

Innovate UK

Results of Competition:

Aerospace Technology Institute - Strategic R&D Projects - Batch 20

Competition Code:

1309_SPEC_TRA_ATI_batch20

Total available funding is £8,636,227 from Industrial Strategy Challenge Fund and £131,120,804 from ATI (across ATI Batches 18-20)

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Boeing United Kingdom Limited	Boeing Gear and Actuation	£2,900,000	£0
University of Sheffield	Systems Manufacturing Sheffield	£2,700,000	£2,700,000
Project description - provided by applicants			
Awaiting Public Project Summary			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Meggitt Aerospace Limited	UHBR Thermals	£5,367,349	£1,677,425
Cranfield University		£445,951	£445,951
The Manufacturing Technology Centre Ltd		£904,759	£904,759
University of Sheffield		£355,380	£355,380
University of Strathclyde		£253,850	£253,850
S & C Thermofluids Ltd		£131,418	£91,993

Project description - provided by applicants

The Ultra High Bypass Ratio (UHBR) engine thermal management systems project, UHBR Thermals, is a technology research project addressing oil heat management, a key enabler for next-generation UHBR turbofan aero engines. Next generation UHBR engines will be much more efficient than current engines, and will feature a larger fan driven by a power gearbox; a smaller, hotter engine core; a shorter fan case; and a slimline nacelle. These engine technology changes will result in a much larger oil heat load to be managed with a much smaller volume available to mount the equipment, and an increasing amount of heat will have to be managed using air.

UHBR Thermals will develop new thermal management technologies for UHBR engines, and advanced manufacturing techniques to increase the competitiveness of the UK's thermal systems supply chain. Supported by investment from the Aerospace Technology Institute and Innovate UK, UHBR Thermals brings together a team of recognised experts in thermal management design, analysis, and manufacturing, consisting of: Meggitt; S & C Thermofluids; Manufacturing Technology Centre; The University of Sheffield Advanced Manufacturing Research Centre; the Advanced Forming Centre at the University of Strathclyde; and Cranfield University. UHBR Thermals will be executed over three years from 2017 to 2020, delivering the new capability to the market in time to support the design architecture decision for the next generation engines, which will be delivered to the market in 2025. The UHBR Thermals consortium will be advised by major international turbine aero engine and aircraft manufacturers.

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Airbus Operations Limited	Future Landing Gear Phase 2	£10,432,854	£4,269,111
Zodiac Interconnect UK Limited		£303,852	£151,926
Sigmatex (UK) Ltd		£324,692	£162,346
Meggitt Aerospace Ltd		£491,477	£212,355
SAFRAN Landing Systems Limited		£2,322,354	£1,008,338
NCC Operations Ltd		£1,222,710	£1,222,710
LB Foster Rail Technologies (UK) Ltd		£128,372	£64,186
Warwick Manufacturing Group		£267,153	£267,153
Smart Fibres Limited		£329,149	£230,404
Southampton University		£306,439	£306,439

Project description - provided by applicants

This project matures key technologies that will reduce costs to the operator; save fuel; improve ground operations; simplify manufacturing and simplify maintenance. The Project also defines how these Technologies will be deployed together on a future Wing/LG configuration for the first time successfully.

Airbus will work with multiple partners and sub-contractors to mature these technologies, and prepare a definition of the Future Landing Gear. Each technology provides one or more benefits: New load/torque sensing technologies coupled with new ground control algorithms will limit structural loads during braking and save weight in the wing and the landing gear structure, thereby saving fuel. New composite components if suitably deployed could further contribute to Landing Gear weight reduction and fuel saving. The new ground control algorithms will simplify pilot workload on the ground, and ease operation under failure conditions. New robust sensing technology will improve basic reliability of brake temperature and tyre pressure sensing and enable a faster return to service in the event of an overload condition. New sensors and wheel modifications will enable dispatch with hotter brakes and achieve a shorter aircraft Turn Around Time. New Landing Gear materials which are corrosion resistant will reduce the cost of major overhaul and increase the time between them whilst the introduction of new maintenance tools will speed up and improve the servicing of the Shock Absorber.

The Future Landing Gear project will mature each of these new items so that they can be deployed as necessary to existing aircraft programmes and also work out how they will be deployed together on the Landing Gear in a new aircraft application for the first time with minimal risk.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Rolls-Royce plc	Proving Advanced Concept Engine (PACE)	£25,593,351	£6,363,000
Project description - provided by applicants			
Awaiting Public Project Summary			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Rolls-Royce plc	Enabling Novel Controls & Advanced Software for Engines (ENCASE)	£15,919,110	£7,456,665
Penny & Giles Controls Limited		£557,755	£278,878
Aero Stanrew Limited		£499,417	£249,709
Porvair Filtration Group Limited		£159,342	£79,672
Ionix Advanced Technologies Ltd		£336,006	£235,205
Active Sensors Ltd		£138,481	£96,937
Greene Tweed and Co Ltd		£92,377	£55,426
University of Newcastle		£331,743	£331,743
University of York		£465,768	£465,768

Project description - provided by applicants

Enabling Novel Controls & Advanced Software for Engines (ENCASE)

ENCASE will help Rolls-Royce Control Systems develop the desired networked control systems architecture through delivery of a new software architecture, electrical and hydromechanical hardware and is a key enabler to the delivery of the UltraFan engine demonstrator programmes, which are vital to the future of Rolls-Royce Plc. ENCASE allows a maturing of these technologies to TRL 6 / MCRL 4. ENCASE will be a Rolls-Royce Control Systems consortium led programme with industrial partners including both large and SME's and academic partners to assist in delivering some of the key technologies. A key benefit of ENCASE will be in delivering scalable solutions for both business jet and civil engines providing access to a potential market of £2.8bn and securing all research and development activities remain in the UK.

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Lenis Aer Limited	Extended Lipskin Forming (ELF)	£1,938,569	£581,570
Crossen Engineering Ltd		£431,007	£129,302
UTC Aerospace Systems		£750,000	£0
Queens University Belfast		£991,882	£991,882
TWI Ltd		£238,000	£238,000
University of Strathclyde		£165,123	£165,123
Project description - provided by applicants			
Awaiting Public Project Summary			

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Hexcel Composites Ltd	MAXIM (Multi AXial Infusion Materials)	£7,528,000	£3,764,000
Project description - provided by applicants			
Development of CFRP materials using a resin infusion approach, aimed at large scale composite primary structures such as wing covers, spars and stringers ultimately for the production of a full composite wing. Optimisation of materials and processes to deliver a cost competitive composite solution for such structures			

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GKN Aerospace Services Ltd	CO-MET (COMposite and METallic Developments)	£9,700,000	£4,850,000
Boeing R&T		£0	£0
Project description - provided by applicants			
CO-MET is a technology development programme led by GKN Aerospace aimed at advancing current technologies and knowledge in Composite and Metallic processing for current product and advanced Structures for application on future new aircraft platforms. The programme is critical for the intermediate future operations given the potential gains in productivity-efficiency-repeatability and quality are compelling. GKN Aerospace, global Tier 1 supplier for the Aerospace industry, with its headquarters in the UK brings a wealth of experience and background managing research & technology initiatives.			

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