

GAS TURBINE RESEARCH

Gas Turbine Laboratory

The Gas Turbine Laboratory (GTL) of the NRC Institute for Aerospace Research (NRC Aerospace) has unique facilities and expertise to assist industry in developing and evaluating the performance of gas turbine engines and components in compliance with increasingly stringent environmental, safety, and operational requirements.

Combustion and fluids engineering research is carried out to develop more efficient and clean industrial combustion processes for the next generation of fuels, engines and combustion devices. These studies include modifying gas turbine combustion systems at low to intermediate pressure and flow conditions to improve thermodynamic performance, conserve energy, and reduce harmful emissions. Investigations are also carried out in spray characterization, numerical simulation, and probe calibration.

NRC Aerospace specializes in research on propulsion systems, with emphasis on overall and component performance testing of airborne gas turbines. These tests include adverse weather (icing, fog, ice sheet, hail storm), bird ingestion and endurance trials, as well as complex development work. Researchers also provide expertise in engine diagnostics, computer simulation, and health monitoring. These capabilities are complemented by expertise in solving issues related to lubrication, friction and wear (tribology) of mechanical equipment and rotating machinery.

To support these activities, NRC Aerospace has air compressor/exhauster facilities that can supply up to 56 lb/s of air at 325 psi. The air can be dried and heated or refrigerated, as needed. NRC Aerospace also offers a high-pressure steam plant, a large-scale test rig and a large-scale transonic planar cascade.



Other facilities include:

- five combustion test cells
- four engine test cells, two capable of icing simulation
- static and dynamic test rigs for radial bearings, oil-free bearings and seals
- high-pressure spray and atmospheric mixing rigs, and
- icing and hail facilities for certification testing.

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The GTL management system has been registered to ISO 9001:2000



