



AIRBUS HELICOPTERS BEGINS FLIGHT TESTING HIGH-COMPRESSION ENGINE DEMONSTRATOR

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Airbus Helicopters has completed the first flight of a lightweight, high-compression engine (HCE) on an H120 Colibri helicopter technology demonstrator.

The 6 November sortie of the light-single, modified with a 4.6 litre V8 high-compression piston engine, is part of the “green rotorcraft” component of European Clean Sky initiative. The powerplant is designed to lower noise and emissions levels while boosting the performance and fuel efficiency of the helicopter. The project is supported by France’s TEOS Powertrain Engineering and Austro Engine of Austria.

Tomasz Krynski, Airbus Helicopters’ head of research and innovation, says the 30min flight at the airframer’s Marignane, southeast France headquarters “confirms the advantages of new-technology high-compression piston engines for rotorcraft in offering reduced emissions, up to 50% lower fuel consumption depending on duty cycle, nearly double [the] range and enhanced operations in hot and high conditions”.

Over the coming months Airbus Helicopters says the in-flight evaluations of the HCE demonstrator will also focus on the right power-to-weight ratios “that would make high-compression engines sustainable alternatives to the turbine powerplants typically used in the helicopter industry”.

The H120's adapted 4.6 litre high-compression engine incorporates numerous technologies already applied on advanced self-ignition examples, the airframer adds, and runs on the "widely-available" kerosene fuel.

Its V8 design has the two sets of cylinders, Airbus Helicopters explains. These are "oriented at a 90° angle to each other, with a high-pressure (1,800bar or 26,100psi) common-rail direct injection and one turbocharger per cylinder bank".

Other features include fully-machined aluminium blocks and titanium connecting rods, pistons and liners made of steel, liquid-cooling and a dry sump management method for the lubricating motor oil as used on aerobatic aircraft and race cars.

Environmental targets of Clean Sky are to reduce specific fuel consumption by 30%, CO₂ and NO_x emissions by 40% and over 50% respectively, says Airbus Helicopters.

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