

SMARTTECH3D

PHOTOGRAMMETRY

Portable System for Large-Scale 3D Measurement



SMARTTECH3D Photogrammetry is a portable coordinate measuring system that uses digital photographs to create a precise map of markers placed on an object. The system can be used for direct quality control or combined with full-field optical measurements. Designed for large-scale industrial applications, it provides high accuracy while remaining lightweight and easy to transport.

Integrating photogrammetry into the 3D scanning process combines high-resolution surface measurement with overall dimensional quality control. This approach reduces scanning time by focusing on the critical points of each part.

TYPICAL USE CASES:

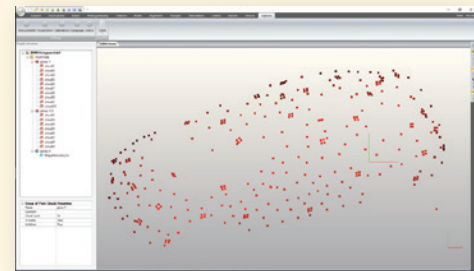
- Marker mapping for high-resolution 3D scanning of large objects
- Point-to-point quality assurance for large-scale parts
- Assembly control in automotive, shipbuilding, and steel construction industries
- Component deformation measurement
- Shimming and aligning components into assembly

ADVANTAGES OF SMARTTECH3D PHOTOGRAMMETRY

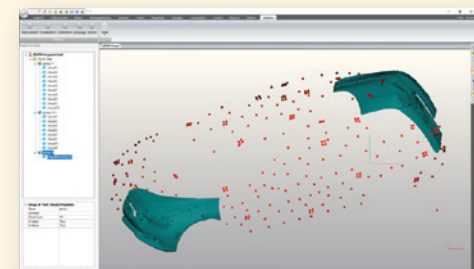
- Lightweight and portable (approx. 5 kg)
- Usable in bright daylight and on dark surfaces
- High precision for objects up to 20 meters or more
- Resistant to shocks and vibrations
- Reliable performance across a wide temperature range

ACCURACY & EVALUATION

Both photogrammetry and 3D scanning processes are evaluated in accordance with the VDI/VDE 2634 standard. The base accuracy of a photogrammetry map is 92 μm . The precision of 3D scanning depends on the model used and can reach up to 10 μm , supporting a wide range of industrial applications.



Generating a map of markers based on photos



Integrated data from photogrammetry and 3D scanning

PHOTOGRAMMETRY SET STANDARD

The standard set includes:

- Calibration plate
- Scale bars
- Numeric and round targets
- Dedicated Canon camera with flash
- SMARTTECH3Dmeasure software



SMARTTECH3D Photogrammetry can be purchased as a stand-alone system or as an additional module for a SMARTTECH 3D scanner.

PHOTOGRAMMETRY PROCESS - HOW IS IT DONE:

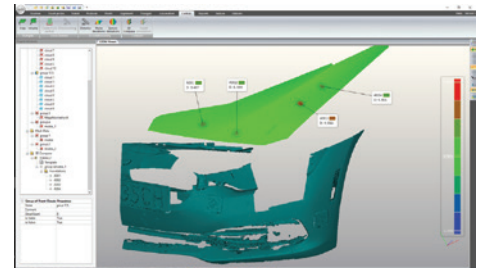
Photogrammetry uses high-resolution photographs of the measured object taken with specially designed markers and scale bars. These images serve as input data for calculating a precise marker map.

The process begins by placing self-adhesive or magnetic markers and scale bars on the object. Next, several dozen photos are captured from different angles, depending on the size and complexity of the project. The collected data is processed in SMARTTECH3Dmeasure software to create a marker map.

This map can then be used for measurements, quality checks, and dimension verification. For additional analysis, users can work directly with the coordinate data of visible points on the map.

The system is especially effective when used as an additional module for SMARTTECH 3D scanners. The metric marker map created through photogrammetry is fully compatible with point clouds from SMARTTECH 3D systems.

This integration allows high-resolution 3D scan data to be aligned with the photogrammetry map within a single coordinate system. The result is comprehensive quality control for large objects and detailed analysis of specific areas within the same dataset.



Color deviation map with reference check points

SMARTTECH3DMEASUREMENT SOFTWARE

The SMARTTECH3Dmeasure software with an active photogrammetry module enables full integration of photogrammetry and optical scanning in one system. It also provides tools for advanced quality control based on CAD reference models.

QUALITY CONTROL TOOLS

The software includes essential tools for quality inspection, such as color deviation maps, CAD comparison, distance and cross-section measurements, and area and volume calculations. These features allow users to generate complete quality control reports (PDF) directly from SMARTTECH3Dmeasure.

VISUALIZATION OF MEASUREMENT RESULTS ON THE OBJECTS

The software can project points, lines, or color deviation maps directly onto the scanned object. This feature highlights areas that require attention during production or inspection, improving communication and collaboration across teams.