



Thermal Development Facility

Purpose:

To develop and implement aerospace thermal applications, technologies, and test methods.

The Thermal Development Facility (TDF) is a joint initiative that is managed by the two thermal groups at MSFC, the Thermodynamics and Heat Transfer Group and the Thermal and Fluids Systems Group. The TDF facilitates the development and implementation of aerospace thermal applications, technologies and test methods. The TDF also provides a unique “hands-on” environment enabling thermal technologists to stay abreast of the latest thermal control/protection and test approaches including alternate techniques not employed in MSFC programs. Facilitation of basic IR&D is a critical part of maintaining engineering excellence within the Engineering Directorate at MSFC. As a joint initiative across the thermal discipline at MSFC, the TDF supports all MSFC productlines.

The TDF is located Building 4612 and includes approximately 5000 ft² of high-bay space and over 1000 ft² of general-purpose shop/laboratory/storage space. Dedicated facility capabilities include:

- Two 4-ft diameter by 6 ft long vacuum chambers
- One 2 ft diameter by 3-ft long bell jar
- Flow boiling facility capable of subzero conditions when operating up to a 5 KW load
- One 30”x31”x36” Temperature/Humidity Chamber capable of -40C to 200C
- Various cooling carts with cryogenic capability and miscellaneous coldplates, heat exchangers, etc.
- Wide range of instrumentation
- Highly developed data acquisition and control

As part of the Thermal and Fluids Group, the TDF operates in partnership with MSFC’s Environmental Test Facility (ETF). This provides direct access to the significant resources



possessed by the ETF. This includes not only the wide range of environmental testing systems and equipment but equally important is the wide range of expertise, skills and crafts. The combination of the two thermal groups provide access to approximately 78 engineers and 16 technicians with a diverse range of knowledge encompassing all aspects of thermal design, analysis and verification in support of MSFC’s mission.

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