Lifecycle Phases: Deployment, Performance & Evolution

Benefits

Lower Cost: Third party equipment rentals are very expensive, and the time and cost of training your staff may be prohibitive for infrequent tests. The laser tracker is designed to reduce the number of costly test personnel required for measurements. MI Technologies owns and maintains the laser tracker equipment, and expertly trains its staff to use it.

Reduced Measurement Time: Conventional measurements performed with an auto-collimation transit or digital theodolite are manual, laborious and slow. Our system uses the speed and accuracy of the laser tracker with a precision gimbal assembly capable of up to 1000 measurements per second. Once it is set up and stabilized, our system performs typical measurements over a large volume in just a few hours.

Higher Accuracy: Operator error plagues conventional measurement techniques primarily through data interpretation. The laser tracker performs all measurements and stores the data automatically. A properly calibrated and maintained laser tracker system provides measurement data traceable to the National Institute of Standards and Technology (NIST), enabling you to test higher-frequency antennas with a greater degree of certainty and confidence in the measurement accuracy.

Convenience of Digital Data: Specialized software automatically controls data acquisition, stores raw data, performs the analysis, and prepares a test data report. Conventional methods require operator interpretation and manual data stores.

Turnkey Service: MI Technologies performs the measurements, prepares data reports, and provides engineering expertise to meet your individual needs. We also help you detect and correct many range and chamber alignment problems through special test methods.

Lifecycle Quality Control: You can enhance your measurement quality assurance program by contracting us to install monuments on your significant range components. Each monument is an optical target permanently attached to your equipment that establishes a permanent coordinate system you can compare with subsequent tracker measurements to determine drift and misalignment over time.

Our Precision Alignment Service can help you:

- Characterize surface geometry or align antennas, compact range reflectors, radomes, industrial equipment, or manufacturing tooling
- Establish any coordinate system
- Characterize and correct for positioner axis alignment accuracy
- Relocate large positioners, reflectors or ranges to a new facility
- Align equipment, machinery and tooling fixtures
- Establish a permanent coordinate system to measure repeatability and drift of surfaces, axes and coordinate systems
- Comply with government range performance specifications
- Verify that your range can perform higher-frequency measurements that are under consideration
- Determine center of rotation of a positioner axis
- Determine the normal axis to a plane of rotation

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Precision Alignment Service

Our support services ensure your range and components are operating at maximum efficiency while enabling your organization to apply the vast majority of its resources on testing and product development.

Description

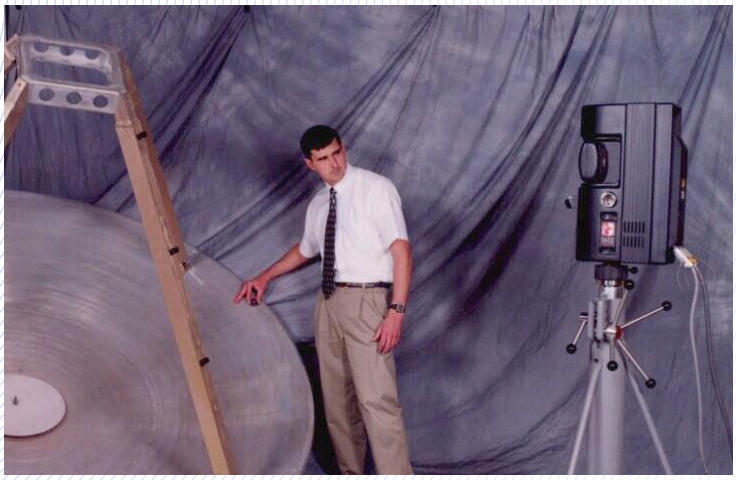
Each test range contains complex electromechanical positioners. Some employ a large reflector in the compact range configuration. These components and the device under test introduce one or more local coordinate systems into the range.

Each component has an actual and design coordinate system. All of these mechanical and electromagnetic coordinate systems chain together to form the range's overall measurement coordinate system.

Productive use of any range comes only with accurate knowledge of the relationship between the various coordinate systems. You must understand these relationships to ensure a suitable alignment of the chain of actual coordinate systems for accurate pattern measurements.

The difficulty in achieving and maintaining a level of accuracy depends on the electrical size of the devices under test. Larger devices generally require larger equipment with a matching degree of wear and loads.

Deviation can increase over the range equipment's lifecycle and can cause an out of specification condition. Historically, characterization and control of the deviation between actual and design coordinate systems or surface geometry have been performed for each range component using standard manual metrological devices, which have proven to be laborious, time consuming and operator error-prone measurement tools.



Introducing a Better Way

MI Technologies offers a Precision Alignment Service that is faster and more affordable with greater accuracy than the older methods. Our service uses an advanced measurement system to perform sophisticated surface characterizations, align equipment, and measure positioning system accuracy. This portable precision coordinate measurement system is known as a laser tracker and is based on a high quality laser interferometer mounted on an accurate, two-axis encoder-provisioned gimbal.

Laser tracking interferometers have long been employed in various industrial precision fabricating applications. MI Technologies has adapted the laser tracker for RF, microwave and millimeter wave test range alignments and characterizations. Our processes can be easily adapted for unique applications for any range configuration.

The laser tracker actually follows the movement of a special mirrored target on or along the surface of the range component under test. The system automatically records absolute and relative position based on any user-defined coordinate system. The system's powerful software compares actual part features and surface finishes to design values.

Our service reduces your measurement time, required personnel, and costs associated with precise measurement and alignment of complex, heavy range equipment and surfaces. We can also characterize an antenna under test when the positioner is under full mechanical load. When used with RF measurements, the system provides the data necessary to ensure optimal alignment of any compact range.