customer)

#### Contact

Simon Marsden – Marketing Manager  
[simon.marsden@ultra-controls.com](mailto:simon.marsden@ultra-controls.com)

This project is to further develop a new concept for a Wing Ice Protection technology for smaller commercial business aircraft and unmanned air vehicles, and to demonstrate operation in an icing tunnel on a representative aerofoil sample.



NATEP Grant

**£150,000**

## Project

### Valuechain.com –connecting the Aerospace Supply Chains

#### Supply chain partnership

- Valuechain.com
- Techni Grind Machining
- Hyde Coatings Ltd
- Alcoa (formerly RTI Forming) (customer)

#### Contact

Tom Dawes – Director  
[tdawes@valuechain.com](mailto:tdawes@valuechain.com)

The Valuechain.com project provides multi-tier connectivity and visibility within the aerospace supply chain through an integrated cloud-based collaborative platform to streamline inter-company operations and develop competitive high value manufacturing extended enterprises.



NATEP Grant

**£150,000**

Project

**Visual Inventory Optimisation Software**

Supply chain partnership

- Consult Avila
- CANDA Systems
- RLC Engineering (customer)

Contact

Dudley Wood - Director  
[dudley.wood@consultavila.com](mailto:dudley.wood@consultavila.com)

This project will:

Develop a visual management software tool to optimise inventory levels based on a proven best practice methodology, including data visualisation and active & dynamic inventory planning and control, segmentation, mapping, trend analysis, alerting, root-cause analysis and forecasting. This software will be supported by an inventory management and control e-learning package and will be delivered via cloud technology.



NATEP Grant

**£64,000**

Project

**Volume manufacture of a composite fixing and weight Reduction system**

Supply chain partnership

- Adhesion Technologies Ltd
- MEP Ltd
- Dopag
- Formax
- Pressavon
- Loop Technologies
- GKN (customer)

Contact

Colin Wood – General Manager  
[colin.wood@adhesiontec.com](mailto:colin.wood@adhesiontec.com)

This project provides a machine to prove mass production of Fibra Spida fixings which will facilitate weight reduction and revolutionise how composite aerospace structures are designed, and constructed.

NATEP Grant

**£150,000**

Project

**Water Soluble Ceramics for Aluminium investment casting applications**

Supply chain partnership

- Aeromet Intl. Ltd
- Adaptive Engineering Solutions
- Airbus (customer)

Contact

Steve Ashworth – Technical Director  
[steve.ashworth@aeromet.co.uk](mailto:steve.ashworth@aeromet.co.uk)

The project will develop a water soluble ceramic material which offers significant improvement potential in the investment casting industry. Once mature, this technology will allow components to be manufactured with features which today cannot be produced, thus opening up the product design space for parts count and component size reduction.



NATEP Grant

**£148,000**

## Project

### Wet Fit Slave Fasteners

#### Supply chain partnership

- Kwikbolt Ltd
- izM
- Wesco Aircrafts (customer)
- GKN Aerospace (customer)
- Lockheed Martin Aeronautics (customer)

#### Contact

Mr Jan Niklewicz – Technical Director  
jan@kwikbolt.com

The project will design and develop, in collaboration, new innovative wet fit slave fasteners to be used during composite aircraft assembly. Providing a more efficient and effective working environment as well as a more cost effective, environmentally friendly and reliable method of production.



NATEP Grant

**£145,000**

## Project

### Whole-field simulated/ experimental data comparison

#### Supply chain partnership

- Enabling Process Technologies Ltd
- Strain Solutions Ltd
- Airbus Operations Ltd (customer)

#### Contact

Dr John Philip Tyler – Director  
philip.tyler@eptworld.com

This project will develop a new method for the full-field comparison between experimentally derived digital image correlation displacement/strain data and finite element simulation results from aerospace structures, incorporating an innovative and fully automated coordinate transformation approach.

NATEP Grant

**£77,000**

## Project

### Xenon Pulse Technology in Fibre Placement

#### Supply chain partnership

- Heraeus Noblelight Ltd
- Hexcel Composites Ltd
- Rolls-Royce plc (customer)

#### Contact

Martin Brown - Applications Manager  
martin.brown@heraeus.com

Heraeus Noblelight Xenon Flash technology offers potential cost and performance advantages in processing of composite materials for aerospace applications. This research will take the technology closer to commercialisation.



NATEP Grant

**£145,500**

# Company Index

3D Metal Printing Ltd 7  
 3T RPD Ltd 27  
 4C Electronics 14

## A

Abstract Solutions Ltd 40  
 Accelonix 36  
 Adaptive Engineering Solutions 51  
 Adhesion Technologies 16, 47, 51  
 Advanced Innovative Engineering (UK) Ltd 46  
 Advanced Laser Technologies Ltd 39  
 Aero Composites Innovations, France 46  
 Aeromet 4, 51  
 Aerospace Metal Composites Ltd 27, 30  
 AGC Aero Composites 10, 47  
 Agile Business Improvement Ltd 9  
 AgustaWestland 7, 15, 16, 30, 32, 33, 47  
 AIM Aviation Ltd 15  
 AIM Cabin Interiors 9  
 AIM Composites 9  
 Airbus 7, 10, 13, 15, 16, 19, 20, 21, 22, 32, 35, 38, 40, 41, 45, 51, 52  
 Aircelle Ltd 16  
 Air Liquide 38, 40  
 Alcoa 50  
 Altran UK Ltd 8  
 ALTUS 16  
 A&M EDM 44, 48  
 Amfax Ltd 39  
 Ant Industries 39  
 Applied Graphene Materials Limited 24  
 Arrowsmith Engineering (Coventry) Ltd 30, 39  
 Artemis Optical 45  
 Arville Textiles 18, 33  
 Ashton & Moore Ltd 6  
 ASNU Corporation Europe Ltd 44  
 Aspect Supportability Consultants 12  
 Assystem UK Limited 7, 46  
 ATS UK 30

Autonomous Technologies Limited 22  
 Avia Technique 38, 40  
 AVoptics 25  
 AVPE Ltd 40  
 AVS-SYS Ltd 18, 33  
 aXenic Limited 33

## B

BAE Systems 4, 13, 19, 25, 30, 45, 50  
 BE Aerospace, Florida 34  
 Beagle Technology Group Ltd 22  
 Belfast Aircraft Stress Engineers Ltd 32  
 Bentley Motors 10  
 Blackprint Ltd t/a "Alloy Heat Treatments" 6  
 Blue Bear Systems Research 36, 42  
 Boeing 4, 14, 24, 48  
 Bombardier 6, 7, 14, 25, 27  
 Boston Design Consultants 24  
 BOXARR Ltd 9  
 Bristol Aero Ltd 36  
 Brunel University 26

## C

Cabot Design Ltd 21  
 CANDA Systems 51  
 Castle Air 15  
 CCP Gransden Ltd 27  
 Centrax Turbine Components 41  
 Chemring 26  
 Clwyd Compounds 9  
 C&M Mould Tools Ltd 34  
 CNR Services International 34  
 Cobham Antenna System 19, 39  
 Cobham Mission Systems 39  
 Comco 27  
 Composite Innovations Ltd 24  
 Composites Evolution 9  
 Consult Avila 51  
 Contra Electric Propulsion Ltd 34  
 Controls and Data Services 35, 36, 41  
 Craftsman Tools Ltd 14  
 Cranfield Aerospace 20  
 Createc 36

Creative Composites Ltd 14  
 Crossen Engineering Ltd 14  
 CTES Ltd 13  
 CybAero 20

## D

Datum Tool Design 25  
 Denroy Plastics Ltd 32  
 Dickinson Legg Ltd 38  
 Distributed Management Systems Ltd 42  
 Diversus Ltd 33  
 Dopag (UK) Ltd 16, 51  
 D-RisQ Ltd 40

## E

e-Go 42  
 e-Mould (UK) Ltd 10  
 Ejot UK Ltd 16  
 Electrobase RP 4  
 Element Materials Technology 10, 20  
 Embraer Commercial Aviation 14  
 Enabling Process Technologies Ltd 52  
 ENL Ltd 10, 16  
 EPM Technology 39  
 Eurocontrol 13, 16  
 European Maritime Safety Agency, Lisbon 41  
 ExoTec Precision 27  
 Extrude Hone Ltd 26

## F

Falcomposite Ltd 34  
 F E Robinson Ltd 22  
 Fleet Maintenance 25  
 Flow HD 22  
 FlyBe 35  
 Foam Techniques Ltd 33  
 Fokker Elmo BV 24  
 Formax 51  
 Forsberg Services Ltd 38

## G

G2 Communications 45  
 Gardner BTC Ltd 12  
 Gardner Group Ltd 9  
 GE Aerospace 40  
 GE Aviation 6, 20  
 GE Aviation Czech 10  
 Gemms Ltd 38  
 General Dynamics UK 36  
 General Engine Management Systems 20  
 Geo Kingsbury 25  
 German Aerospace Centre (DLR) 16  
 Geven SPA 18  
 Gingerneering Ltd 21  
 GKN Aerospace 13, 21, 24, 47, 51, 52

## H

Haydale Composite Solutions Ltd 19, 20  
 Helitune 15  
 Heraeus Noblelight Ltd 52  
 Hercules Propellers Ltd 34  
 Hexcel Composites 30, 52  
 HiETA Technologies Ltd 36  
 Hitex Ltd 30  
 Hucknall Sheet Metal Ltd 10  
 HW Communications 16, 19  
 Hybrid Air Vehicles 42  
 Hyde Aero Products Ltd 13  
 Hyde Coatings Ltd 50

## I

i2M 44, 52  
 i3 Works 9  
 Impcross Ltd 38  
 Indestructible Paint Ltd 46  
 Industria de Turbo Propulsores, SA 25, 26, 39  
 Insphere Limited 21, 32  
 Investment Casting Systems Ltd 34  
 Invest Tech Ltd 12  
 Invirt Reality 35  
 Ionix Advanced Technologies Ltd 35  
 Ipeco Composites 15

Ipeco Holdings 36  
 ITP Engines UK Ltd 25, 26

## J

Jackson Design Ltd 8  
 Jaguar Land Rover Automotive PLC 16  
 Jet Aviation AG 36

## K

KAMAN Composites Ltd 30  
 KAMAN Tooling Ltd 30  
 Kenard Engineering(Tewkesbury) Ltd 18  
 Klauke UK Ltd 22  
 Kwikbolt Ltd 44, 52  
 Kyocera Unimerco Tooling Ltd 15, 50

## L

Lancashire Fire & Rescue 6  
 Laser Optical Eng. Ltd 4  
 Leigh Speciality Cables 21  
 LIMA 40  
 Line Business Services 39  
 Linwave Technology 35  
 Locanis 38  
 Lockheed Martin Aeronautics 52  
 Loop Technology Ltd 16, 47, 51

## M

Magnesium Elektron 18  
 MAN Diesel and Turbo 46  
 Manufacturing Technology Centre 48  
 Martin Baker Aircraft 26  
 Material Solutions 12  
 MBDA UK Ltd 4, 8  
 McLaren Applied Technologies 19  
 MDA Corporation UK Ltd 26

MD Helicopters 15  
 Meditech Systems 38, 40  
 Meggitt Aerospace Ltd 6  
 Meggitt PLC 21  
 Meggitt Sensing Systems 35  
 MEP Ltd 8, 47, 51  
 Messier-Dowty Ltd 24  
 Met Office 42  
 Mettis Aerospace 18, 30, 41  
 Midland Aerospace 34  
 MOD - UK Chinook project team 25  
 Moog Controls 14  
 Moog Inc. 14  
 Morgan Advanced Materials 50  
 Mosquito Digital Limited 7  
 Moulded Circuits Ltd 4  
 Moyola Precision Engineering Ltd 32  
 Muretex Ltd 20  
 M Wright & Sons Ltd 24

## N

NASA Goddard Space Flight Centre 27  
 Nasmyth Technologies Ltd 10  
 NEDEAS Ltd 19  
 Net Composites Ltd 9  
 Newcastle University School of Agriculture,  
 Food and Rural Development 22  
 NFF Ltd 48

## O

On-Systems Ltd 42  
 Oxford Space Systems 26  
 Oxsensis 35

## P

P3ec 9  
 Packaging Automation 9  
 Pattonair Ltd 39  
 Pentangle Internet Ltd 9

Peregrine Semi-conductors UK 42  
 Perfect Bore Manufacturing Ltd 38  
 Photon Fire Limited 21  
 Plessey Semiconductors Ltd 45  
 PNLD 13  
 Poeton Industries 4  
 Powerkut Ltd 18  
 Pre-Met 12  
 Pressavon 16, 47, 51  
 Prion Cutting Edge 46  
 ProFlight UAV Suppliers 42  
 Prosig 15

## R

Ramp Industries Ltd 48  
 Rapita Systems Ltd 8, 41  
 Raytheon 18, 33, 42  
 Reliance Precision Ltd 26  
 Remvox Limited 6  
 Renishaw 32, 40  
 Resinex UK Ltd 34  
 Retrac Composites Ltd 13  
 Rinicom Limited 16, 19  
 RLC Engineering 51  
 RNC Avionics Ltd 6, 13  
 Rockwell Collins 38  
 Rolls-Royce plc 8, 10, 12, 14, 20, 41, 45, 47, 48, 52  
 Rolls Royce (Precision Casting Foundry) 34  
 Rotite Technologies 16  
 Rotron Group 20, 44  
 ROTRON Power Ltd 41, 48  
 Rule IQ 46

## S

S2 Aerospace Ltd 45  
 SAFRAN Labinal Power Systems 8  
 Saher (UK) 13  
 Sandvik Coromant 14  
 Scotia Gas Networks 22  
 Selex ES 33  
 Semelab Ltd 12  
 Sensor Coating Systems Ltd 46

SHD Composite Materials Limited 15, 19, 20, 24  
 Showcase Graphics 12  
 Sigma Precision Components UK Ltd 27  
 Sigmatex 16  
 Silcoms Ltd 14  
 SKF 32, 47  
 Snelflight Limited 22  
 South West Metal Finishing 40  
 Sovereign Global(UK) Ltd 41  
 Spirit AeroSystems 7  
 SR-Technic 32  
 Stainless Plating Ltd 6  
 Starrag UK Ltd 13  
 Stirling Dynamics 7  
 Strain Solutions Ltd 52

## T

TBG Solutions Ltd 45  
 TCS Micropumps Ltd 4  
 Technical Fibre Products Ltd 10  
 Technicut Ltd 25  
 Techni Grind Machining 50  
 Technoset 39  
 Techteam Development LLP 44  
 Teer Coatings Ltd 15, 50  
 TEKEVER Ltd 41  
 Ten Cate Advanced Composites 30, 47  
 Test and Verification Systems Ltd 8  
 THALES 16, 48  
 The AMRC with Boeing 14  
 The Great Circle Ltd 19, 42  
 The National Composites Centre 47  
 Theta Technology Ltd 48  
 Third Dimension 21  
 Tiab Limited 47  
 Trackwise Designs Ltd 24  
 Trimvale Aviation 16  
 TT Electronics 25

## U

UK Council for Electronic Business 12  
 Ultra Electronics Controls 19, 50

Unilathe 9  
 University of Bath 7, 33  
 University of Bedfordshire 33  
 University of Bristol 8, 15  
 University of Central Lancashire 19, 42  
 University of Coventry 18, 20  
 University of Exeter 35  
 University of Manchester 16  
 University of Oxford 8  
 University of Southampton 7, 50  
 University of the West of England 45  
 University of York 41

## V

Valuechain.com 6, 50  
 Vortex Exhaust Technology Ltd 46  
 VTOL Technologies Ltd 22, 26, 38

## W

Walter GB Ltd 13  
 Welwyn Components Power & Hybrid 36  
 Wesco Aircraft 44, 52  
 West Country Tools (WCT) 41  
 West Midlands Fire Service 22  
 West Yorkshire Police 13  
 Winbro Group 18  
 WMG HVM Catapult 32

**NATEP**

**MAKING  
IDEAS  
HAPPEN**

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