

# Powering space craft of the future

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Lancaster research will look at how mechanical energy generated by the vibration of the aircraft's wings can be transferred, stored and used to support the communications system.

Engineers at Lancaster University are working on powering future 'giant leaps' for mankind.

They are major partners of a consortium working on a new £1 million project to maximise '[energy harvesting](#)' on a space craft of the future.

The BAE Systems initiative seeks to find energy-saving and maximising solutions to enable eco-friendly aircraft to stay in space for long periods of time without the need to return to earth to re-fuel or to avoid carrying vast amounts of heavy fuel on long-stay journeys.

Principal Investigator Professor Jianqiao ye, of Lancaster University's Engineering Department, said: "Our role is to look at saving the power

used to support the monitoring system. There needs to be frequent communication between the aircraft and earth and power is needed to send huge constant quantities of data as well as receiving instructions from a communications centre."

The Lancaster research, which has just begun, will look at how [mechanical energy](#) generated by the vibration of the aircraft's wings can be transferred, stored and used to support the communications system.

Sensors constructed from special spatial material are adhered to the surface of the aircraft wing panels. Vibration from the wings is then transferred to and collected by the sensor to generate electricity and, therefore, maximising the energy generated by the craft.

Lancaster Researchers will examine the actual structure of the aircraft and estimate the amount of energy that can be 'harvested' in this manner by looking at the location, geometry of the sensor and the distribution of the energy.

The consortium will also look to see how the process could be improved and built on from, for example, a design perspective and using wireless connections to reduce weight.

The Engineering and Physical Sciences Research Council funded project is a three-year collaboration led by Exeter University and including UCLAN in Preston, BAE Systems, the Defence Science and Technology Laboratory (DSTL), Westland Helicopters, the Knowledge Transfer Network and several other companies.

Professor Ye added: "This is a very exciting project involving fundamental research and industrial impact national and internationally.

"There are many potential applications of this technology – not just for

the aerospace industry but for others including offshore activity – and the potential for a commercial development. It is the integration of different aspects of sensors, structure design, signals and software support – a full package of technology. We are very excited."

Provided by Lancaster University

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