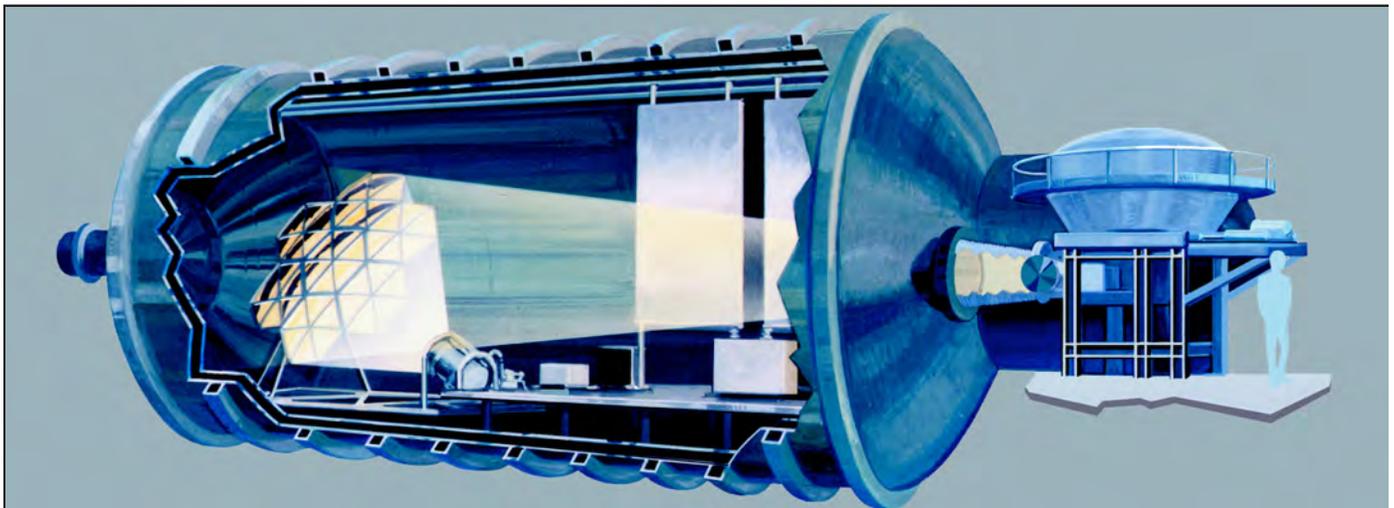




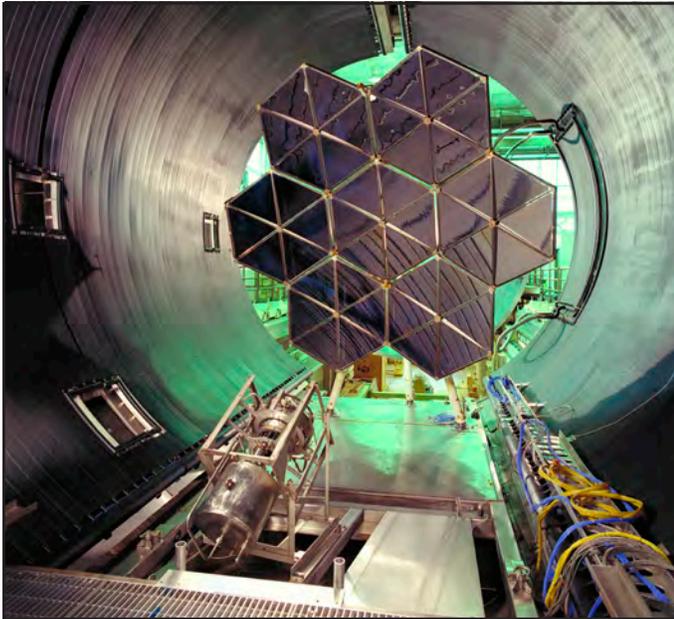
Thermal Vacuum Testing Vacuum Facility 6 at NASA Glenn Research Center

Vacuum Facility 6 (VF-6) is a 25-foot-diameter thermal vacuum facility located at NASA Glenn Research Center in Cleveland, Ohio. The test chamber and supporting infrastructure continue to serve as a valuable resource in space environmental ground testing. Some unique facility capabilities include a large chamber volume (25 ft diam by 70 ft long), and the use of a liquid-nitrogen-cooled shroud and a solar simulator specifically designed for solar-concentrated power.

The clean, cryogenic vacuum system provides a no-load base pressure of 5×10^{-7} torr at a pumping speed of 900,000 l/sec of air. The test chamber has a 16-ton loading capacity via an internal rail system and 6-ton tank overhead monorail. The facility is oriented horizontally with an attached 10-ft-diameter by 10-ft-long valved test port. Additional test capabilities consist of a large staging area, access to a class 1,000 cleanroom, a machine shop, and automatic and unattended vacuum operations. VF-6 is 1 of more than 25 chambers included in the unique suite of vacuum facilities supporting space simulation ground testing at Glenn.



Section view of VF-6.



Solar dynamics ground test demo project in VF-6.



VF-6 solar simulation.

Facility Applications

- Thermal vacuum testing of flight experiments
- Spacecraft hardware development
- Plasma interaction effects on spacecraft hardware and materials
- Advanced materials applications
- Electric propulsion research development
- Integration of space power systems
- Development and demonstration of advanced space power

Facility Testing Information

<http://facilities.grc.nasa.gov/epl>

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Capabilities

Overall dimensions	
Main chamber	25 ft diam by 70 ft long
Test port	10 ft diam by 10 ft long
Internal working dimensions	
Main chamber	22 ft diam by 65 ft long
Test port	10 ft diam by 10 ft long
Vacuum system	Twelve 54-in. nude cryopumps provide a no-load pressure of 5×10^{-7} torr and a pumping speed of 900,000 l/sec on air
Thermal simulation	
Cold	Liquid-nitrogen-cooled shroud (77 K) with thermal heat rejection of 240 kW
Heat	Solar simulator provides 1.2 solar constants on 5-m target (56.5 ft away from source) Solar constant increases as function of source distance and target size Other attributes include a 1° subtense angle, 270 kW solar array simulation, and 10 percent beam uniformity Configurable lamps available upon request
Instrumentation	Thermocouples, Residual Gas Analyzers (RGA), Thermoelectric Quartz Crystal Microbalances (TQCM), cameras, and other necessary test equipment
Additional	Multiple test port and feed thrust, automatic and unattended vacuum operation, large staging area, class 1,000 cleanroom, machine shop, 16-ton chamber loading capacity, 6-ton internal tank monorail, and 10-ton crane