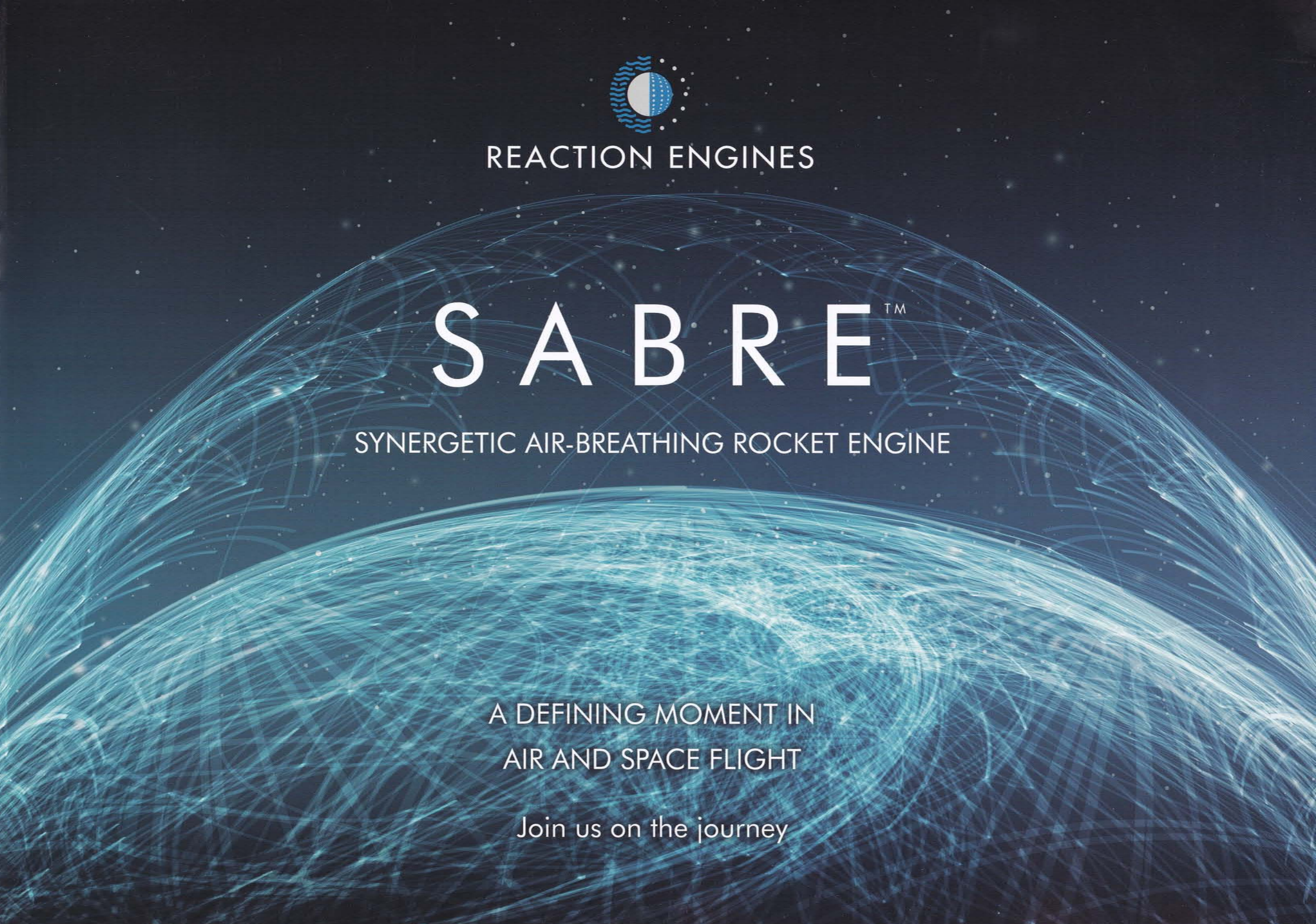
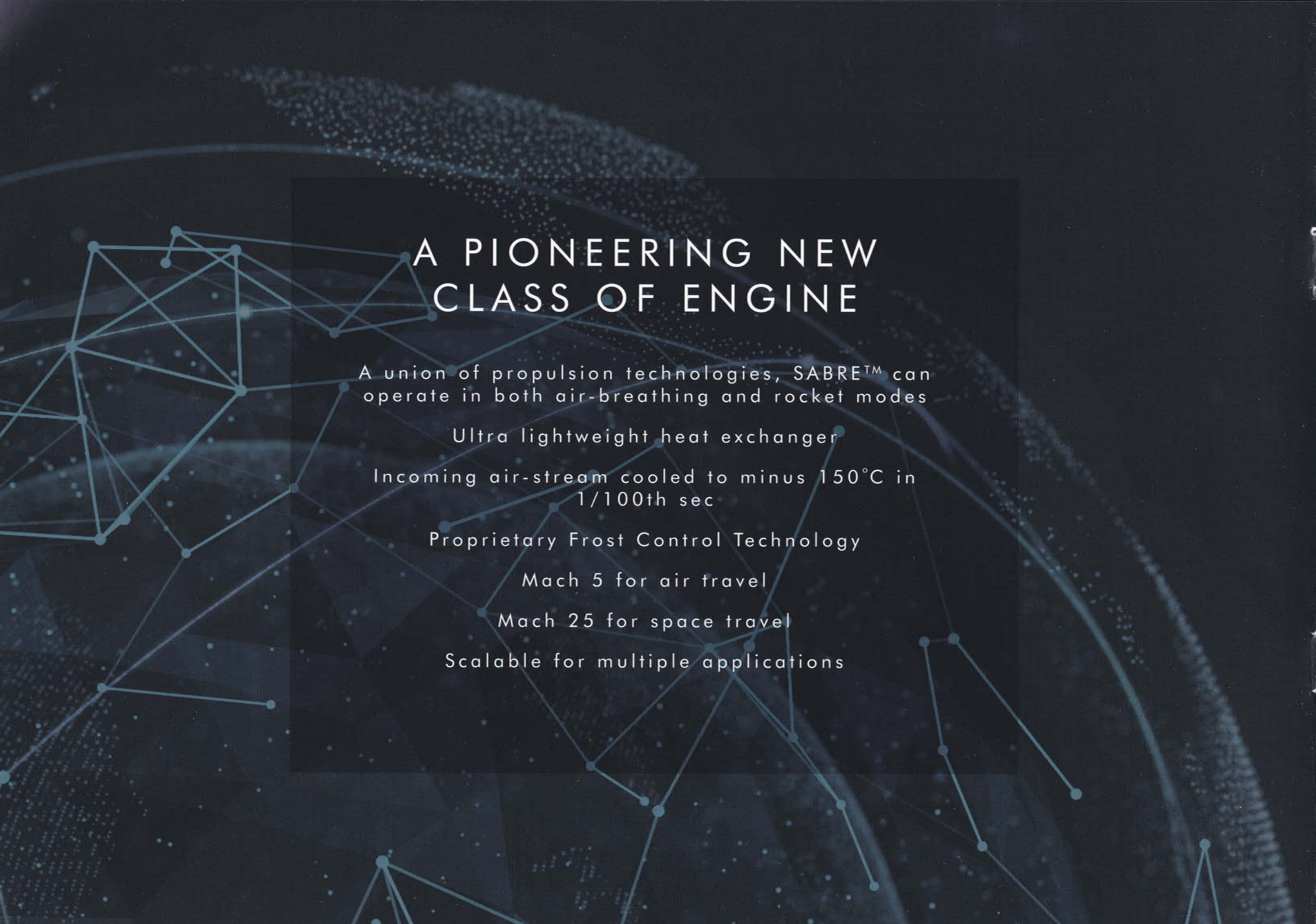

REACTION ENGINES
SABRE™
SYNERGETIC AIR-BREATHING ROCKET ENGINE
A DEFINING MOMENT IN
AIR AND SPACE FLIGHT
Join us on the journey



A PIONEERING NEW CLASS OF ENGINE

A union of propulsion technologies, SABRE™ can operate in both air-breathing and rocket modes

Ultra lightweight heat exchanger

Incoming air-stream cooled to minus 150°C in 1/100th sec

Proprietary Frost Control Technology

Mach 5 for air travel

Mach 25 for space travel

Scalable for multiple applications

ABOUT REACTION ENGINES

Welcome to Reaction Engines Ltd. We are a UK-based company that was formed in 1989 to design and develop the technologies needed for an innovative Synergetic Air-Breathing Rocket Engine. The result of two decades of research is SABRE™.

SABRE™ is a new class of combined cycle propulsion system. It is capable of operating from a standing start to speeds over Mach 5, or transition to a rocket mode for space access. It enables a new generation of air and space vehicles - efficient, long range hypersonic air flight and reusable, responsive space launch.

Though the SABRE™ engine utilises many existing ramjet, turbojet and rocket architectures, two new key aerospace areas had to be addressed: ultra-lightweight heat exchangers and frost control. Our revolutionary development offers a unique combination of high thrust to weight ratio and low fuel consumption, by re-injecting the heat absorbed in the cooling process to drive the turbo machinery.

Right now, the company is backed by the UK Space Agency and European Space Agency. It has had a recent £20.6m minority investment by BAE Systems and a £60m commitment from the UK government. We've also begun partnering with aerospace suppliers to deliver a ground-based SABRE demonstrator engine. There's never been a better time to join us on the journey.

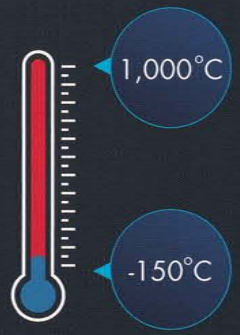
"ESA is confident that a ground test of a sub-scale (SABRE) engine can be successfully performed to demonstrate the flight regime and cycle and will be a critical milestone in the development of this programme and a major breakthrough in propulsion worldwide."

European Space Agency Report to the UK Space Agency

SABRE™

THE ENGINE THAT'S TRANSFORMING AIR AND SPACE FLIGHT

This is a truly versatile propulsion system. SABRE™ is an air-breathing rocket engine that can propel an aircraft from zero to five times the speed of sound and 25 times the speed of sound for space access. Another advantage of this engine is that it's highly scalable. Along with its huge range of operation, this is a defining moment in powered flight.



ULTRA-LIGHTWEIGHT HEAT EXCHANGERS

Our ground-breaking proprietary technology cools incoming air from temperatures of 1,000°C to - 150°C in less than 1/100th of a second. Frost control technology stops it becoming blocked with ice

RAMJET

The ramjet mixes excess air from the intake with evaporated hydrogen from the cooling process to generate thrust during acceleration

ROCKET ENGINES

SABRE's rocket mode uses a conventional LH2/LOX engine combined with other SABRE™ subsystems for the ascent into space

EFFICIENT THERMODYNAMICS

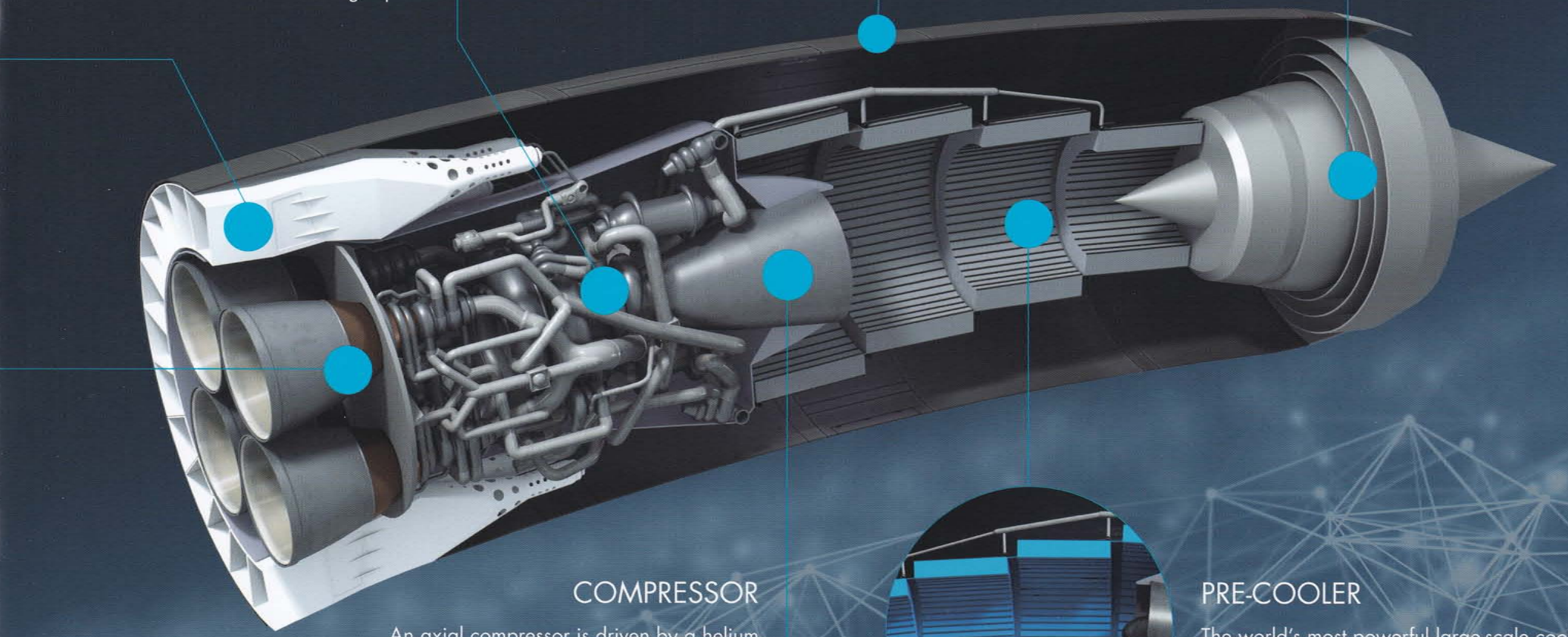
Heat absorbed by the engine's heat exchangers powers engine components, significantly reducing fuel consumption at high speeds

NACELLE

SABRE™ engines can be installed in an engine pod like jet engines

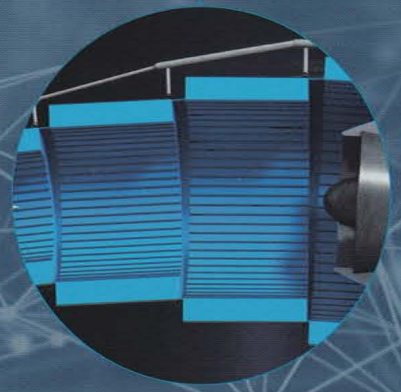
SUPERSONIC AIR INTAKE

The intake slows the air entering the engine, and has to operate from zero to over Mach 5 before closing for rocket mode



COMPRESSOR

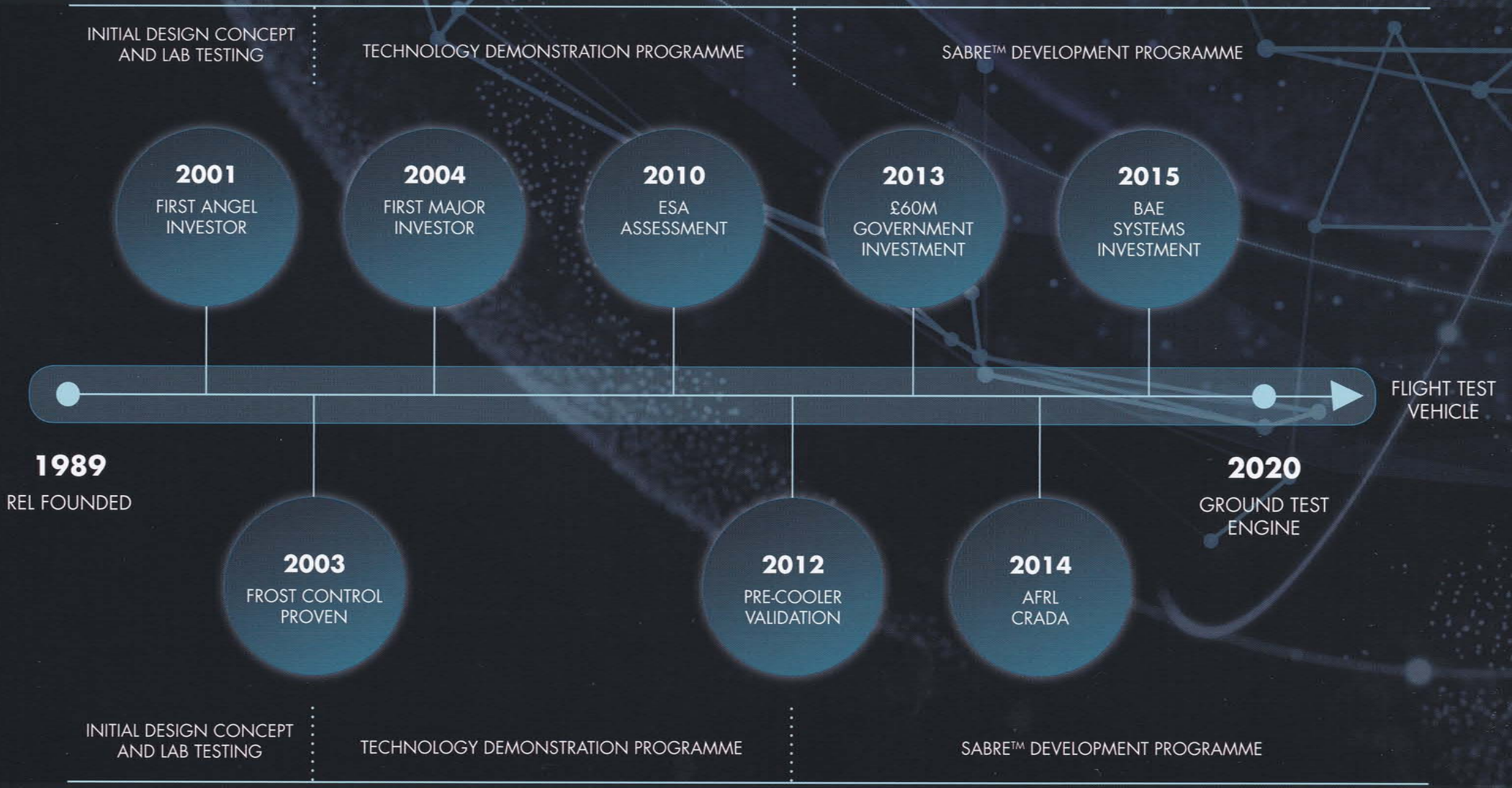
An axial compressor is driven by a helium turbine, turning the heat absorbed in the pre-cooler into useful work



PRE-COOLER

The world's most powerful large-scale cooling unit, capable of transferring 400MW of heat with less than 1 tonne of hardware

SPACE TECHNOLOGY THAT WILL CHANGE THE WORLD IN YOUR LIFETIME.



JOIN US.
YOU'LL BE IN GOOD COMPANY

SABRE™ is a leading contender for the next generation of hypersonic flight and space access vehicles. It is a major breakthrough in propulsion worldwide. It is a new class of engine with multiple applications that offers access to a wealth of both new and existing markets.

Already we have achieved a network of impressive international partnerships and collaborations. It presents a cutting-edge opportunity. So come and talk to us, and be part of it.

"(Reaction Engines') successful demonstration of the frost control... is a major milestone that has so far eluded other international developments."

European Space Agency Report

esa

BAE SYSTEMS

UK SPACE AGENCY

BRITE PRECISION

CROSSMAN ENGINEERING

airborne engineering

BAYERN-CHEMIE an MBDA company

BE PART OF THE JOURNEY

Find us at Farnborough International Airshow 2016:

Reaction Engines: Stand C, Hall 4 | BAE Systems plc: FIVE Building | UK Space Agency: UK Pavilion, Space Zone

REACTION ENGINES
Aerospace Propulsion Systems

Please contact us on:
E: farnborough@reactionengines.co.uk
T: +44 (0)1865 520200

reactionengines.co.uk/sabre

Jack's Aerospace History Files

Junkers Ju 287

The most advanced
Jet-Bomber
of the Luftwaffe

This is the story of an aircraft that might have changed the air-war in 1945/46. Lots of photos, drawings, information, data and more than 6000 words give a detailed insight into the development of this unique piece of aviation.

Available as eBook on

Amazon

and

smashwords

Uwe W. Jack occasionally puts new documents on his website.

Please visit:

www.aerospace-jack.com