



ROLLS-ROYCE SMALL ENGINE SET TO BEGIN TESTS TO ADVANCE HYBRID-ELECTRIC FLIGHT

News / Manufacturer



Rolls-Royce new small gas turbine that has been specifically developed to power hybrid-electric flight is set to begin testing. The engine is part of a turbogenerator system that is being developed for the Advanced Air Mobility market. This includes eVTOL aircraft for Urban Air Mobility and Commuter Aircraft applications up to 19 seats. The turbogenerator system will complement the Rolls-Royce Electrical propulsion portfolio by delivering an on-board power source with scalable power offerings between 500kW and 1200kW enabling extended range on sustainable aviation fuels and later, as it becomes available, through hydrogen combustion. This will open up new, longer routes than electric battery powered aircraft can support as of today.



Olaf Otto, President - Electrical commented: "Rolls-Royce will be the leading provider of all-electric and hybrid-electric power and propulsion systems for Advanced Air Mobility. The Pass-To-Test (PTT) of our brand-new small engine that will power our turbogenerator system is an important step forward. This product will enable our customers to extend the routes that electric flight can support and means more passengers will be able to travel further on low to net zero emissions aircraft."

The development of the turbogenerator system is combining Rolls-Royce's electrical and gas turbine development competencies. The new combustion engine uses recent technology developments to achieve a step change in efficiency of small gas turbines. The turbogenerator can be used in serial or parallel hybrid applications. It is well suited to recharge batteries as well as provide energy to electrical propulsion units directly and therefore enables aircraft to switch between power sources in flight. The research and development of this technology is being partially funded by the German Ministry for Economic Affairs and Climate Action.

This engine will be tested on SAF in the coming months and will be used for the commissioning of Rolls-Royce's test facility in Dahlewitz. The Rolls-Royce Power Gearbox test facility has been modified to accommodate testing of the new engine, and to confirm the engine's technical attributes.

Rolls-Royce is developing complete power and propulsion systems for all-electric and hybrid-electric applications. Our systems under design feature the latest technology, from power generation and energy storage via power electronics and control systems to electric motors.



Turbogenerator for Advanced Air Mobility

800kW highly efficient and power dense system

- Fully integrated design for hybrid-electric aircraft platforms - for emission reduction with longer range, and more efficient, distributed architectures.
- 600 kW to > 1 MW scalable power output adaptable platform requirement
- SAF capable, provision for H₂



Design targets

$P_{\text{max, cont.}} (0.154-0.9)$	600-1200 kW
V_{dc}	850 V
Power to weight ratio	$\leq 4 \text{ kW/kg}$
Noise @ 300 ft / 100 m	$\leq 62 \text{ dBA}$
SFC vs. In service products	15% better
MTBO	10 000 cycles
Length - 1500 mm	$\varnothing = 500 \text{ mm}$

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