

# Libertine announces first OpenFPE sale to Cranfield University

*Libertine's sale of its OpenFPE research engine to Cranfield University will advance green aviation.*

SHEFFIELD, YORKSHIRE, UNITED KINGDOM, January 14, 2025

/EINPresswire.com/ -- [Libertine FPE](#) has been selected by Cranfield University to supply a turnkey single-cylinder opposed free piston research engine for combustion experiments as part of the MINIMAL project to reduce the climate impact of aviation.

The MINIMAL project, a European consortium of leading industrial and academic partner organisations funded by Horizon Europe and UKRI, is assessing internal combustion technologies for future composite-cycle aero engines running on hydrogen or a sustainable aviation fuel. These engines will deliver net zero CO2 emissions with reduced fuel consumption and minimal climate impact.

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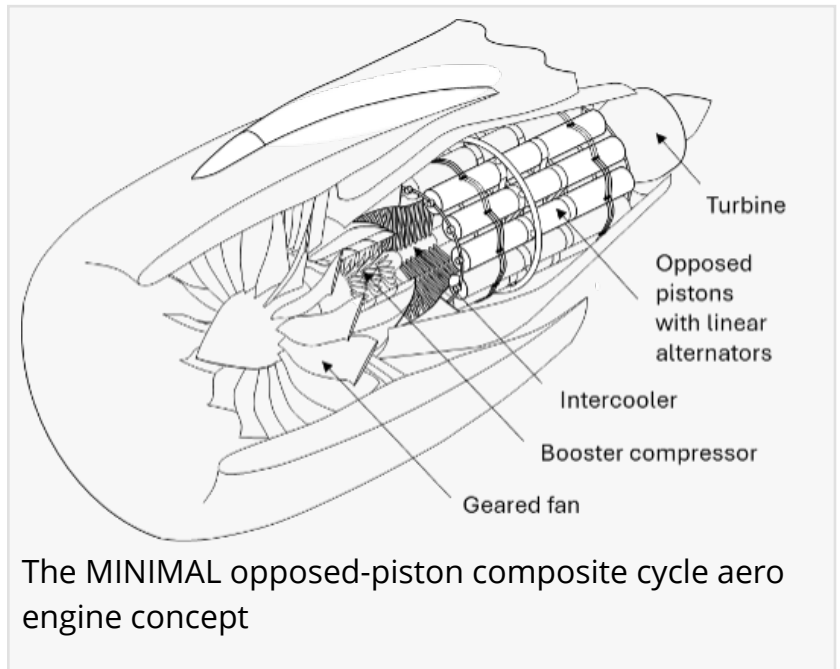
The Libertine OpenFPE research engine is ideal for our combustion experiments in the MINIMAL project.”

*Andrew Rolt, Senior Research Fellow at Cranfield University*

In a preferred engine concept from Cranfield University, the exhaust from a turbocharged multi-cylinder set of opposed free piston gas generators drives a turbine that powers the fan. The free piston gas generators also generate electric power via linear alternators and this is used to help drive the fan and booster compressor, giving a significant improvement in overall efficiency relative to a conventional turbofan engine. The experiments to be

conducted at Cranfield will investigate alternative fuel injection and ignition systems to maximise efficiency and minimise NOx emissions for hydrogen-fuelled engines.

Libertine's '[intelliGEN](#)' opposed free piston engine and control technology platform has the potential to deliver double-digit percentage improvements in fuel economy when integrated into

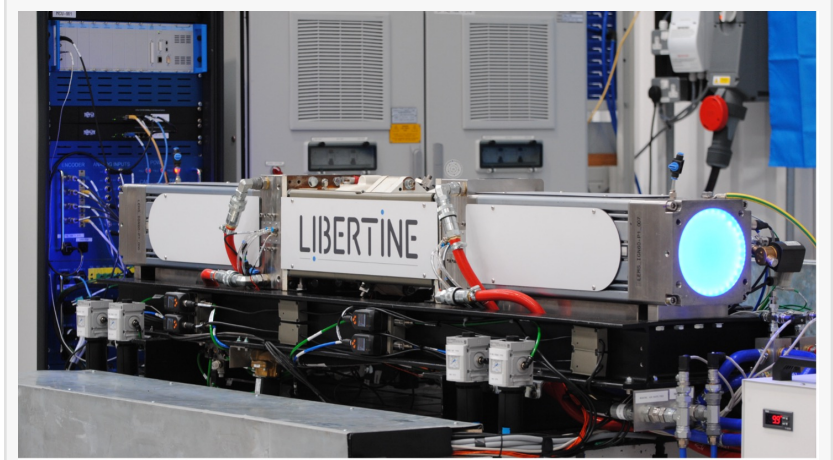


The MINIMAL opposed-piston composite cycle aero engine concept

commercial aero engines. Libertine has incorporated the intelliGEN platform into its 'OpenFPE' product, a research engine solution that will be supplied to Cranfield University.

OpenFPE is a turn-key free piston research engine solution for advanced combustion development and renewable fuels research programmes, combining a single cylinder opposed free piston Linear Generator module with the necessary power electronics,

motion controls and auxiliary systems for operating the system. OpenFPE has been designed to enable combustion system components to be modified or swapped, and to improve research and development productivity with tools for system modelling, data acquisition and analytics.



Libertine's OpenFPE single cylinder research engine

Sam Cockerill, Chief Executive of Libertine, said: "OpenFPE is the first ever research engine that offers real-time compression ratio control, multi-fuel capability and a customer-configurable combustion system. It provides leading research organisations with the means to quickly integrate intelliGEN free piston technology into their programmes, shortening the development cycle and allowing researchers to focus on experimental validation of a wide range of new engine and power generation architectures."

Andrew Rolt, Senior Research Fellow at Cranfield University, said: "The Libertine OpenFPE research engine is ideal for our combustion experiments in the MINIMAL project. Its flexibility will enable us to make NOx emissions measurements over a wide range of operating conditions representative of those to be encountered in a future hydrogen-fuelled commercial aero engine."

#### About Cranfield University

Cranfield is a specialist postgraduate university with globally renowned expertise in science, technology, engineering and management. We deliver applied research that has real-world impact – 88% of our research is world-leading or internationally excellent (REF2021).

Our innovative education is enhanced by large-scale facilities and global industry partnerships. Cranfield is one of the few universities in the world to have its own airport – our global research airport is a unique environment for research. We are a six-time winner of the prestigious Queen's Anniversary Prize, the highest national honour for educational institutions.

Cranfield is a leading centre for research and development in hydrogen with projects in production, storage, propulsion, usage, aircraft design and airport operations. The University is developing the Cranfield Hydrogen Integration Incubator (CH2i) which will create the first large-

scale hydrogen research hub at any UK airport.

<https://www.cranfield.ac.uk/academic-disciplines/hydrogen>

### About the MINIMAL Project

The Horizon Europe and UKRI project MINIMAL (Minimum environmental impact ultra-efficient cores for aircraft propulsion) will contribute to a radical transformation in air-transport by providing technology that, in collaboration with the aviation ecosystem, will substantially reduce aero engine emissions and the climate impact of aviation. The MINIMAL project is led by Chalmers University in Sweden and has nine active partners, including Cranfield University. Further details at <https://www.minimal-aviation.eu/>

### About Libertine

Founded in 2009, Libertine provides technology platform solutions for Original Equipment Manufacturers ("OEMs"), enabling efficient and clean power generation from renewable fuels, and more effective energy storage devices and gas compressor systems. Libertine was admitted to trading on the AIM market of the London Stock Exchange in December 2021.

Libertine has created two technology platforms, each using the same core technology elements, which the Company provides to its OEM customers for their development of Linear Generator and Linear Motor products:

- The intelliGEN™ platform enables the creation of clean, highly efficient and fuel-flexible Linear Generator products including:
  - Heavy-duty hybrid powertrains of trucks, buses, tractors, construction and mining equipment;
  - Medium and light-duty hybrid powertrains of commercial vehicles operating over longer distances;
  - A proportion of the passenger automotive market where vehicle use and recharging constraints are a barrier to battery electrification; and
  - A wide range of off-grid, portable power and distributed power generation applications.
  
- The [HEXAGEN](#)™ platform enables more effective energy storage, thermal power generation, waste heat recovery and gas compression products including:
  - Stirling Engine power generators and thermal energy storage systems;
  - Linear motor reciprocating compressor (LMRC) systems for hydrogen refuelling stations; and
  - Organic Rankine Cycle waste heat recovery systems.

The potential market for Linear Generator products goes well beyond the distributed power generation applications where Linear Generators are already in commercial use today, complementing intermittent renewable power with clean, on-demand power generation. Linear Generators also have the potential to complement battery electrification in hybrid powertrains, providing on-board power generation to address the practical and economic barriers to rapid adoption of clean electric propulsion using battery electric powertrain technology alone.

Working with OEMs from an early stage in the development cycle ensures Libertine's technology is effectively integrated into OEM products, maximising the performance and economic benefits provided by Libertine's platform technology. Libertine has developed a portfolio of over 30 granted patents in addition to a significant body of technical know-how generated since the Company's formation.

For more information, please visit [www.libertine.co.uk](http://www.libertine.co.uk)

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