RAPTOR SCIENTIFIC®

Space Sector

Global Provider of Test & Measurement Solutions

Raptor Scientific offers the most accurate mass properties measuring instruments in the world. Our mass properties instruments are used in the space industry to measure the mass, center of gravity, moment of inertia, and product of inertia of satellites, both manned and unmanned spacecraft, and other space vehicles. These instruments are essential for ensuring that spacecraft are stable and controllable, properly balanced and that they can be maneuvered accurately in space.

Our instruments are not only the most accurate in the world, but also the most reliable. Some have been in daily use for more than 50 years, and we have a 40-year relationship with NASA as their mass properties instrument provider. We have an established portfolio of products ready to meet your needs and are agile enough to meet the quickly emerging demands of new space.

Key Applications of Mass Properties in Space Sector

Raptor Scientific mass properties instruments play a critical role in ensuring the safety, stability, and success of spacecraft missions throughout the space industry. These instruments are used to support various activities related to spacecraft design, development, and operations.

Some of the key applications of mass properties instruments in the space industry include:

Design and analysis of spacecraft: Mass properties instruments are used to measure actual values for mass, CG, MOI and POI of components and full vehicles during the design phase. You should not rely on calculated CAD values as these typically do not account for build variations, cabling, or non-uniform material density. "To measure is to know." Accurate mass properties information is critical for ensuring that the spacecraft is stable and controllable during launch, orbit, and re-entry.

Payload integration: Mass properties instruments are used to measure the mass and center of gravity of components and payloads that are integrated into spacecraft. This information is used to ensure that the spacecraft remains balanced and stable during launch and operation.

Trajectory analysis: Mass properties instruments are used to determine the trajectory of spacecraft during launch and orbit. This information is used to ensure that the spacecraft follows the desired path and maneuvers in a controlled way.

RAPTOR SCIENTIFIC®

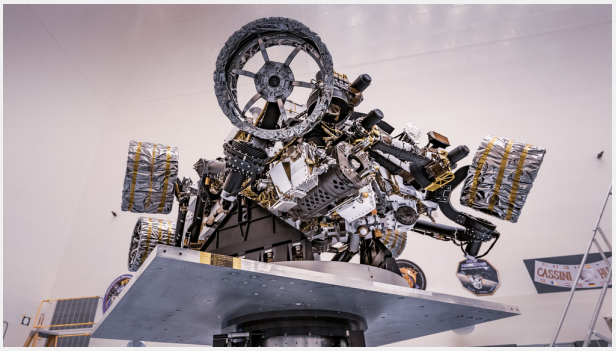
Global Provider of Test & Measurement Solutions

Space Programs Supported

- Boeing C ST-100 Starliner
- NASA Orion Multi-purpose Crew Vehicle
- NASA Lunar Explorer (LADEE)
- JPL Mars Curiosity and Perseverance Rovers
- Iridium Satellite Constellation
- JPL Galileo Jupiter Spacecraft

Customers Include

- NASA, Jet Propulsion Laboratory
- Thales Alenia Space (Italy)
- JAXA (Japan)
- NSPO (Taiwan)
- KARI (South Korea)
- Turkish Aerospace Industries



State-of-the-Art Technology, Unparalleled Accuracy

- **Weight and Center of Gravity (CG) Measurement Devices:** We offer 26 standard models that can assess large spacecraft over 35,000 lbs. down to bullet-sized objects of a few grams and millimeters.
- **Moment of Inertia (MOI) Measurement:** Capable of measuring a wide range of object sizes and weights and can measure MOI to better than 0.1%.
- **Full Mass Properties:** Instruments combine CG and MOI measurements with the world's most accurate technology.
- **Dynamic Balancing:** Measure Product of Inertia (POI), Moment of Inertia (MOI), as well as Center of Gravity (CG) in both static or dynamic modes. Configurations accommodate explosion-proof and vacuum environments.
- **Gimbal Balancing:** We create the only comprehensive set of machines for gimbaled platforms.
- **Moment Weight Scales:** Measure the mass center of gravity of spacecraft and payloads. Provide accurate and precise measurements of the moment weight of objects, which is the product of the mass and distance from the center of gravity to a reference point.
- **Fixtures and Accessories:** We fabricate custom-made adapters and positioning fixtures for all types of objects.

RAPTOR SCIENTIFIC®
Raptor Scientific - Physical Properties Systems
81 Fuller Way, Berlin, CT 06037
Manufactured in the USA
Phone: (860) 829-0001
www.Raptor-Scientific.com