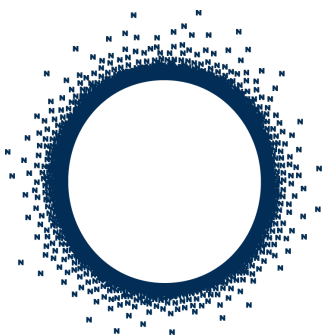




The ESA Business Incubation Centre in Harwell, UK, started its operations in 2011 and is managed by the Science and Technology Facilities Council (STFC). It is located at Harwell Campus, a world leading science, technology and business campus based in South Oxfordshire with more than 4,500 researchers, engineers and innovators from over 150 high-tech organisations, and a focal point and cluster for the UK's rapidly growing high-tech space community.

Oxford nanoSystems

increasing energy & generation efficiency.



Oxford nanoSystems

Website

Founded in 2012 by

- **Peter Dobson**
- **Mark Evans**

Incubation period

01-06-2012 to 31-05-2013



space solutions

Alumni

About Oxford nanoSystems

Oxford nanoSystems (OnS) have spent five years developing a ground-breaking coating technology which has shown substantial enhancements in heat transfer capabilities when applied to heat exchangers and other two-phase systems.

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The challenge

The removal of heat is a major factor in a range of industries from air conditioning and refrigeration to data centre cooling and power generation. The heat exchangers are the constraining component in all of these processes and being able to improve the transfer of heat transforms the weight, output and economic proposition of many of these systems. The basic principle is the use of a working fluid which boils as it passes through the exchanger removing heat from the system. Refrigeration, AC and Heat Pump technology (RACHP) currently consumes 16% of the total UK energy production, 10% of CO₂ production and has an indirect market value of goods and services produced of £100bn in the UK alone. It is expected that the amount of energy consumed by RACHP processes will increase dramatically as global temperatures rise and by improving the efficiency of the HEXs used it is possible to minimise the environmental impact.

The solution

OnS has developed nanoFLUX®; a low cost, low temperature heat transfer coating. This

coating has been independently verified, by a world leading thermal management team at Brunel University, and has demonstrated a more than six-fold increase in heat transfer coefficient within two-phase systems. The technology can be implemented onto any metallic heat transfer surface and is versatile to accommodate any type of geometry from fully brazed plate heat exchangers to millimetric tubes. The process itself can also be implemented as an aftermarket add-on, or adapted into pre-existing facilities without overhauling established factories.

The coating can be easily modified to cope with different refrigerants, environments and heat flux ranges and can be fully optimised for individual applications.

