Pioneering the power that matters

Aerospace R&D Funding Call Promotion Webinar – Joint UK-SE Call for Proposal

Who we are

We are one of the world's leading industrial technology companies.

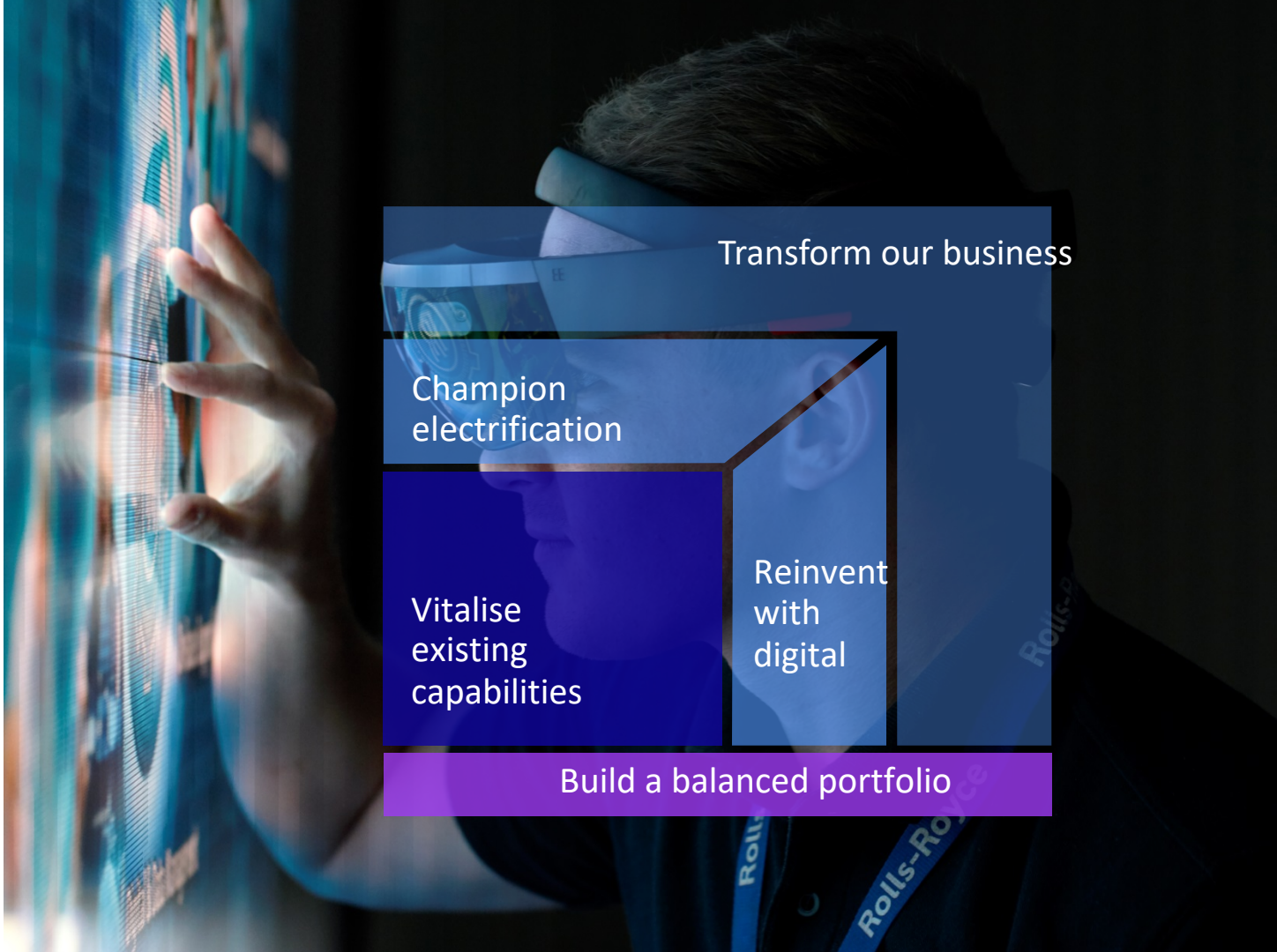
Our purpose is to pioneer the power that matters to connect, power and protect society.

Our strategy

The nature of power is being transformed by digitisation and electrification.

We are vitalizing existing capabilities, championing electrification, reinventing with digital, building a balanced portfolio and transforming our business.

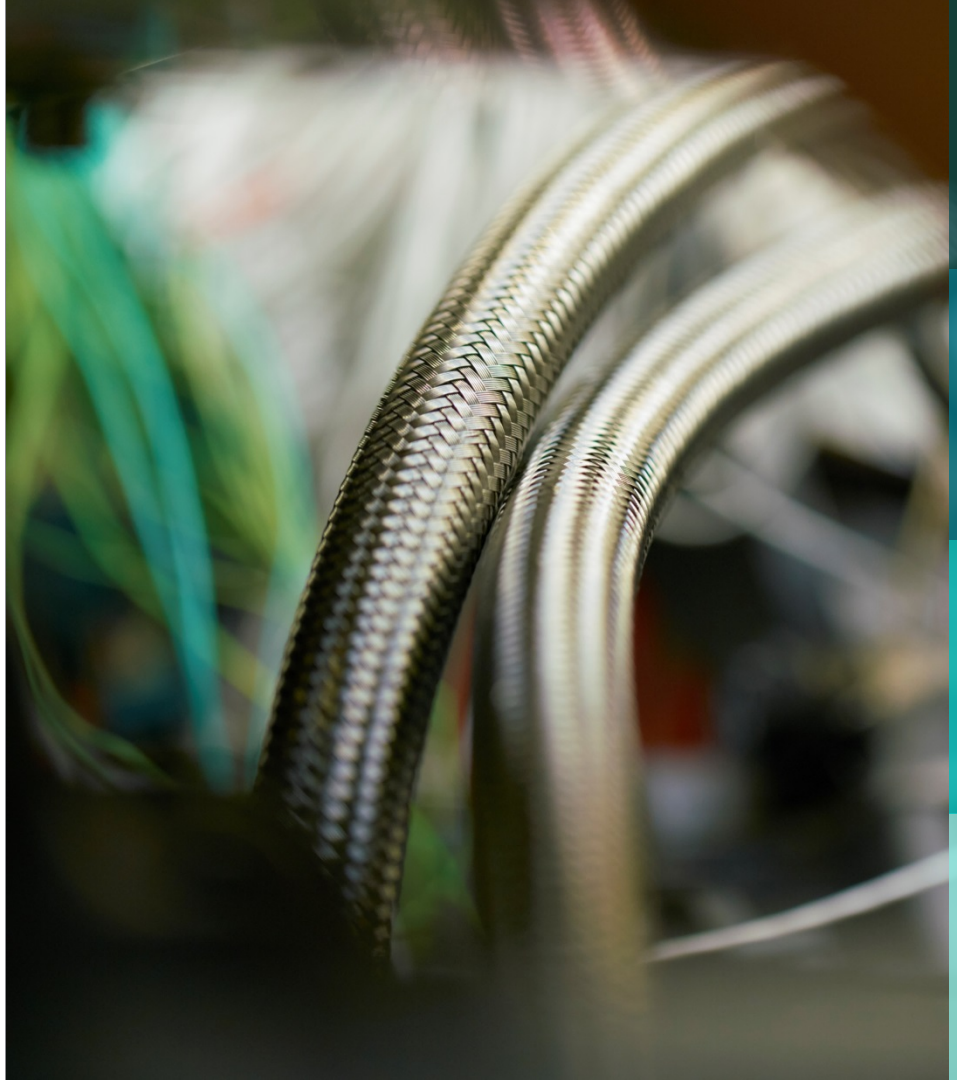
Our people and our technology are core
to our strategy.



Our performance

We have made solid progress with financial results ahead of expectations.

After a decade of significant investment we remain committed to delivering improved returns while continuing to invest in the innovation needed to realise our long-term ambitions.



Underlying revenue [1]

£15.3bn

Operating profit [1]

£810m

Free cashflow [1]

£911m

Patents*

830

[1] 2019 results reported on an IFRS 16 basis
*Patents approved for filing in 2019

Our business

We are tightly focused into three core operating businesses and ITP Aero.

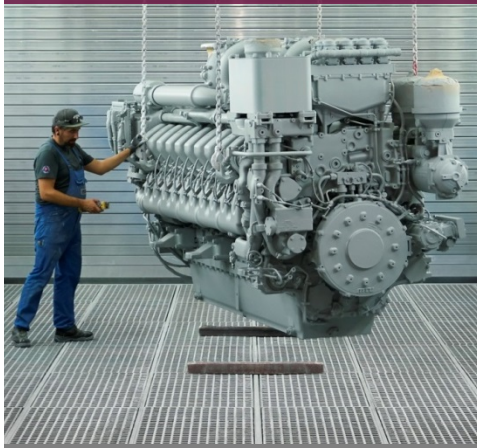
Civil

35
types of commercial aircraft powered by us

13,000
engines in service around the world

47%
of total employees

Power Systems



1,200
development, service product, and dealerships locations

20,000
reciprocating engines sold per year

19%
of total employees

Defence

150
customers in over 100 countries

16,000
engines in service around the world

19%
of total employees

Collaborate on sustainable aviation fuels

Key areas of focus in Civil Aerospace

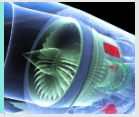
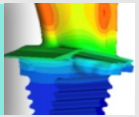
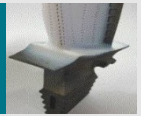
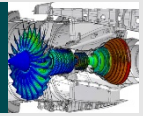
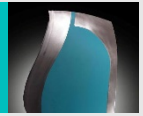
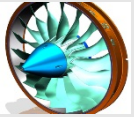
All closely inter-connected and being developed in parallel

All have a role to play in the decarbonisation of our industry

Continue to evolve the gas turbine

Increase integration between airframe and engine

Develop alternatives such as electrification, hydrogen

Architecture and design	Manufacture	Advanced materials	Intelligent systems
Advance Core architectures 	Advanced manufacturing research centres 	Advanced alloys: TiAI 	Future systems 
Lean burn / low emissions combustion 	Additive Layer Manufacturing 	Advanced alloys: Ni Alloys 	Aerothermal excellence 
UltraFan (VHBR) 	Specialist turbine manufacture 	Ceramic Matrix Composites (CMCs) 	
Virtual engine 		Lightweight C(Ti) fan system 	
Small engine core technologies 			
Small engine fan 			

Our full-scale Technology programmes – all contribute to greater sustainability

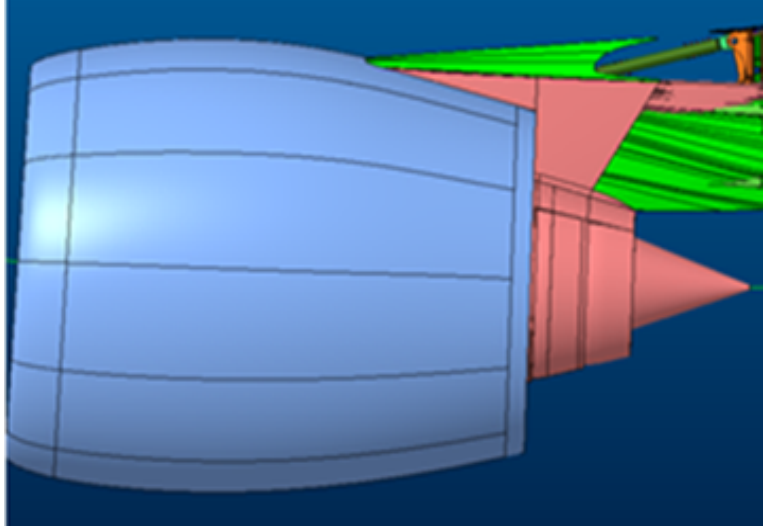
Significant collaborations on integration

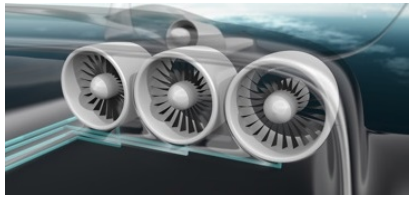
Boeing short inlet

UltraFan demonstrator

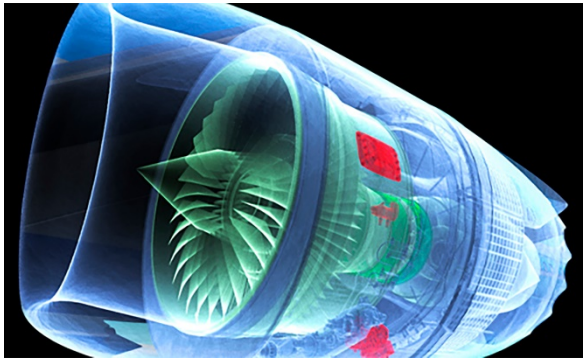
AIRC (Aerospace Integration Research Centre) now operational

Exploring novel concepts





Innovative aerospace technologies



World-leading, Research facility

Electrification and Civil Aerospace

Timing and impact in each market is uncertain.

Maintaining options is key to developing capability to support potential requirements.

A number of demo programmes underway

Acquisition of Siemens eAircraft completed

Early 2020s	Mid 2020s	Late 2020s	2030s	2010s-2040s
Personal Air Mobility (PAM)	Small Regional	Large Regional	Narrowbody & small/medium bizjets	Widebody & large bizjets
200nm	400nm	850nm	1,500nm	4,000nm

All electric

Hybrid electric

More electric

Sustainable Aviation Fuels (SAF)

Vital in reducing the carbon emissions of our industry

Latest Trent and business jet engines are compatible with blended SAF

Currently only 0.01% of global flights are flown on SAF

Suitability	Sustainability	Scalability
		
Energy density Fuel specification	+ Carbon neutral Food and water considerations	+ Mass production Global distribution

UK-SE Last Call

RR / ASCATRON

Silicon Carbide Technologies for Aerospace Applications (SiCTAA)

- Duration : 18 months
- Five Participants (4 UK, 1 SE)
- Develop a supply chain for novel Silicon Carbide Junction Gate Field-Effect Transistor devices for use in lightning strike protection and power electronics applications in aerospace; providing higher temperature capable and more radiation tolerant electronics to facilitate the More Electric Engine.

2020 UK-SE Call

Potential Scope / Topics of Interest:

- Through this Call, Rolls-Royce interested in collaboration with UK & Swedish
  - Catapult Centres
  - Universities
  - SMEs
  - Industrial Organisations
- In current environment – level and spread of financial contribution is critical
- Topic Areas: Multi-disciplinary design optimization, System Design, Hydrogen Based Propulsion, Aerodynamic Duct Design, Complex Bleed Systems, Complex Carbon-Fibre Structures, Software/Sensor Fusion, Cyber Protection Systems, High Pressure Warm Forming, Metal Ceramic Composites, Ultrasonic Defect Identification, Low Profile Dampening Liners
- Today Rolls-Royce is partnered with GKN in UK & Sweden in R&T programmes (e.g. UltraFan®)
- Other collaborations exist today e.g. Chalmers (Fuel pumping), Ascatron (harsh environment electronics)

Thank You.