National Aeronautics and Space Administration

Technology Opportunity

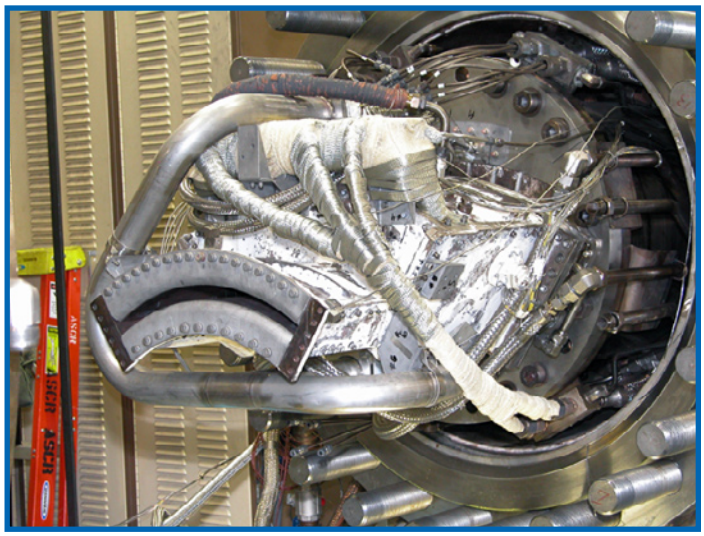
Technology Transfer & Partnership Office

TOP3–00212

Advanced Subsonic Combustion Rig

Facility

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.



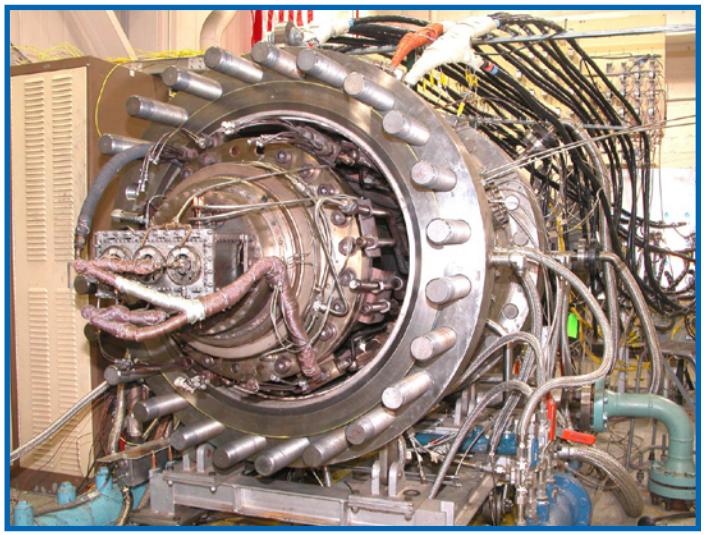
GE test hardware mounted in ASCR.

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 air flow operations up to 50 lb/sec.
- Non-intrusive laser based diagnostic measurements
- In-house and private industry research programs
- Experienced staff of technicians, engineers, researchers, and operators



Rolls-Royce combustor test in ASCR.

Commercial Applications

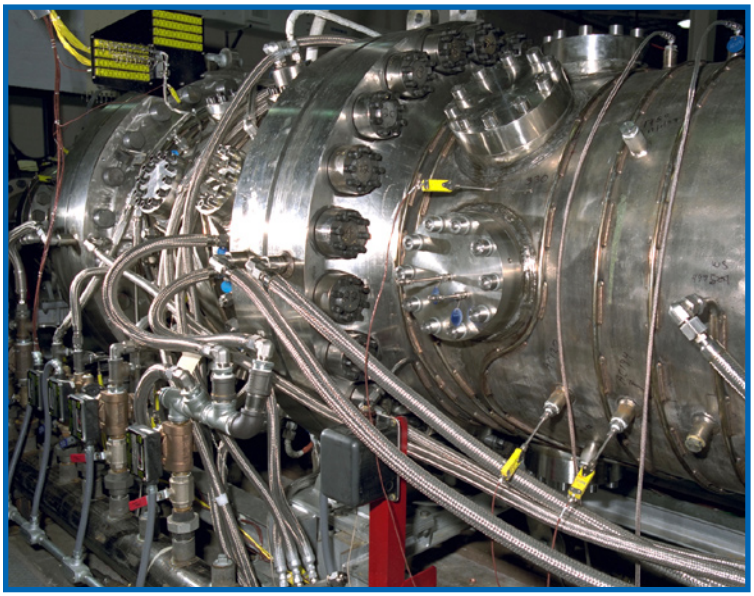
- Aircraft engines

Programs and Projects Supported

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

Capabilities

Combustor Facilities—ERB, ECRL, ASCR, and RCL					
Facility	Test emphasis	Maximum pressure, (psig)	Maximum airflow (lb/s)	Non vitiated 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 600	1,900
RCL	Flametube	0 to 350	0.5 to 4	500 to 1,200	3,000



ASCR sector stand.

Facility Testing Information

http://facilities.grc.nasa.gov

Contacts

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

Technology Transfer & Partnership Office
E-mail: ttp@grc.nasa.gov
http://technology.grc.nasa.gov

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