



1- by 1-Foot Supersonic Wind Tunnel at NASA Glenn Research Center

The **1- by 1-Foot Supersonic Wind Tunnel (SWT)** offers the supersonic research community an excellent low-cost testing tool for small-scale research.

Facility Description

The 1- by 1-Foot SWT specializes in conducting fundamental research in supersonic and hypersonic fluid mechanics, supersonic-vehicle-focused research and detailed benchmark quality experiments for Computational Fluid Dynamics code validation.

Facility Benefits

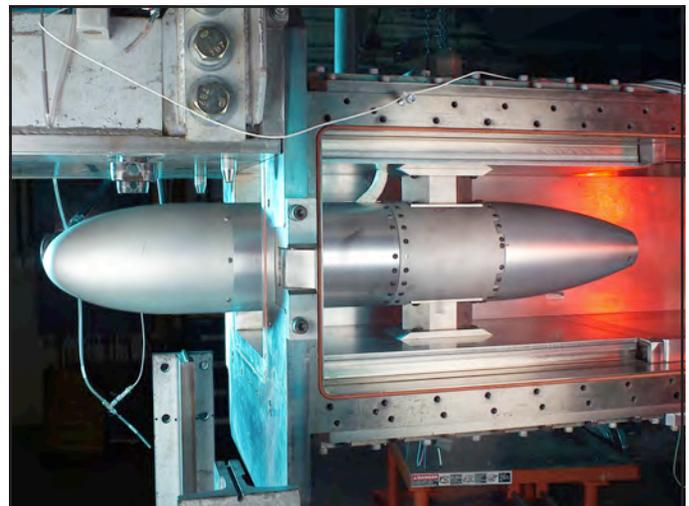
- Two-shift staffing and operation provide high productivity, flexibility, and quick-model installation and configuration
- A number of specialized support systems are available to meet the research customer's needs including auxiliary bleed, model hydraulics, and probe actuation systems
- Remotely accessible real-time data display
- Infrastructure in place for secure testing
- Accommodates in-house and private industry research programs
- Experienced staff of technicians, engineers, researchers, and operators

Commercial Applications

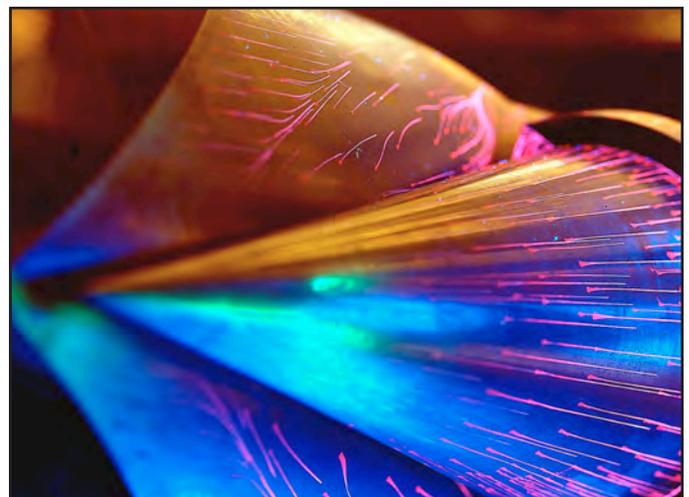
- Valuable tool to conduct fundamental research in supersonic and hypersonic fluid mechanics

Programs and Projects Supported

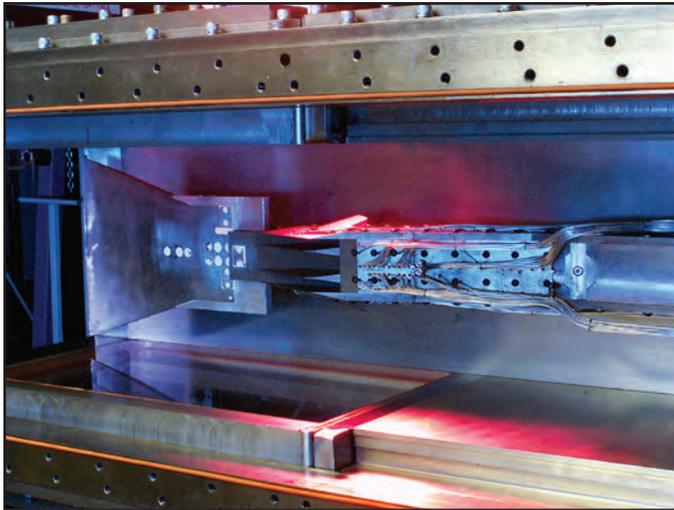
- Rocket-Based Combined Cycle (RBCC) Inlet
- Pulsed Ejector Wave Propagation Test
- Pulse Detonation Engine Parametric Inlet Test



Pulsed ejector wave propagation test rig in the 1- by 1-Foot SWT test chamber.



The 1- by 1-Foot SWT oil flow visualization on the GTX inlet test rig.



Integrated System Test of Airbreathing Rocket (ISTAR) inlet testing.



IMX (Inlet Mode Transition) Mach 4 inlet model mounted.

Capabilities

1- by 1-Foot SWT	
Test section speed, Mach	1.3, 1.6, 2.0, 2.5, 2.8, 3.0, 3.5, 4.0, 5.0, 5.5, 6.0
Simulated Altitude, ft	11,000 to 115,000
Test section Reynolds number/per ft	0.4×10^6 to 16.5×10^6
Dynamic pressure, lbf/ft ²	80 to 1,750
Test section total temperature, R	520 to 1,100
Auxiliary air supply	
At 40 psig	-----
At 150 psig	2 lbm/s
At 450 psig	8 lbm/s
Model exhaust	-----
High-pressure air storage at 2,600 psig, scf	-----
Fuels	-----

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