National Aeronautics and Space Administration

Power Systems Facility at NASA Glenn Research Center

The **Power Systems Facility (PSF)** provides an exceptional platform to not only test and verify today's space power systems, but also to design, develop, and test components and systems for new technologies.

Facility Description

The PSF supports the design, development, assembly, and testing of space power components and systems that includes the International Space Station (ISS), satellites, next-generation launch vehicles, and space-based power systems. PSF houses testbeds where experienced scientists and engineers verify critical concepts, test prototype hardware and software, and validate systems in real-time simulations under actual loading and operating conditions. Testing capabilities include flywheel systems and components, battery systems, fuel cells, alternating current (ac) power sources, electrical actuators, and power management and distribution hardware and software. An adjacent solar array field provides 960 solar cell modules to power system hardware during testing.

Facility Benefits

- PSF provides a 10,000-square-foot, class 100,000, 60-foot high bay cleanroom
- Provides the capability to easily connect test areas in PSF to support system-level testing of large power systems
- A 1,600-square-foot raised floor area to support power management and distribution in systems development
- The Telescience Support Center (TSC) provides the capability to execute ground support operations of on-orbit ISS payloads and other space missions
- Solar array—30 kW at 160 V maximum
- Launch vehicle main engine thrust vector control testing
- Loads—Full spectrum of ac and direct current (dc) programmable electrical loads for constant power, current, voltage, and resistance modes of operation
- Spacecraft Power System (SPS)—Emulation including solar arrays, energy storage systems, and power distribution hardware
- Power Electronics Laboratory (PEL)—Testing of electronic components and breadboards
- Electromagnetic interference and acoustic test capability
- Kinetic, chemical, and other energy storage system testing

Spacecraft Power Systems Laboratory.

Programs and Projects Supported

- End-to-end testing of the ISS power system
- Flywheel energy storage systems
- Thrust vector control systems
- Power sources and loads using ac/dc
- Spacecraft power management
- End-to-end power system integration testing
- Spacecraft harware assembly

Facility Testing Information

http://facilities.grc.nasa.gov

Contact

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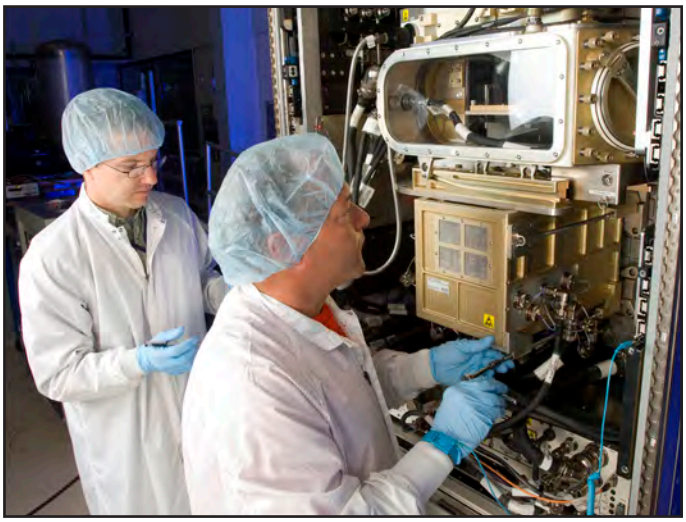
Area I-X Pathfinder (PF–1) segment delivered to the high bay in PSF.



Technicians make final adjustments to Fluids Integrated Rack (FIR) for space station.

Aerial view of the PSF.