

Results of Competition: ATI Programme: Batch 32 Research Projects

Competition Code: 1309_SPEC_TRA_ATI_BATCH32

Total available funding is £150 million

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
ROLLS-ROYCE PLC	REINSTATE: Repair, Enhanced Inspection, and Novel Sensing Techniques for increased Availability and reduced Through life Expense	£16,959,914	£6,783,966
B.J.R. SYSTEMS LIMITED		£361,197	£252,838
CLIFTON PHOTONICS LIMITED		£301,395	£210,976
Manufacturing Technology Centre		£610,852	£610,852
ROKE MANOR RESEARCH LIMITED		£795,399	£397,700
University of Nottingham		£1,699,913	£1,699,913
University of Sheffield		£589,078	£589,078
University of the West of England		£225,822	£225,822

Note: you can see all Innovate UK-funded projects here: <https://www.gov.uk/government/publications/innovate-uk-funded-projects>

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Project description - provided by applicants

The ATI estimates that through-life engineering services in civil aerospace will be worth \$2.5 trillion over the next 20 years. Within the widebody aeroengine market, airlines continue to use long-term service agreements such as Rolls-Royce's TotalCare package. In order to maximise engine uptime and product availability, and to keep the UK at the forefront of this servicing revolution, the eight REINSTATE partners will develop a portfolio of sensing, inspection, and repair techniques for use within on-wing installed engines, in the aerospace maintenance, repair, and overhaul network, and in an array of neighbouring industrial sectors.

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GKN AEROSPACE SERVICES LIMITED	Hybrid Hydrogen & Electric Architecture (H2GEAR)	£31,838,568	£11,716,593
AERISTECH LIMITED		£4,403,607	£3,082,525
INTELLIGENT ENERGY LIMITED		£14,475,453	£8,685,272
Newcastle University		£1,939,283	£1,939,283
The University of Manchester		£1,486,489	£1,486,489
University of Birmingham		£294,102	£294,102

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Project description - provided by applicants

H2GEAR develops a disruptive modular aerospace electrical power generation and propulsion system powered using hydrogen, enabling emission free flight, with water as the only by-product.

The innovative modular powertrain comprises a hydrogen fuel cell system and next generation cryogenic motor/drive and electrical network. A smart venting system, which aims to alleviate the challenge of contrails and their global warming potential, will also be explored.

H2GEAR equips the consortium with the necessary innovative technology for integration into hybrid and electric aircraft configurations up to 100PAX, and installation of future/retrofit Auxiliary Power Units (APU) into large category transportation aircraft (CS-25).

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ROLLS-ROYCE PLC	LUCIA (Large UltraFan Composite Integrated Aerostructures)	£29,689,190	£14,844,595
CAUSEWAY AERO LIMITED		£235,305	£164,714

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Project description - provided by applicants

LUCIA (Large UltraFan Composite Integrated Aerostructures) is a key enabler for the delivery of the UltraFan powerplant, by introducing unique new components to the UK aeronautical supply chain. A consortium of strategically important UK suppliers, innovative SMEs and leading aerostructure research universities will collaborate to push the boundaries of composite technology through providing novel large-scale bypass structures for performance in arduous environments. This includes an enabling flight pylon for the powerplant - a first for UK industry - providing fundamental learning for a future composite pylon, something currently not available in the market and unlocking significant weight savings.

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Q5D TECHNOLOGIES LIMITED	LiveWire	£1,008,540	£504,270
M-SOLV LTD		£441,967	£220,984
ONEPLM LIMITED		£87,577	£43,788
Safran SA		£119,221	£0
University of Sheffield		£160,470	£160,470

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Project description - provided by applicants

Wiring in aircraft, cars and many consumer electrical goods is done by hand. It is an expensive and laborious process that is prone to errors that can cause failures and sometimes even fires. The LiveWire project will create a machine that can automate manufacture and embed wiring into a component, such as: an airline seat, or a wall or floor panel, or perhaps a control panel in the flight deck. This will reduce cost and make lighter, higher-quality components. The technology will provide new employment opportunities in the UK and on-shore jobs lost to the fair-east.

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DENROY PLASTICS LIMITED	High Performance Thermoplastic Structural Overmoulding for the Aerospace Industry	£2,177,857	£958,257
Queen's University of Belfast		£397,434	£397,434
SHORT BROTHERS PLC		£1,407,408	£631,926

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Project description - provided by applicants

This project brings together the diverse strengths and capabilities of an SME, Large Company and Academia to develop a practical means of designing and manufacturing aerostructural composite components via a novel overmoulding process. The multi-component systems developed will be thermoplastic-composite based providing optimised integrated structures with the economic benefits of short cycle production times. The ultimate aim is to provide aerospace manufacturers with credible commercial alternatives to metallic or thermoset composite parts as part of an overall optimised multi-material strategy for the industry.

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AIRBUS OPERATIONS LIMITED	Smarter Testing	£5,495,000	£1,703,450
CFMS SERVICES LIMITED		£1,026,384	£1,026,384
DASSAULT SYSTEMES UK LIMITED		£1,702,140	£646,813
GOM UK LTD		£972,146	£486,073
NPL MANAGEMENT LIMITED		£966,808	£966,808
University of Liverpool		£497,511	£497,511

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Project description - provided by applicants

The Smarter Testing project aims to develop a novel testing and certification process for aeronautical structures through the use of an optimised test campaign that will combine virtual and physical tests to provide a step reduction in development lead-time and costs. This will be achieved through the development of a continuous digital thread between virtual and physical tests to increase the use of simulations that supports the whole lifecycle of the product, from early design to type-certification. Simulations will be validated using advanced measurements, quantitative data correlation methods and exploited through data analytics in order to increase credibility and maturity.

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MOOG CONTROLS LIMITED	CONVERGENCE	£10,280,014	£3,829,305
DELAPENA HONING EQUIPMENT LIMITED		£625,756	£438,029
Manufacturing Technology Centre		£3,528,161	£3,528,161

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Project description - provided by applicants

Project CONVERGENCE delivers a structured approach to implementing a 'digital thread'; incorporating Industry 4.0 innovative technologies such as future factory design modelling and optimisation, smart automation and flow-line enhancement. The industry led project is supported by key suppliers and research organisation capabilities. The increased capacity gained by the projected efficiency improvements will secure future high value work from the UK aerospace sector and enable the in-load of additional non-UK manufactured products. The increased capabilities and established technology innovations will be disseminated to both the project partners and wider industry through a Smart Factory Learning Centre and a SME Digital Handbook.

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TRUE POSITION ROBOTICS LIMITED	ADI (Automated Drilling and Inspection)	£901,517	£528,199
AIRBUS OPERATIONS LIMITED		£18,662	£0
BAE SYSTEMS (OPERATIONS) LIMITED		£27,247	£0
FANUC UK LIMITED		£63,849	£38,309
GKN AEROSPACE SERVICES LIMITED		£201,345	£0

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Project description - provided by applicants

Innovative robotic aerospace assembly project.

Project team includes Airbus, BAE Systems, GKN Aerospace, Fanuc UK and True Position Robotics.

Focus on high accuracy, low payload robot drilling to facilitate affordable and yet precise automation.

A UK designed and made metrology system will be further developed to allow simple integration into robot cells with open architecture to plug into other products in the digital factory.

Developing enhanced informatics for process control and feedback to design (Design for Manufacture)

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