



ROLLS-ROYCE SETS NEW AEROSPACE RECORD WITH ULTRAFAN POWER GEARBOX

News / Manufacturer



Rolls-Royce today announced that it has set a new record for the world's most powerful aerospace gearbox, just months after testing began. Speaking at the International Society for Air Breathing Engines (ISABE) conference in Manchester, UK, Paul Stein, Chief Technology Officer at Rolls-Royce, confirmed that the Power Gearbox had successfully reached 70,000 horsepower while on test at Rolls-Royce's dedicated facility in Dahlewitz, Germany. The Power Gearbox will play a central role in the company's next-generation UltraFan® engine, helping to deliver improved efficiency over a wide range of thrusts.

Testing of the first demonstrator gearbox began on a specifically designed rig in May and having proven that the Power Gearbox is capable of managing the equivalent power of around 400 family cars at full throttle, testing will now focus on lower power functions such as endurance and reliability.

Rolls-Royce's Power Gearbox is designed to run all the way up to 100,000 horsepower and future demonstrators are expected to achieve these levels. When running at maximum power, each pair of teeth on the gearbox will transmit more power than an entire grid of

Formula 1 cars between them.



The Power Gearbox has a planetary design, with each ‘planet’ capable of holding the force of a Trent XWB engine at full throttle. It is designed to allow the shafts at the core of the engine to run at very high speeds while allowing the fan at the front of the engine to run at a slower speed. The associated improvement in efficiency and reduction in weight will allow the UltraFan engine to offer a 25% fuel efficiency improvement over the first generation of Rolls-Royce Trent engines.

Commenting on the milestone, Paul Stein, Rolls-Royce – Chief Technology Officer, said: “Setting this record is a great achievement for the team and I’m proud we’ve managed to get there so quickly. Our Power Gearbox technology is central to the success of the next generation of Rolls-Royce jet engines and I’m pleased to see us pushing back engineering boundaries with this work.”

Arndt Schoenemann, Managing Director, Liebherr-Aerospace Lindenberg GmbH commented: “Reaching this milestone and impressive performance is proof of the great co-operation of all parties involved and especially of the expertise that accumulates in our joint venture with Rolls-Royce. Together, we are writing aerospace history.”

As well as high power testing, the Power Gearbox is also undergoing Attitude Rig testing, which simulates the effect of the gearbox being on the wing of an aircraft in flight, through phases such as take-off, climb, banking and descent.

Rolls-Royce is working in partnership with Liebherr-Aerospace, through our Aerospace Transmission Technologies joint venture, to develop manufacturing capability and capacity for the new Power Gearbox. Rolls-Royce leads the design definition and design integration of the project, as well as testing activities.

The UltraFan engine, available from 2025, will feature:

- Maximum fuel burn efficiency and low emissions through a new engine core architecture
- Reduced weight through the use of Carbon Titanium (CTi) in fan blades and a composite casing
- Increased efficiency through the use of ceramic matrix composites (CMCs) which are heat resistant and require less cooling air
- Efficient power for high by-pass ratio engines of the future through a geared design



04 SEPTEMBER 2017

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