

Success Cases – Space High Accuracy Mechanism

- **Function & Architecture**
 - Custom Electromechanical Actuators and Mechanisms are used in a variety of applications, such as optical instruments and ultra-stable systems for aerospace applications, medical instrumentation, etc.
 - By using specific analysis, design methodologies & applied manufacturing processes on Linear, Tilt, and Rotary Mechanism, Equipment/system performance are highly improved
- **Main requirements**
 - Compact Design for fine positioning use
 - Low/High Linear/Angular Range with Submicron Resolution and Accuracy
 - Restricted Envelope and Optimized Mass
 - Suitable for vacuum/ambient conditions
 - Operational / Non Operational Temperatures ranges from -250°C up to 250°C.
 - Use of Wet/Dry lubricants
 - Control & Cleanliness requirements in Particles & Molecular Contamination
- **Product Specificity & Achievements**
 - High Repeatability Performance.
 - Specific Technique's to avoid undesirable effects such as friction and backlash.
 - Possibility to incorporate Open/Closed control Loop through capacitive sensors & optical encoders
 - Designed and MAIT under aerospace or on ground standards. In particular:
 - High Cleanliness Environment compatibility
 - Specific testing methodologies and rigs used for its qualification and acceptance
 - Under Static (Lineal/Non-linear) / Random / Modal, Operative and non operative conditions in Space environment.
- **Main skills involved & Value Added:**
 - Specialization in High accuracy positioning devices from design up to final hardware integration, able to operate under Vacuum & Cryogenic/Hot Temperatures.
 - Hundred of tests have been performed (Functional/ Environmental/Thermal/Life Cycle) at equipment and component level
 - “Building Block” approach (Linear Actuator, Planetary Gearboxes, Pulleys System & Belt) under extreme performances
 - Customer Satisfaction regarding:
 - Accuracy, Reliability & Long Life Duty cycle under hazardous environments
 - Testing Facilities and Auxilliary Metrological Equipment in Cleanliness environment for Functional test

