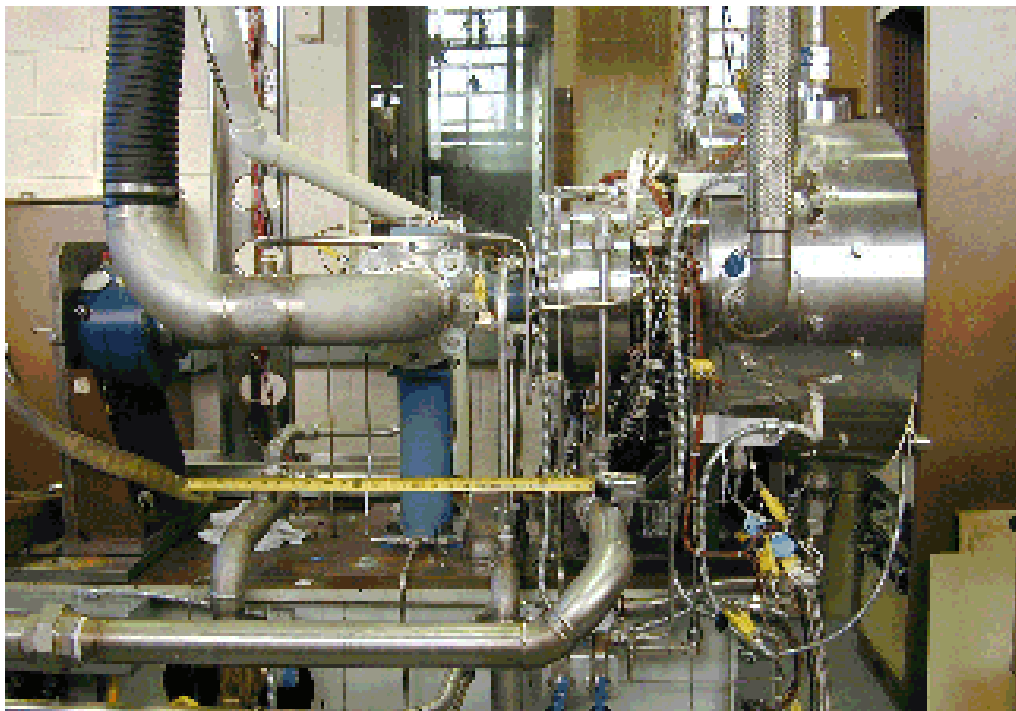


New High-Temperature Turbine Seal Rig Installed



High-Temperature Seal Rig installation completed.

Current NASA program goals for aircraft engines and vehicle performance include reducing direct operating costs for commercial aircraft by 3 percent in large engines and 5 percent in regional engines, reducing engine fuel burn up to 10 percent, and reducing engine oxides of nitrogen emissions by more than 50 percent. Significant advancements in current gas turbine engines and engine components, such as seals, are required to meet these goals. Specifically, advanced seals have been identified as critical in meeting engine goals for specific fuel consumption, thrust-to-weight ratio, emissions, durability, and operating costs. In a direct effort to address and make progress toward these goals, researchers at the NASA Glenn Research Center have developed a unique high-temperature, high-speed engine seal test rig to evaluate seals under the temperature, speed, and pressure conditions anticipated for next-generation turbine engines. Newly installed, this seal test rig has capabilities beyond those of any existing seal rigs. It can test air seals (i.e., labyrinth, brush, and new seal concepts) at temperatures of up to 1500 F and pressures up to 100 psid (even higher pressures are possible at lower temperatures), and at all surface speeds anticipated in future NASA (Ultra-Efficient Engine Technology, UEET) and Integrated High-Performance Turbine Engine Technology (IHPTET) engine programs. In addition, seals can be tested offset from the rotor centerline, in the rotor runout condition,¹ and with simulated mission profiles. Support for this new rig was provided by Glenn, the U.S. Air Force, and the U.S. Army.

Find out more about turbine seal work at Glenn:

Glenn's Mechanical Components Branch (<http://www.grc.nasa.gov/WWW/5900/5950/>)

Glenn's Turbine Seal Branch

(<http://www.grc.nasa.gov/WWW/TurbineSeal/TurbineSeal.html>)

¹With the rotor outer diameter eccentric to the rotor inner diameter.

Bibliography

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