HIGH PERFORMANCE TEST SYSTEMS
Testing Products

**Satellite Support Platforms**
The process of satellite assembly, integration and test is exacting and requires considerable care. Our satellite support platforms ease these steps by providing mechanical mounting and decoupling from your facility and its sources of mechanical disturbance. Platforms incorporate vibration isolation and are compatible with atmospheric and thermal-vacuum environments.

- Mechanically decouple satellite from facility
- Compatible with thermal-vac
- Optional latch and release

**Gravity Offloaders**
Gravity influences structures differently on orbit but those structures must be integrated and validated on the ground. A deployable spacecraft appendage is often mass-optimized for zero gravity performance but unable to support its own weight on Earth. Moog CSA’s no-sag gravity offload systems provide low frequency suspension, with modes as low as 0.1 Hz, enabling you to test and validate fixed and moving space structures before flight.

- Supports weight from above or below
- Payloads up to 15,000 kg
- Optional load leveling

**Flight Motion Simulators**
Flight testing of spacecraft is rarely practical, and flight testing of missiles is expensive. Moog CSA offers products that extend the fidelity of hardware-in-the-loop testing, incorporating more realistic aspects of flight including high frequency structural response. With Moog CSA’s six degree of freedom motion bases, you can now evaluate image motion compensation algorithms and position test articles relative to other verification equipment.

- Six-axis motion control
- Hardware-in-the-loop testing
- Real-time interfaces

**Launch Vehicle Static Test Structures**
The latest generation of launch vehicles, small satellites and evolving structural concepts drive the need for more sophisticated testing and qualification before flight. Moog CSA operates a facility that allows us to test a variety of payload and interstage structures, fairings, and interface cones under multi-axis loading.

- Multi-axis load application
- Structures up to 5 meters
- Test adapters, inter-stages, fairings

**Isolation Benches**
When a major aerospace company began to develop a new vacuum test facility for large space optics it turned to Moog CSA to provide vibration isolation. Moog CSA delivered a large optical bench, supported by a soft isolation system. With suspension modes in the range of 1 to 2 Hz, the 250-ton bench is mechanically decoupled from the rest of the facility including pumps and other machinery, enabling a high fidelity representation of the space environment.

- Flat optical bench (25 m long) for testing in vacuum
- Isolation system (1.5 Hz) with active leveling for moving payloads

**Large Optics Positioners**
Space telescopes and other large optical systems require validation and verification before launch. Moog CSA provides precision positioning systems to support these ground tests. These systems are based on our proven hexapod motion platforms, with resolution measured in micrometers or better. During vacuum chamber operation, they allow software-controlled alignment of test optics and flight components to validate performance of subsystems and complete systems.

- Six-axis motion control systems
- Options for range, speed, precision
- Intuitive user interfaces
ABOUT US

For more than 25 years, Moog CSA Engineering has been providing mission critical motion control products. Our major customers include the U.S. Government, Boeing, Lockheed Martin, Northrop Grumman, semiconductor manufacturers and leading research laboratories. Moog CSA Engineering – a part of Moog since 2008 – is a recognized world leader in the field of vibration suppression, providing unparalleled experience in the analysis, design and production of a wide array of leading edge, high precision systems.

WHY INVEST IN A TEST FACILITY PRODUCT

Today, an ever increasing number of Moog CSA’s customers are building sophisticated systems that must operate reliably in harsh environments. Our customers recognize the value of testing before the start of product operational lifetime. Traditionally, testing of space flight and other hardware has included thermal-vacuum, shock, and vibration tests to screen or stress components. Moog CSA offers a wide range of products that allow more comprehensive testing, simulating loads, vibration, boundary constraints, and other aspects of operational mechanical environments. These test facility products can be used to perform traditional stress tests. But more broadly, they allow our customers to easily assess performance by capturing essential features of operational environments and permit prolonged, comprehensive ground testing and refinement of subsystems. Our systems replicate the critical aspects of launch, flight, or on-orbit operation, and are compatible with other test facilities including vacuum chambers. They help close the gap between the real operating and synthetic environments. Risk is reduced, controllability is proven, and additional partial testing is avoided.

CUSTOM TEST SYSTEMS

Would you like to test a space component or system on the ground but it doesn’t seem possible? Moog CSA will work with you to understand your requirements and rapidly develop a custom system that builds on our established products. Whether you have a long spar incapable of supporting its own weight or an antenna structure, Moog CSA will start with our established test systems and augment them or use different architectures to meet your needs.
U.S. LOCATIONS

Moog Space and Defense:

Albuquerque, NM
Chatsworth, CA
Decatur, GA
East Aurora, NY
Gaithersburg, MD
Mountain View, CA
Northbrook, IL
Orlando, FL
Orville, OH
Salt Lake City, UT
Santa Barbara, CA