

# Leica Geosystems Products Accurate Performance in Every Dimension



- when it has to be **right**

**Leica**  
Geosystems

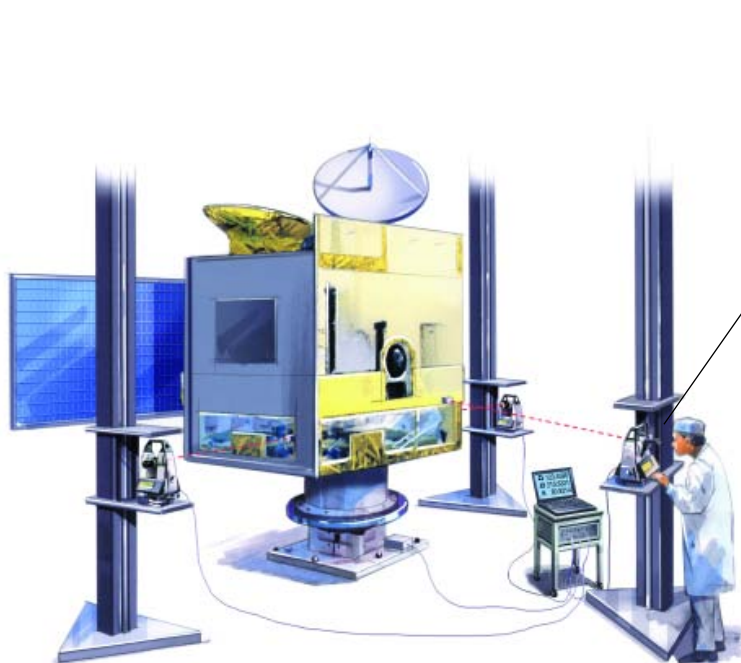


# Possible applications for Theodolites and Total Stations

The Industrial Theodolite Systems from Leica give you full flexibility as well as superior precision and stability in every environment, for any task. From the TM5100A Theodolite to the TDA5005 Total Station, Leica supplies large-scale metrology solutions for every industry at a superior price-to-performance ratio.

## System alignment and Symmetry check

Rapid and accurate logging of 3D data is one of the advantages of Leica Theodolites and Total Stations. Due to their open-system architecture, the instruments may be used in conjunction with customized software. Consequently, traditional construction tools can be replaced by a single optical measurement system, such as the verification and control of head-up displays and navigation systems in aircraft.



## Part alignment

The autocollimation theodolite allows for measuring the directional orientation of work pieces with unrivalled precision in real time using reference targets on each part. Relying on the non-contact measuring method, all sections may be adjusted extremely accurately and in relation to each other, such as in applications like the assembly and adjustment of satellite components.





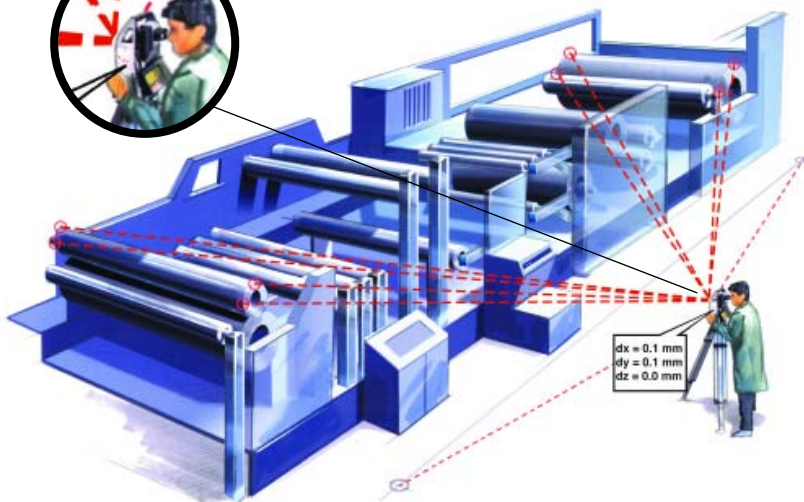
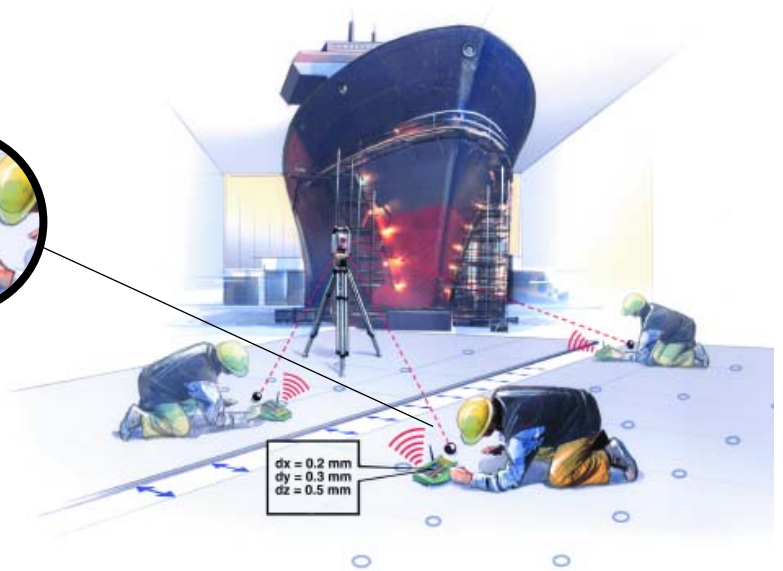
### Large-part inspection

Using Total Stations, large and heavy components are inspected according to their "as-built" status. Leica's unique function for automatic target recognition makes this truly a one-person system, including full data flow for analysis. In that case control of repetitive measurements and analysis by the operator during series production is carried out effectively.



### Large-scale assembly

Just one single instrument for 3D measurements, together with remote controlled automatic target recognition monitors, oversees the assembly process from the very beginning to the final hoisting. The assembly is guided exactly with pre-calculated burning maps and welding gaps. The system allows for automatic pre-positioning to the desired location, such as assembly of sub-blocks and blocks in a shipyard.



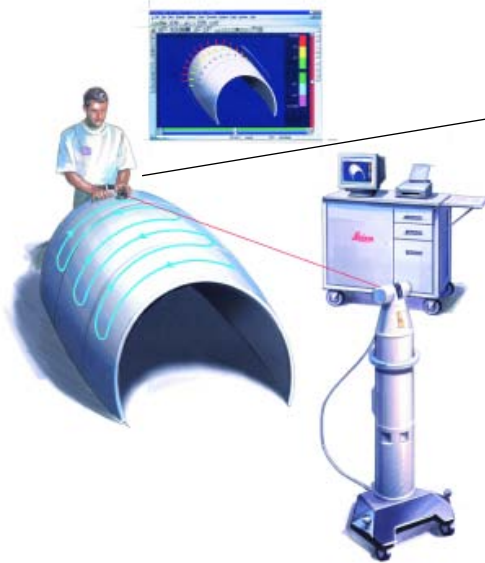
### Machinery alignment

Rapid and flexible setup of Total Stations and Theodolites, combined with automated measurements, means that data can be recorded under a variety of conditions. Alignment procedures are carried out with enormous flexibility. Component movement, inclination or deformation can therefore be detected and corrected early, like in applications such as roller alignment in the paper industry.



# Laser Tracker Applications ✓

Based on proven technology used by operators in every major industry, the Leica Laser Tracker gives you more features and advantages than any other tracker on the market. Leica Laser Trackers are equipped with high-precision vertical and horizontal angle encoders for precise angle measurements with the Leica-patented interferometer for precise distance measurements as well as with the absolute distance meter for true automation.



## CAD-based inspection

Surface inspections and verification of components are carried out much faster due to the high measurement rate of up to 3,000 points/second and real-time analysis. The Metrolog XG for Leica software immediately presents actual-to-design deviations to determine out-of-tolerance areas on the surface.

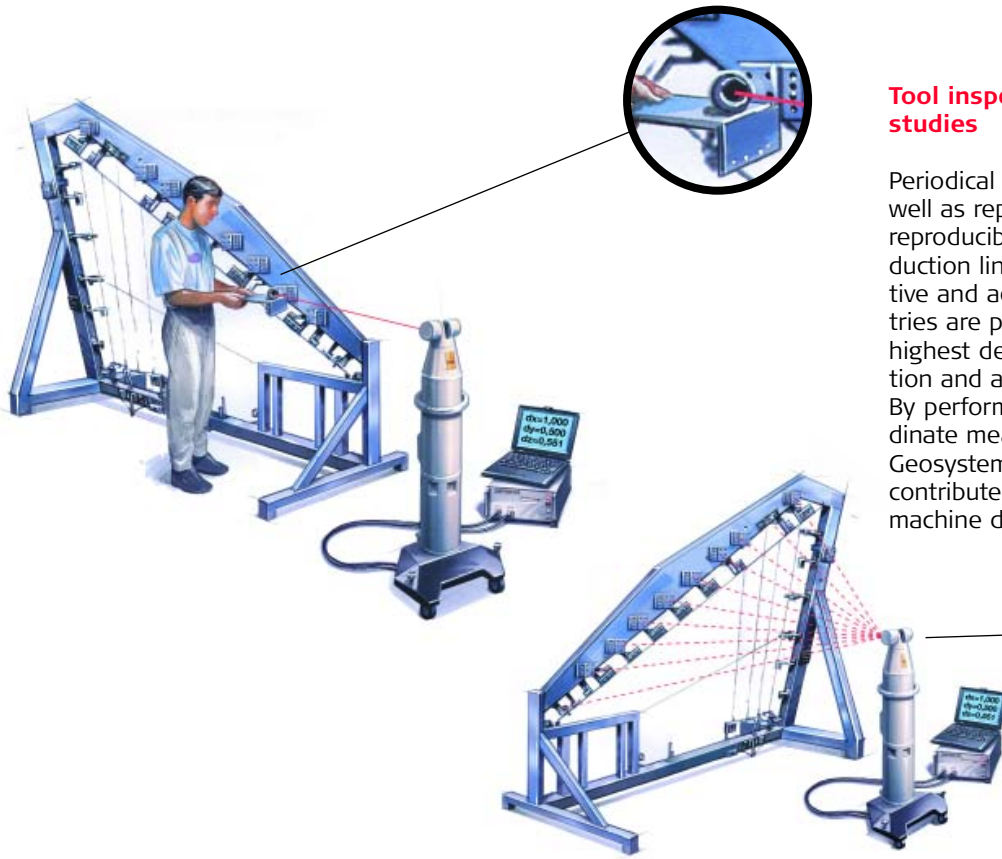
## Large-scale metrology

Both small and large objects, for example airplanes, can be digitized within a previously unattainable measurement volume of up to 80 meters, achieving accuracies of up to one micron. Using a hand-held reflector, the operator can freely probe the object. He receives real-time feedback about actual-to-design deviations.



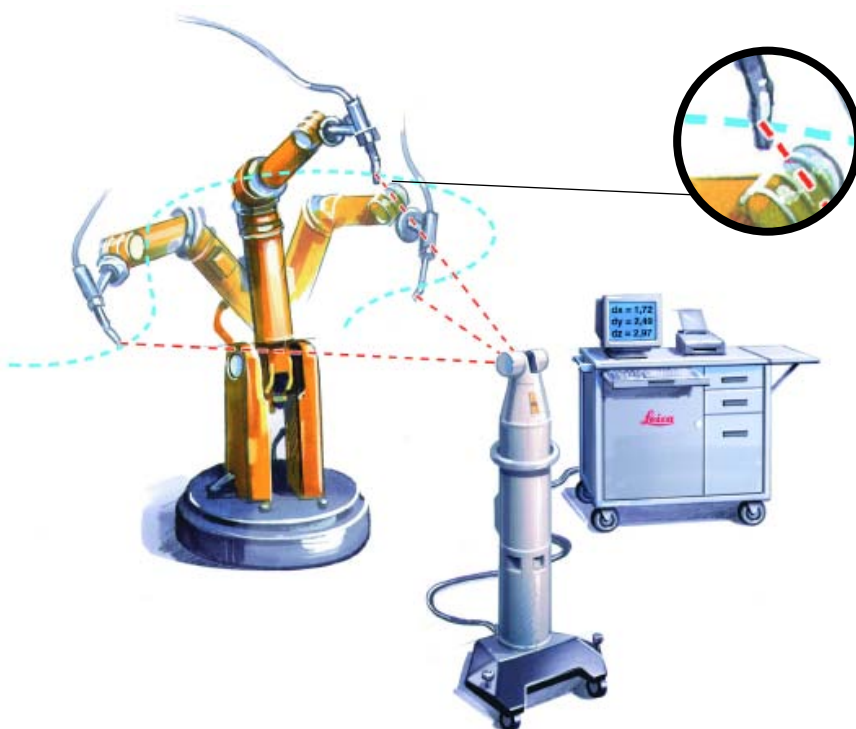
## Assembly and part inspection

Complex structures like production lines in the aerospace and automotive industries are inspected and built with high reliability within the shortest time possible. Practically all major aerospace and automotive manufacturers have migrated to Leica Laser Trackers, substantially increasing their productivity.



### Tool inspection and R&D studies

Periodical inspections as well as repeatability and reproducibility tests on production lines in the automotive and aerospace industries are performed with the highest degree of automation and accuracy possible. By performing mobile coordinate measurements, Leica Geosystems substantially contributes to reducing machine downtime.



### Robot control

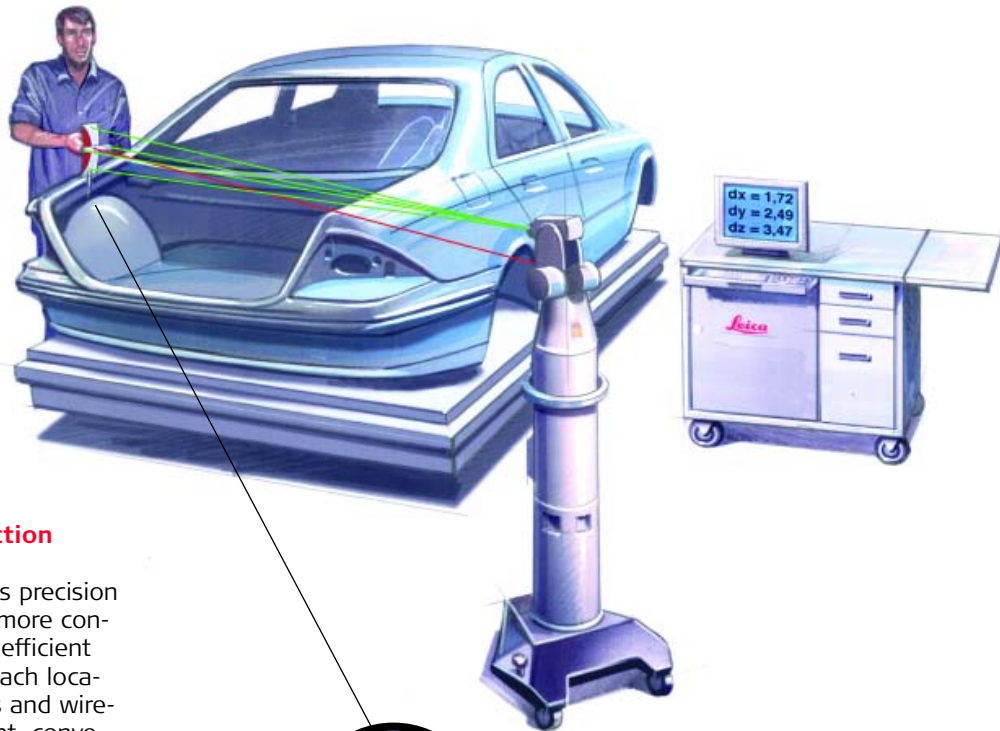
High-speed tracking is one of the mandatory requirements for robot control, machine guidance and Metrology-Assisted Assembly. Robot calibration, accuracy improvement of drilling machines or automation of wing-to-body assembly are just some examples of machine control applications of Leica Laser Trackers.





## T-Probe Applications

Leica Geosystems brings additional functionality and flexibility to the shop floor. As a result, the productivity of inspection, assembly, and reverse engineering processes are set to increase dramatically. The Universal CMM from Leica Geosystems is based on Leica's unique Local Positioning Technology, in which the unique combination of tracker technology and photogrammetry provides high-speed tracking of location and orientation of any object in space with 6DOF position, pitch, roll and yaw.



### Geometry inspection

The T-Probe makes precision inspection faster, more convenient and more efficient even in hard-to-reach locations. The armless and wireless T-Probe is light, convenient to hold, fast and intelligent. Within a range of 30 meters, the T-Probe gives you more freedom to move than any other portable CMM on the market.



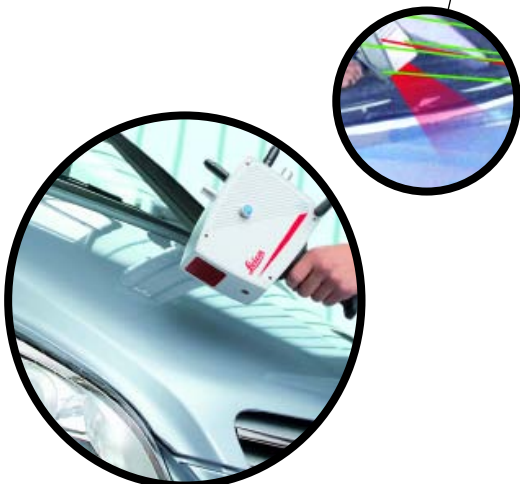
# T-Scan Applications

The hand-held T-Scan laser scanner digitizes small and large objects 50 percent faster than regular scanners. It scans any surface with no need for powder or photogrammetric targets—from clay and foam to textiles, folio-covered surfaces and sheet metal.



## Reverse engineering

The hand-held T-Scan permits fast and easy scanning of objects with virtually no setup time. Millions of points can be delivered for reverse engineering within minutes and in measurement volumes of up to 30 m (50 ft).



Whether building the fastest car, the biggest plane, or the most precise tooling, you need exact measurements to improve quality and productivity. So when it has to be right, professionals trust Leica Geosystems Metrology to help collect, analyze, and present 3-dimensional (3D) data for industrial applications.

Leica Geosystems Metrology is best known for its broad array of control and industrial measurement products including laser trackers, Local Positioning Technology (LPT) based systems, hand-held scanners, 3D software and high-precision total stations. Those who use Leica Metrology products every day trust them for their dependability, the value they deliver, and the world-class service & support that's second to none.

Precision, reliability and service from Leica Geosystems Metrology.

**When it has to be right.**

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 **HEXAGON**  
METROLOGY

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