Facility Factsheet

Aerospace Structures Test Complex
Environmental Test Chambers (ETC)

Purpose: The ETCs test the structural integrity of aerospace structures in representative operating temperatures and aerodynamic load distributions. The test article may be tested in an inert atmosphere. The ETCs are utilized to validate design and analysis of advanced structures technology for extreme thermal and mechanical applications such as hypersonic structures and thermal protection systems.

Capabilities: The ETCs are four chambers capable of thermally and mechanically loading aerospace structures at representative mission profiles. ETC #1 and #2 are separated by a removable wall, providing the capability of testing larger structures.

Chamber	Size	Power Available	Maximum Test Article Temperature
ETC #1 + #2	35'x25'x20'H	13.7 MW	Graphite Heating Modules capable of 250+ BTU/ft^{2}sec T-3 Quartz Lamp Modules capable of 120 BTU/ft^{2}sec
ETC #1	20'x25'x20'H	6.5 MW	
ETC #2	15'x25'x20'H	7.2 MW	
ETC #3	20'x20'x16'H	5.4 MW	
ETC #4	7'x12' Long	1.8 MW	

- 69 discrete PLC controlled electrical power channels
- 82 channels of load control using Moog control system
- 500+ channels for data acquisition
- Instrumentation includes strain, displacement, load, pressure and digital image correlation
- Purged oxygen levels down to 100 ppm using nitrogen gas from 10,000 gallon liquid nitrogen Dewar with electric and ambient air vaporizers
- 15M BTU/hr evaporative water cooling; 3M BTU/hr deionized water

Contact: Structural Validation Branch at 937-656-8827