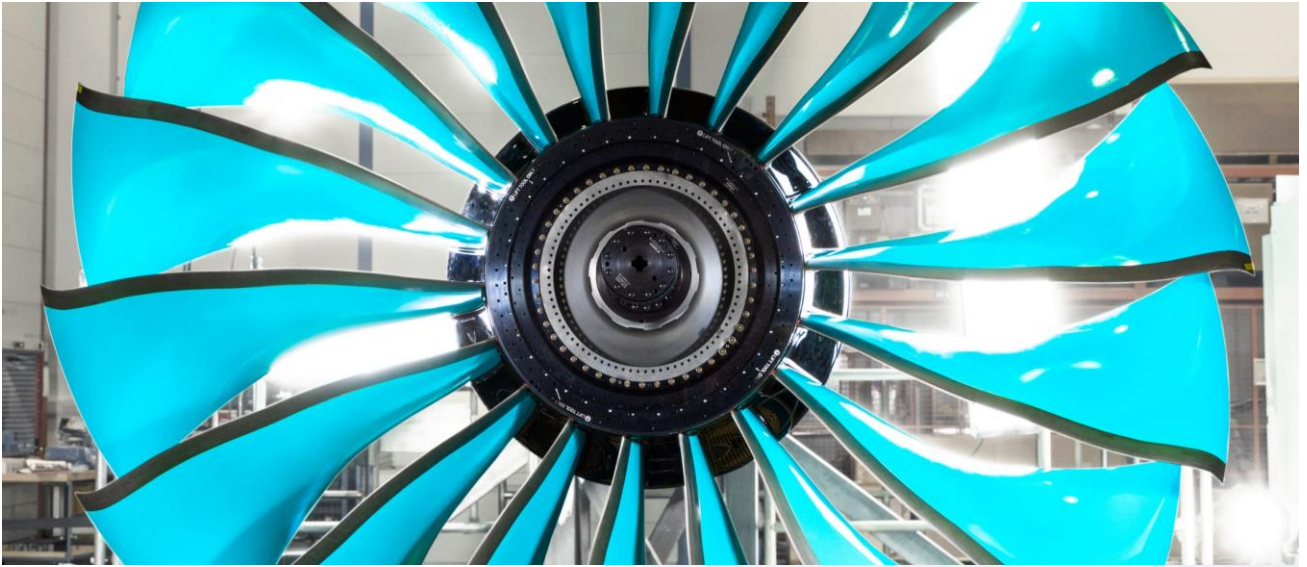


UltraFan®

The Ultimate TurboFan

UltraFan is the world's largest aero engine technology demonstrator, providing both a new engine design and a suite of technologies that can support sustainable air travel for decades to come.



- UltraFan will be 25 per cent more fuel efficient than the original Trent 700 and is a key element of the Rolls-Royce sustainability strategy as part of its commitment to continue to improve gas turbine performance and efficiency.
- UltraFan features a new architecture and light-weight composite materials as well as the world's most powerful aerospace gearbox.
- UltraFan also offers a 40% improvement in NOx and 35% lower noise
- In addition, UltraFan will be compatible with 100% sustainable aviation fuels and we are also exploring hydrogen and hybrid-electric as alternative forms of power.
- There is also potential to transfer technologies from UltraFan to current in-service engines to provide even greater fuel efficiency and reductions in emissions.

Engine demonstrator build in final phase

The engine demonstrator (UF001) is now in the final build phase.

It will then undergo final instrumentation and the testbed will be fully calibrated.

The engine will then go on test at the new engine test facility, Testbed 80, in Derby UK later this year,

The first run will be on 100 per cent Sustainable Aviation Fuel.

UltraFan is due to be available to the market in the 2030s, with timing determined by airframer requirements and market demand.



Technology and architecture

UltraFan features

- **A new engine core architecture**
to deliver maximum fuel burn efficiency and reduce emissions
- **A CTi Fan System**
with carbon/titanium fan blades and a composite casing
- **Advanced manufacturing and materials and technologies**
such as ALM to save on waste and allow for more intricate designs and CMC materials to withstand higher temperatures
- **A geared design**
which will deliver efficient power for the high-thrust, high-bypass ratio engines of the future. The Power Gearbox is the world's most powerful aerospace gearbox.

Performance

25%

More fuel efficient
than first generation Trent
The Trent 700

10%

More fuel efficient
than the Trent XWB

Currently the most efficient
aero-engine in service

Engineering fun facts

- **Fan diameter**
The UltraFan demonstrator is the world's largest engine demonstrator with a fan diameter of 140 inches
- a London tube train could run through a circle the size of the engine's fan case.
- **The power gearbox**
Approximately one square metre but can produce more than 50 MW
- enough to power 500 family cars.
- **Testbed 80**
The largest and smartest indoor aerospace testbed in the world.
- with an internal area of 7,500 square metres, it is larger than a football pitch.

Funding organisations

Clean Sky/Clean Sky 2, Aerospace Technology Institute, Innovate UK, LuFo, Brandenburg State.

Images

Available in a dedicated UltraFan folder on the [Rolls-Royce flickr.com account](#)