National Aeronautics and Space Administration

Advanced Subsonic Combustion Rig at NASA Glenn Research Center

The **Advanced Subsonic Combustion Rig (ASCR)** is Glenn's unique high-pressure and high-temperature combustor facility. It is significant to Glenn and industry because of its one-of-a-kind ability to simulate combustor tests up to 60 atmospheres, twice the capability of combustor rigs in the United States.

Facility Description

This facility supports research on multiple fuel injector test hardware for large aircraft engine development and full-scale annular combustor development for regional aircraft engines.

Facility Benefits

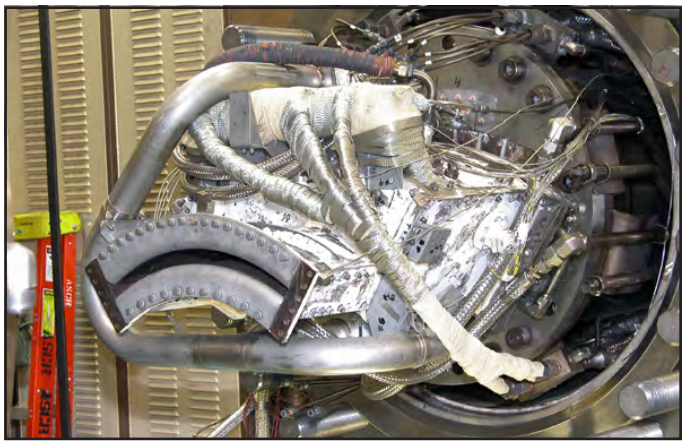
- Simulate engine test conditions in high-temperature and high-pressure combustion environment
- Supporting low-emissions combustor development
- Continuous airflow operations up to 50 lb/sec
- Nonintrusive laser-based diagnostic measurements
- In-house and private industry research programs
- Experienced staff of technicians, engineers, researchers, and operators

Commercial Applications

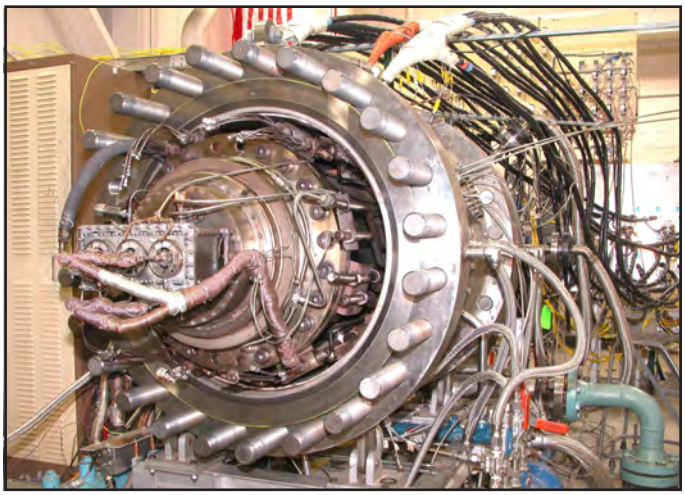
- Aircraft engines programs and projects supported
- Ultra-Efficient Engine Technology (UEET)
- General Electric Aircraft Engines (GEAE)
- Rolls-Royce North America (RRNA)
- Pratt & Whitney

Programs and Projects Supported

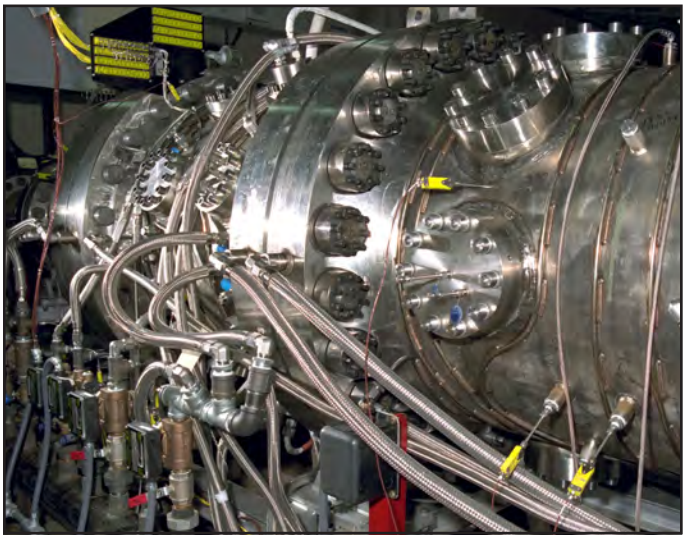
- Ultra-Efficient Engine Technology (UEET)
- General Electric Aircraft Engines (GEAE)
- Rolls-Royce North America (RRNA)
- Pratt & Whitney



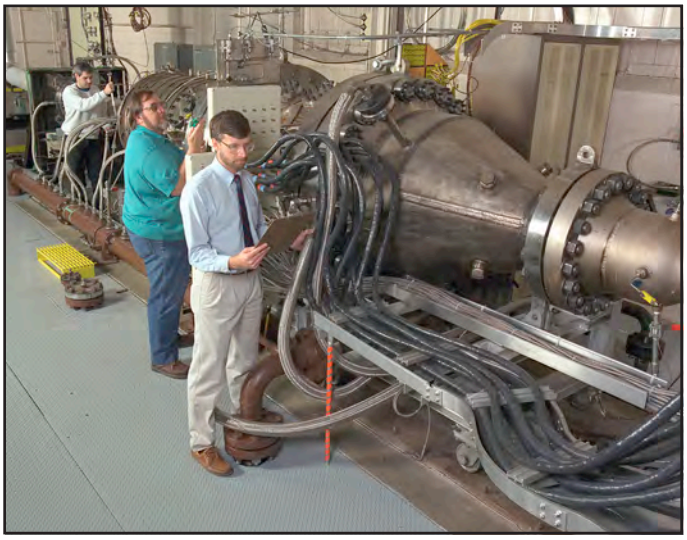
GE test hardware mounted in ASCR.



Rolls-Royce combustor test in ASCR.



ASCR sector stand.



Researchers and technicians pose in front of the ASCR.

Capabilities

Combustor Facilities—Engine Research Building (ERB), Engine Components Research Laboratory (ECRL), and ASCR					
Facility	Test emphasis	Maximum pressure, psig	Maximum airflow, lb/s	Nonvitiated heated air, °F	Maximum exhaust temperature, °F
CE–5B–1	Sector	60 to 275	2 to 12	500 to 1,350	3,200
CE–5B–2	Flametube	60 to 400	0.6 to 5	500 to 1,350	3,200
CE–9B–A	Sector	120 to 450	5 to 30	750 to 1,100	3,400
CE–9B–B	Flametube	120 to 450	1 to 15	750 to 1,100	3,400
ASCR Leg 1	Sector	50 to 900	3 to 50	500 to 1,200	3,400
ASCR Leg 2	Flametube	50 to 900	1 to 10	500 to 1,200	3,400
ECRL–1B	Augmentors	5 to 150	5 to 60	100 to 625	1,900

Facility Testing Information

http://facilities.grc.nasa.gov

Contact

Gwynn A. Severt Facility Manager
NASA Glenn Research Center
Phone: 216–433–8310
Fax: 216–433–8551
E-mail: Gwynn.A.Severt@nasa.gov