

# ELECTRO-OPTICAL

## ALTITUDE TEST CHAMBER

The Space Dynamics Laboratory (SDL) and the Missile Defense Agency (MDA) now have a state-of-the-art altitude test chamber in SDL's optical calibration and test facility that allows full characterization of airborne optical sensors. The chamber provides a high-fidelity, realistic test environment for the sensor under test. It is designed to match the environment for the sensor in terms of temperature and pressure characteristics. This chamber can ramp rates quickly when switching between test temperatures/pressures. This saves critical test time when compared to other options. A sophisticated pressure monitoring system is installed to protect the chamber and attached optical components. This chamber is available to U.S. Government users on a no-cost non-interference basis.

SDL currently has multiple large aperture ZnS Cleartran (infrared), BK7 (visible), and fused silica (visible) windows that can be interfaced to this chamber.

### SPECIFICATIONS

**INTERIOR WORKING VOLUME:** 64 ft<sup>3</sup>

**INTERIOR DIMENSIONS:** 4' x 4' x 4'

**ALTITUDE SIMULATION:** Sea level – 100,000 ft

**OPERATIONAL TEMPERATURES:** -60°C to 125°C

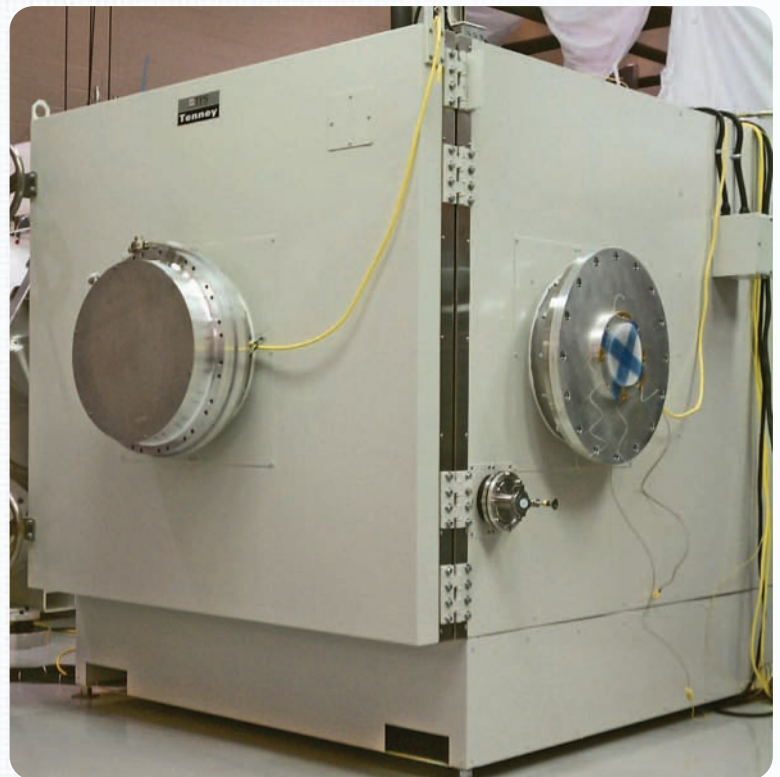
**OPERATIONAL PRESSURES:** Ambient to <10 Torr

**TEMPERATURE RAMP RATE:** ~3° C/min

**OPTICAL PORTS:** 3 x 20" round

**SENSOR POSITIONING SYSTEM:** 2 axis linear (vertical & front to back)  
(SEE BACK FOR MORE DETAILS)

**REFRIGERATION SYSTEM:** Dual compressor with liquid nitrogen boost  
*Compressors are remotely located to reduce vibration coupling*

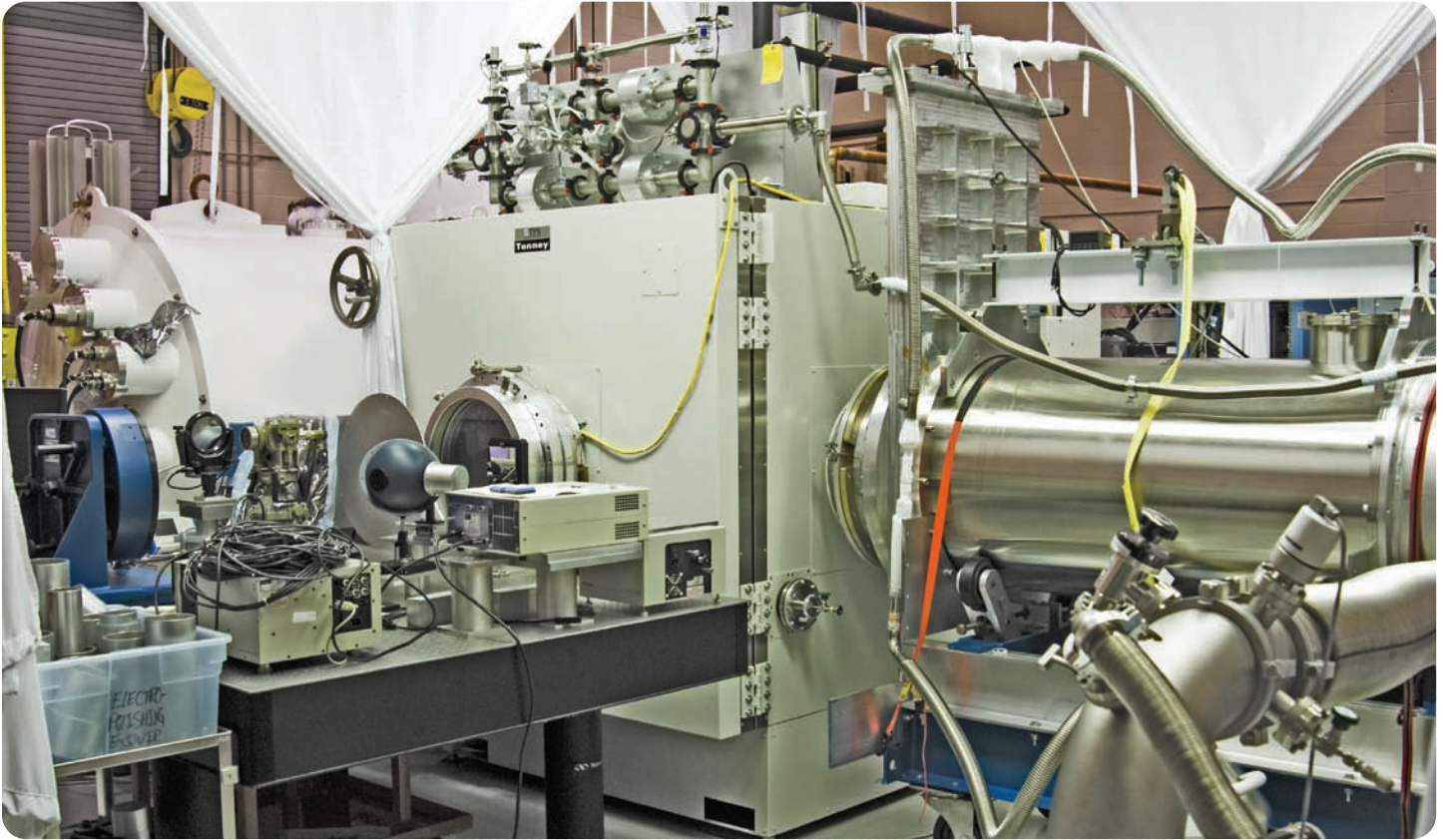


*Electro-Optical Altitude Test Chamber*

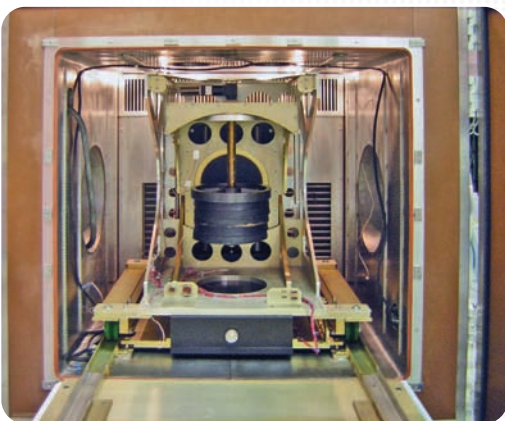


**Space Dynamics**  
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**ELECTRO-OPTICAL**  
A L T I T U D E T E S T C H A M B E R



The Electro-Optical Altitude Test Chamber interfaced with the MIC5 (left), HAES15 (right), and visible collimator/monochromator (front)



Sensor Positioning System inside the Electro-Optical Altitude Test Chamber

### SENSOR POSITIONING SYSTEM SPECIFICATIONS

**STROKE Y (FRONT TO BACK):** 3.63" back, 5.85" forward

**STROKE Z (UP AND DOWN):** 3.25" down, 3.82" up

**TRAVERSE RATE:** Average move in 30 sec

**TEMPERATURE RANGE:** +50° C to -55° C

**PRESSURE RANGE:** 0.1 psia to 14.7 psia (5.2 Torr – Ambient)

**SENSOR WEIGHT CAPACITY:** 338 lbs.

*Supports sensors with built-in rotation & elevation capabilities.*



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