



GE Aviation Turbine Test Services: Precision Measurements at Scale.

Turbine testing requires precise measurements under representative environments. As these may be scaled tests, a wide range of test conditions must be available in order to provide the desired range of parameters such as Reynolds numbers, density ratios, and pressure ratios. The flexibility of the turbine test cells and support facilities at GE Aviation allow for a wide range of proven test conditions. Multiple generations of GE Aviation and GE Power turbine technologies were developed and proven in these facilities.

Early TRL development can be achieved in a super-scale, low speed facility that allows for multiple SLA airfoils design iterations to be quickly tested, with hot film, hot wire, PIV, and other measurements. More mature designs can be tested in full size continuous flow facilities with broad operating ranges and full instrumentation suites. This includes multi-stage single and dual rotor testing, with the provision for multiple secondary air flow circuits and high-accuracy torque measurements. High-speed power turbine testing can be accomplished in a skid-mounted facility for smaller engine applications.



Test Capabilities

- Aerodynamic Efficiency Mapping
- Flow Function Mapping
- Analytical Model Calibration
- On-Line Vane Clocking Performance
- Secondary Flow and Clearance Effects

Facilities

- High Speed Power Turbine
- Low Pressure Turbine
- High Pressure Turbine
- Dual Spool HP/LP Turbine
- Large Scale Low Speed Research Turbine

GE's range of turbine test services covers the range of Technology Readiness Levels, and are available for research, engineering, product development, and product improvement testing, for aviation and power generation applications.

Facilities

High Speed Turbine Rig

Maximum Power Extraction	2500 HP
Maximum Inlet Air Temperature	800 deg-F
Maximum Inlet Airflow	80 pps
Maximum Rotor Speed	30,000 rpm

Turbine Test Cell

Maximum Inlet Air Pressure	150 psia
Maximum Inlet Air Temperature	800 deg-F
Maximum Inlet Airflow	100 pps
Maximum Rotor Speed	16700 rpm
Maximum Power Extraction	15000 HP
Minimum Exhaust Pressure	2.0 psia

Support Capabilities

GE has extensive capabilities for a turnkey test solution to meet your needs:

Rig assembly & teardown in segregated facilities

Instrumentation design, application, leadout, and checkout

Design and build of test rigs & support hardware

Remote near-real-time test monitoring

Full customer data segregation



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