Test site for ESA-backed airbreathing engine

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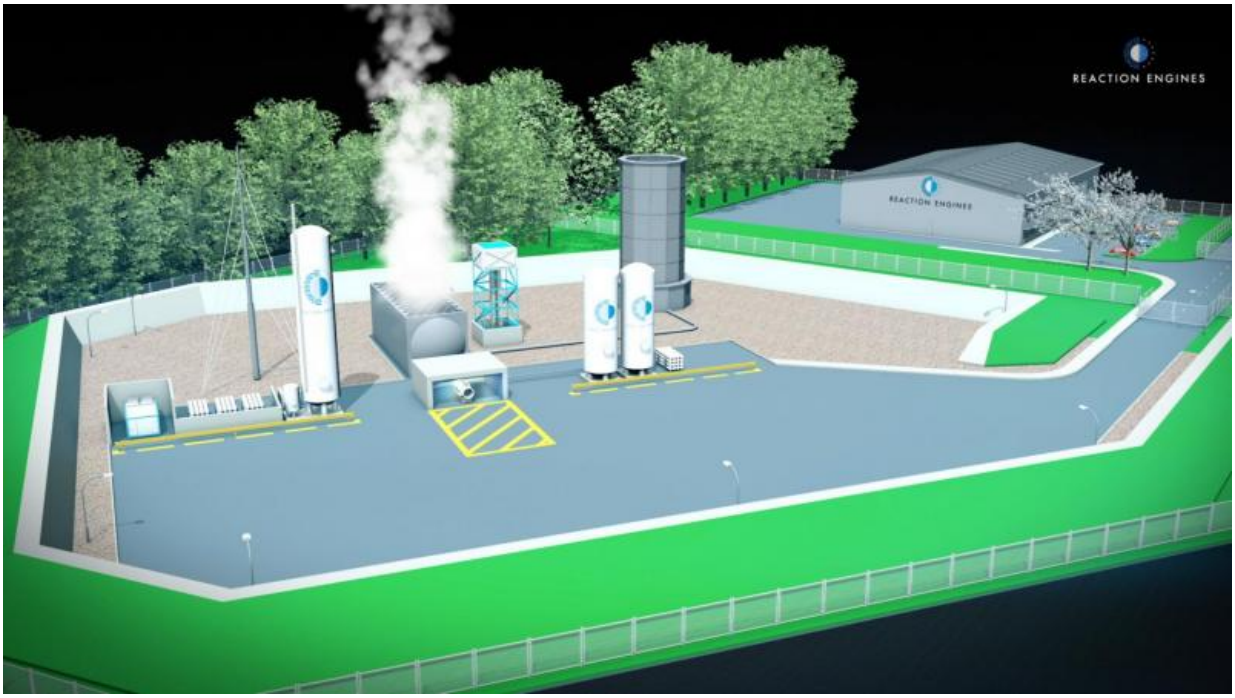


The new rocket engine test facility at Westcott, Buckinghamshire, UK, designed for the first ground demonstration of the SABRE airbreathing rocket engine, designed by Reaction Engines Ltd with ESA support. It will consist of a multipurpose propulsion test stand designed to accommodate various test engine configurations, an assembly building, workshops, offices and control room. The location of workshops and other support facilities alongside the test stand will enable configuration changes to the engine to take place at the site, reducing the down time between testing phases and accelerating the engine's development. Credit: Reaction Engines Ltd

Work began today on building the UK's latest rocket engine test facility, designed for firing the engine core of the ESA-backed SABRE propulsion system within three years.

The Synergistic Air-Breathing Rocket Engine is uniquely designed to scoop up atmospheric air during the early part of its flight to orbit. This slashes the need for the vehicle to carry bulky onboard oxygen for this part of the ascent, before switching to rocket mode drawing on internal propellants for its final climb to space.

Such engines have the potential to revolutionise space launches, powering vehicles that can take off and land like aircraft.

Capable of airbreathing flight up to five times the speed of sound, they could also lead to hypersonic air travel.

UK company Reaction Engines Ltd has been working on the engine for many years, with ESA playing an important technical management role since 2008.

Today, ground was broken on the new test facility at Westcott Venture Park in the UK, an historic site for rocket research over the past seven decades. Engines for the Blue Streak and Black Arrow rockets were tested there, for example.

"The opening of this new test facility marks an historic moment for the European aerospace industry and for the UK research and development in rocket propulsion," remarked Franco Ongaro, ESA Director of Technology, Engineering and Quality.

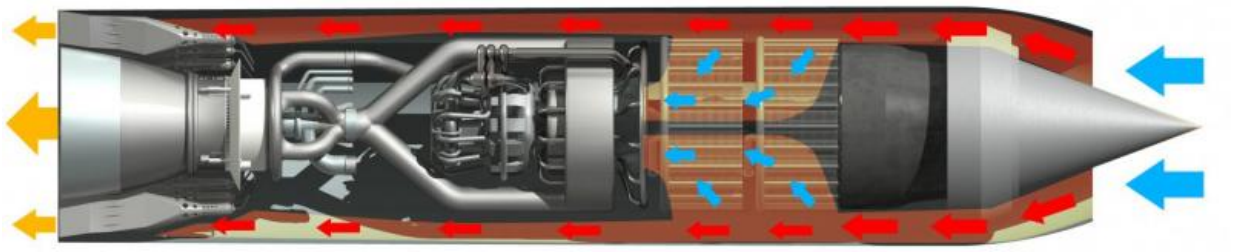
The Synergistic Air-Breathing Rocket Engine, or SABRE, designed by UK-based Reaction Engines Ltd is a hybrid jet and rocket engine designed for a single-stage-to-orbit space plane. Incorporating innovative precooler technology (seen left of the right-side intake) able to chill superheated air in a fraction of a second, SABRE would use oxygen from the atmosphere until it reaches above Mach 5, after which it would shift to a closed-cycle rocket mode. The concept paves the way for true spaceplanes – lighter, reusable and able to fly from conventional runways. Reaction Engines plan for SABRE to power the 84 m-long pilotless Skylon, which would do the same job as today's rockets while operating like an aeroplane, potentially revolutionising access to space. Credit: Reaction Engines Ltd

"This facility enables the ground test of the engine cycle, opening the way to the first test flights, and to a new era.

"ESA is proud of this partnership with industry and the UK Space Agency, to which we bring our technical competence, which has supported the development to this stage, and we are confident, to its future flight success."

ESA has invested €10 million in SABRE, joining £50 million from the UK Space Agency.

ESA independently reviewed the engine's viability in 2010, opening the way to UK government investment. Reaction Engines Ltd has subsequently received private investment from BAE Systems, focused on accelerating development.



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In 2012 ESA oversaw testing of the prototype 'precooler' required to cool the air, followed by research and development projects covering other elements such as the novel rocket nozzles, air intake design and thrust chamber cooling.

Provided by European Space Agency