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Engineers aim to make air travel greener

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Carbon emissions from air travel could be reduced thanks to a new collaboration between engineers from the Universities of Bath and Bristol and the aerospace industry.

The £1.4 million project will investigate new ways of using composite materials for wing panels in aircraft.

The research, funded by the Engineering & Physical Sciences Research Council (EPSRC) and aircraft manufacturers Airbus and GKN, will be using carbon fibres that are curved within flat plates to produce damage-tolerant, buckle-free structures.

This will lead to substantial cost and weight savings of between 10 and 30 per cent on structural components, saving fuel and reducing CO2 emissions from the aviation industry, in turn helping reduce the impact on the environment.

Dr Richard Butler is leading the [University of Bath team](#), which includes Dr H Alicia Kim, Professor Giles Hunt, Dr Wenli Liu and Andrew Rhead. The project stems from research carried out under the ABBSTRACT consortium (Airbus, Bristol, Bath Strategic Research Alliance in Composites Technology).

Professor Paul Weaver, from the Department of Aerospace Engineering and the [Advanced Composites Centre for Innovation and Science \(ACCIS\)](#), is leading the University of Bristol team, which includes Dr Kevin Potter and Dr Stephen Hallett.

The Bristol-based team will be leading the development and manufacturing of the new carbon fibre materials, and the Bath team will be investigating different designs for the structures of wing panels to test their damage tolerance. Both teams will be using mathematical modelling techniques to optimise and test their designs.

The addition of GKN to the collaboration, as one of Airbus' risk sharing partners and supplier of major wing components, creates a strong link with the manufacturing industry.



Researcher Chris Hurd in one of the autoclaves used to produce the carbon fibre structures

Dr Butler said: "This project could really make a difference in reducing the environmental impact of air travel.

"We will be pushing the boundaries of composites technology and believe we can help achieve thousands of tonnes in fuel saving over the life of an aircraft."

Professor Weaver added: "This exciting programme will help ensure that the UK is at the forefront of aircraft structures technology."

The University of Bath's [Research Development and Support Office](#) (RDSO) helped to draft and submit the successful bid for funding.

Dr Butler added: "The successful bid was a team effort. We are particularly grateful to the University's Research Development & Collaborations group within RDSO who helped in putting together the bid.

"We have a strong team which – together with our partners – is keen to build on our excellent track record in composite structures."

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