FIRST GE9X DEMONSTRATOR CORE TESTING LAUNCHES

News / Manufacturer



Testing is underway on the **first demonstration core** for the **GE9X** engine that will power the Boeing 777X aircraft.

“The core test allows us to see all the key hot section modules—the HPC, combustor and HPT—working together as a complete system at least four years before the engine enters service,” said Bill Millhaem, general manager of the GE90/GE9X engine programs at GE Aviation. “This test is a key step in the GE9X technology maturation program, which has yielded extremely positive results and sets us on the right path for engine certification testing.”

During initial testing at GE Aviation’s altitude facility in Evendale, Ohio, the demonstration core successfully operated at maximum or redline speeds over the entire GE9X flight envelope and exceeded the engine’s compressor pressure ratio 27:1, which is the highest pressure ratio of any commercial engine in aviation service. All results are within design limits and predictions. During the next phase of testing, the demonstrator core will undergo tests on aero optimization and combustor operability.

The core testing follow a series of maturation tests that GE has conducted on various engine systems, including the fan, HPC, combustor and low pressure turbine. GE and its partners will spend more than $1 billion on technology maturation and product development for the 100,000-lb. thrust class GE9X engine this year. The culmination of the technology maturation program will be

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the first engine to test in the first half of 2016.

The GE9X engine contains several unique technologies and advanced material in the core.

- The 11-stage HPC has the highest pressure ratio of any GE commercial engine at 27:1 with 4th generation powered alloy material.
- The TAPS III (twin annular pre-mixing swirler) combustor is a unique third-generation system that pre-mixes air and fuel prior to combustion for leaner burn and fewer emissions than conventional combustion systems. The combustor includes 3D additive manufactured fuel nozzle tips, a new combustor dome design and ultra-lightweight, high-resistant ceramic matrix composite (CMC) inner and outer liners.
- The HPT incorporates CMCs in the stage 1 and stage 2 nozzles and stage 1 shrouds along with 3D additive manufactured lightweight low-pressure turbine titanium aluminide (TiAl) blades produced at Avio Aero and the next-generation HPT stage 1 blades with advance cooling technology.

After the first GE9X engine test next year, the engine is set for flight-testing on GE's flying testbed in 2017. Engine certification is scheduled for 2018.

Almost 700 GE9X engines have been ordered by customers since it was launched on the Boeing 777X aircraft.

IHI Corporation, Snecma and Techspace Aero (Safran), and MTU Aero Engines AG are participants in the GE9X engine program.

GE Aviation, an operating unit of GE (NYSE: GE), is a world-leading provider of jet and turboprop engines, components and integrated systems for commercial, military, business and general aviation aircraft. GE Aviation has a global service network to support these offerings.

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