ATOS TRIPLE SCAN

Industrial Optical 3D Digitizer

3D Coordinate Measuring
Full-Field Scanning & Inspection
Quality Control & Reverse Engineering

gom
Optical Measuring Techniques

ATOS TRIPLE SCAN

Industrial High-End 3D Digitizer

ATOS is an industrial, high resolution, optical 3D scanner. It delivers three-dimensional measurement data quickly and accurately to optimize engineering processes and improve manufacturing workflows.

ATOS is widely used in various industries for components such as sheet metal parts, tools and dies, turbine blades, prototypes, injection molded and casted parts. Full part geometry is captured in a dense point cloud or polygon mesh describing the object's surface and primitives precisely.

From coins to cars to aeroplanes

ATOS measures different object sizes, surface finishes, and complexities giving versatility to 3D digitizing by delivering:

- Accurate 3D coordinates and high data quality
- Parametric inspection and evaluation
- Full-field deviation to CAD, 2D and part-to-part
- Section-based analysis, GD&T, and trend analysis
- Complete measuring reports

Worldwide integration

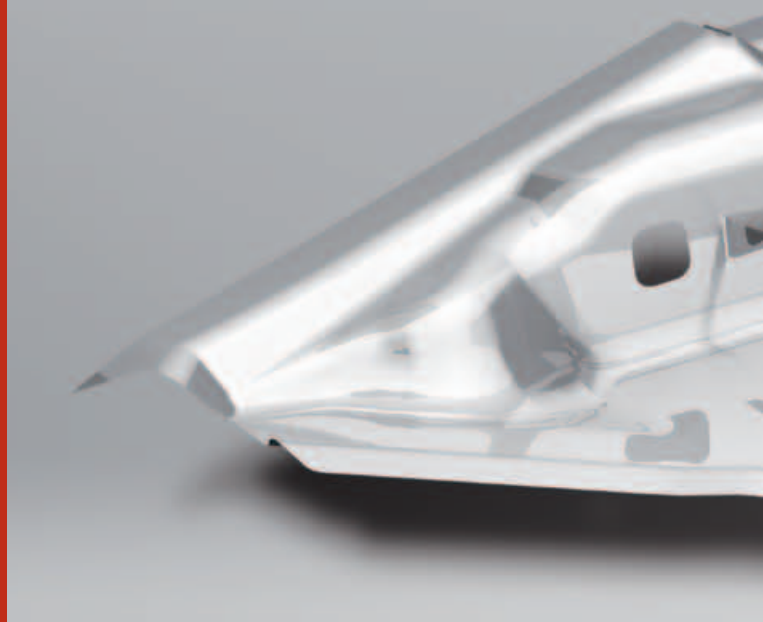
ATOS 3D Digitizers are utilized in a large number of different engineering applications to reduce time and eliminate cost with return of investment. Application areas include:

- Quality Control
- Reverse Engineering
- Rapid Prototyping
- Rapid Milling
- Digital Mock-Up

The benchmark scanner, improved

The ATOS 3D Digitizer is the most innovative optical measuring system for three-dimensional coordinate measurement on the market.

Developed since 1995, ATOS has thousands of installations in measurement and analysis rooms, factories, and production halls worldwide. ATOS is metrology tested and widely accepted as the preferred measuring tool. It is engineered with advanced hardware and intelligent software to provide fast precision measurements with flexibility and stability for industrial environments.

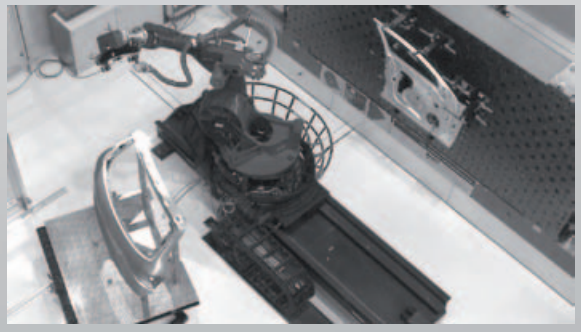


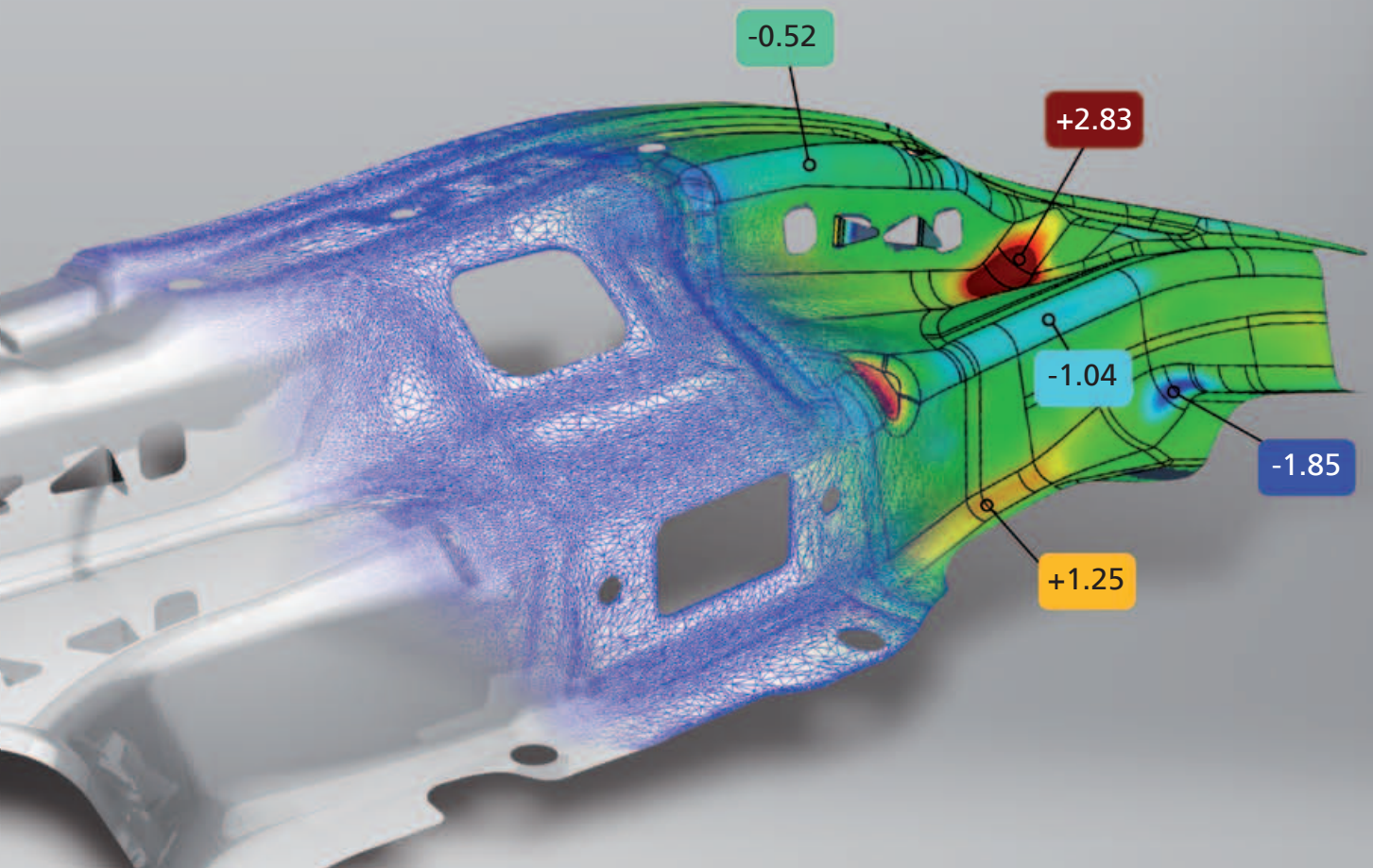
Dimensional control for the complete process chain

The ATOS 3D Digitizer impacts the overall process chain from design through manufacturing to maintenance. The integration of ATOS in industrial development and production processes assists in:

- Reducing research and development times
- Improving prototype quality
- Speeding up production times
- Achieving a higher level of quality assurance throughout the entire product life cycle
- Monitoring early trend analysis within series production processes
- Establishing root cause analysis to detect engineering issues
- Reducing rejects and rework, thus saving valuable time and money
- Automating quality control to improve overall quality assurance requiring fewer personnel and increasing performance

ATOS combines flexibility and ease of use with industrial-grade sensor hardware. ATOS Triple Scan produces process safe, high resolution, high quality measurement data even on complex, shiny or dark object surfaces. This combined with GOM's powerful ATOS Professional software and over 20 years experience in optical measuring techniques makes the ATOS the ideal 3D optical measuring solution for all measuring tasks.





ATOS TRIPLE SCAN

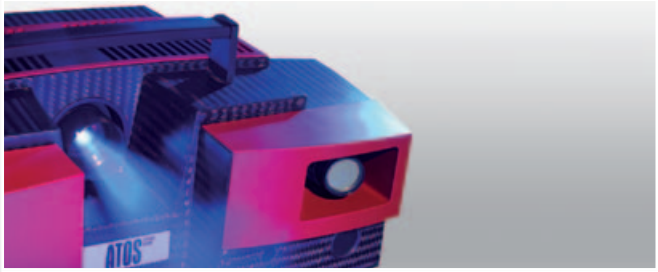
Revolutionary scanning technology

GOM's ATOS Triple Scan uses innovative and ground breaking measuring and projection technology. It encompasses all of the functions and benefits of GOM's proven stereo camera setup plus GOM's latest technological advancements.

Triple Scan - 3 in 1

In addition to GOM's stereo camera technique, the ATOS Triple scan also uses the right and left cameras individually in combination with the projector. This new method results in 3 individual sensors each with different viewing perspectives of the object.

This new technology enables even higher detailed feature capture with faster measurement times for various part sizes, surfaces, finishes, and geometries, regardless of environmental lighting conditions.



Blue Light Technology

GOM's new narrow banded projection technology enables precise measurements to be carried out independently of environmental lighting conditions, with extremely long service life, minimum heat development, and low maintenance.

Integrated TRITOP Photogrammetry

In complex or large scale applications, up to tens of meters in size, TRITOP digital photogrammetry is utilized to ensure the highest level of accuracy and optimal process workflow. This integrated measurement solution also assists in complex virtual assemblies and digital mock-ups.

GOM Touch Probe - Tactile measuring

The GOM Touch Probe enables 3D discrete point measurements in conjunction with ATOS full-field measurements for direct comparison to CAD for measuring difficult to access areas and primitives. Touch probe data can also be utilized for online data alignment.

Triple Scan for shiny or dark surfaces

Save time and increase productivity by directly scanning shiny or dark surface objects such as sheet metal parts and dark colored tools/dies while maintaining accuracy and high-detailed resolution.

Triple Scan for complex part geometries

Scan rapidly without sacrificing detail. Measure intricate characteristics, deep pockets, fine edges, and complex features such as turbine blades and casted or injection molded parts.

Mobile measuring system

Eliminate costs and save time by moving the system to the part. ATOS is completely portable and is easily transported. The dynamic referencing ensures highest accuracy even under difficult environmental conditions.

Industrial sensor head

ATOS is engineered with a robust impact resistant carbon fiber housing to protect the integrated cameras and lenses. It is designed for safety and manufactured with the highest level of quality for various application settings.

ATOS Triple Scan + ATOS Professional

The ATOS Triple Scan is integrated with GOM's intelligent ATOS Professional software to form the ultimate metrology solution. Software features include smart mesh processing, parametric inspection, trend analysis, GD&T, reporting, ...

High resolution measuring cameras

ATOS Triple Scan comes with stereo 5 or 8 megapixel measuring cameras which are specially developed for precise optical measurements. Accuracy, resolution, and measuring area are completely configurable to the application's requirements.

ATOS TRIPLE SCAN

Integration for all measurement tasks

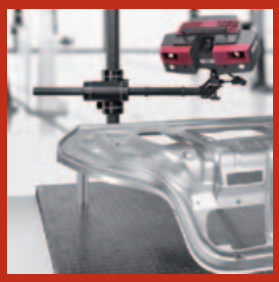
The ATOS sensor head is freely positioned, either manually or automatically, in front of the part. After each measurement, the sensor or part is moved to obtain areas not captured in the previous scan. All individual measurements are automatically transformed into a common coordinate system immediately providing the complete 3D point cloud.

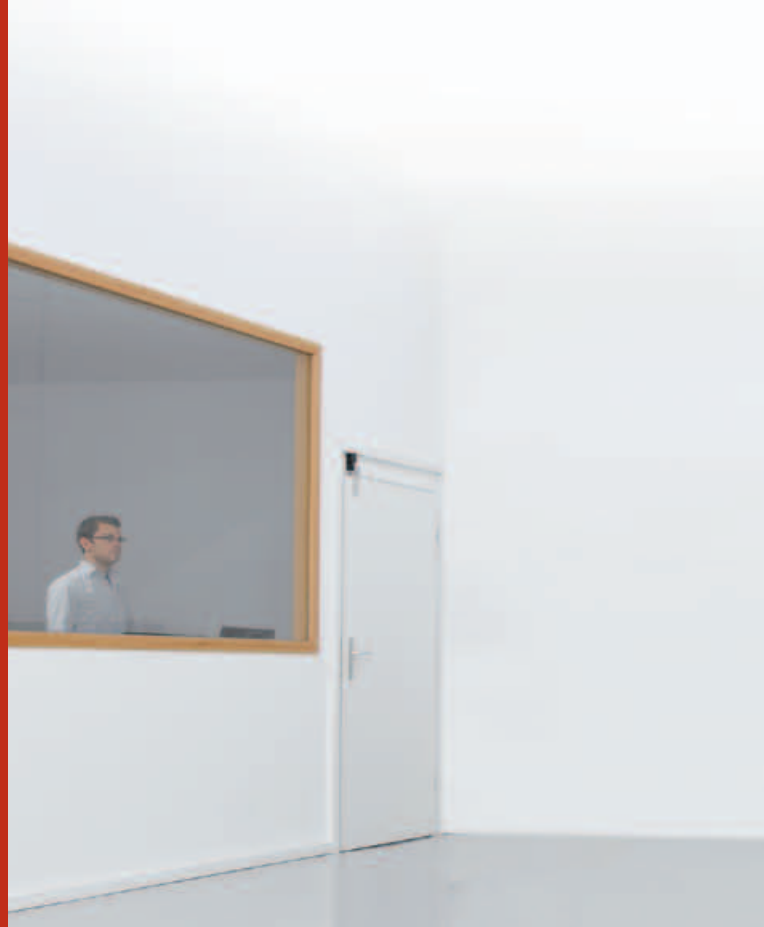
Mobile industrial measuring system

ATOS Triple Scan is a mobile measuring system developed for use in industrial environments. ATOS is quick to setup, with just one operator required. No measuring plate with foundation, measuring table or vibration isolation is required. The ATOS dynamic referencing ensures highest accuracy even under difficult environmental conditions.

Semi-automatic measurement

Rotation tables and linear units enable easy, quick, and efficient measurements of small to medium sized objects. The ATOS Professional software directly communicates with these devices to easily manage positions for a simple measurement sequence. Once configured, scanning can be initiated through a remote control.





ATOS Inspection Cell

Designed and constructed specifically for industrial requirements, the ATOS Inspection Cell is an automated robotic solution. By combining ATOS Triple Scan technology and its process safe software with industrial robotic hardware, it creates the definitive metrology solution for manufacturing environments.

This integration streamlines engineering workflows and facilitates inspection at every stage of the process. Thus becoming an integral part of quality assurance and production processes.

Full automation with optical metrology from GOM offers:

- Increased efficiency in quality control
- Higher throughput
- Higher repeatability
- More comprehensive part inspections
- Major cost reductions
- Accelerated return on investment

Advanced hardware

The ATOS Triple Scan is designed for flexible automated use in industrial environments. The innovative technology can be integrated with various types of robots and other handling devices. The robot is controlled directly from GOM's measurement software or via PLC setup, and automatically positions the sensor. GOM's proven dynamic referencing assures high measurement accuracy, independent from robot accuracy and calibration.

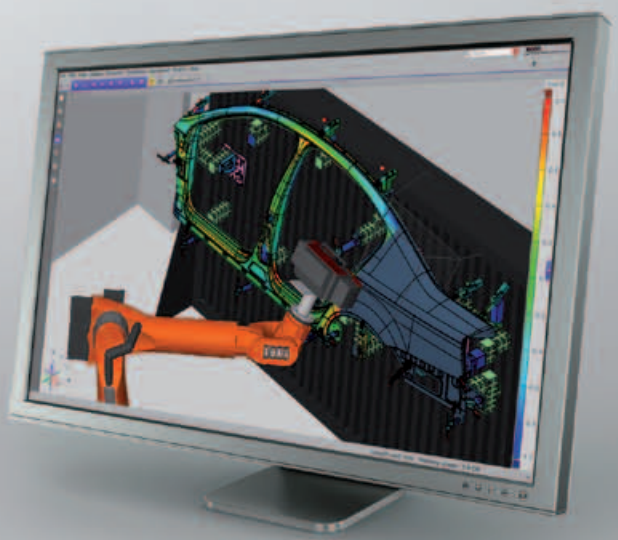
Intelligent software

The ATOS Professional software intelligently orchestrates the automated workflow smoothly without difficulty. The powerful software is independently tested and certified by German and American national measurement laboratories (PTB and NIST). These certifications make it possible to trace all measurement results and to exchange data efficiently with CAD and quality management systems. As a result, the standardized and centralized ATOS inspection process can be implemented across various departments.

Virtual Measuring Room (VMR)

The VMR further advances and evolves the automation experience. The fully integrated solution allows complete reproduction of automated measurement process chains within one software package.

- Offline & online programming
- Building a virtual measuring room
- 3D measurement simulation
- Collision control & safety
- Inspection
- Reporting



ATOS Professional

3D Digitizing & Inspection Software

ATOS Professional is a process-safe software solution that controls the ATOS 3D Digitizer, produces precise 3D surface data, and offers complete inspection and reporting in one software package.

Full-Field 3D Scanning

ATOS Professional guides the operator through the complete scanning procedure. 3D data is available directly after fringe projection.

Single scans are automatically combined using an intelligent algorithm based on a combination of reference points and/or surface matching.

Self-monitoring for process integrity

ATOS is a self-monitoring measuring system that verifies calibration status, transformation accuracy, environmental changes and part movement.

This makes ATOS an industrial measuring solution that is ideal for operating in industrial production environments.

Parametric Inspection

From CAD import to reporting, the ATOS Professional software contains all the evaluation tools for an extensive analysis of parts and components.

ATOS Professional contains Parametric Inspection. All actions and evaluation steps are completely traceable and interlinked, and can be easily modified or adjusted.

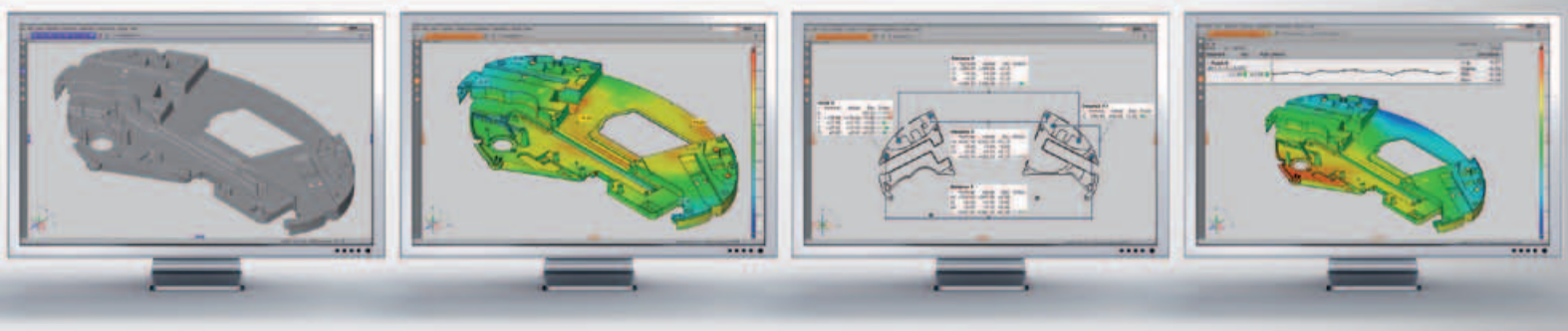
Teaching By Doing
A one-button solution updates all dependent elements automatically after changes. This offers out of box multiple part analysis as standard, without scripting or programming knowledge, thus saving time and cost for multiple part evaluations.

CAD Import

Complete measuring, inspection and reporting workflow in one software package

- Full-field 3D scanning with smart self-monitoring
- Polygon mesh generation: smoothing, thinning, hole filling, ...
- CAD Import: CATIA V4, CATIA V5, PRO/E, NX Unigraphics, IGES, STEP, JT-Open, Parasolid, ...
- Measurement plan import: ASCII, CSV, FTA, ...
- Multiple alignments within one project: automatic pre-alignment, RPS, 3-2-1, plane-line-point, best-fit, hierarchical, ...
- CAD comparison & CAD-based primitive generation
- Inspection functions: dimensions, virtual calipers, angles, diameters, and more ...
- 2D section-based analysis
- Reporting: first article inspection, tables (eg VDA), freely definable report templates, ...

Polygonize 3D Point Clouds | 3D-Analysis | 2D-Analysis | Multi Part Inspection



GOM Inspect

Free Inspection Software

GOM Inspect is a free result viewer, mesh processing and inspection software for dimensional analysis of 3D point clouds or ATOS data.

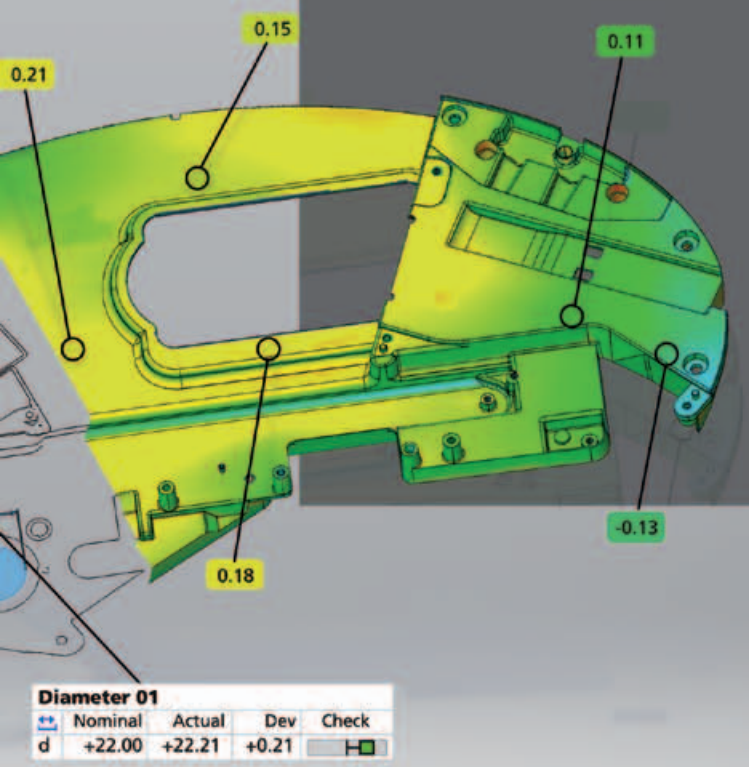
Free result viewer

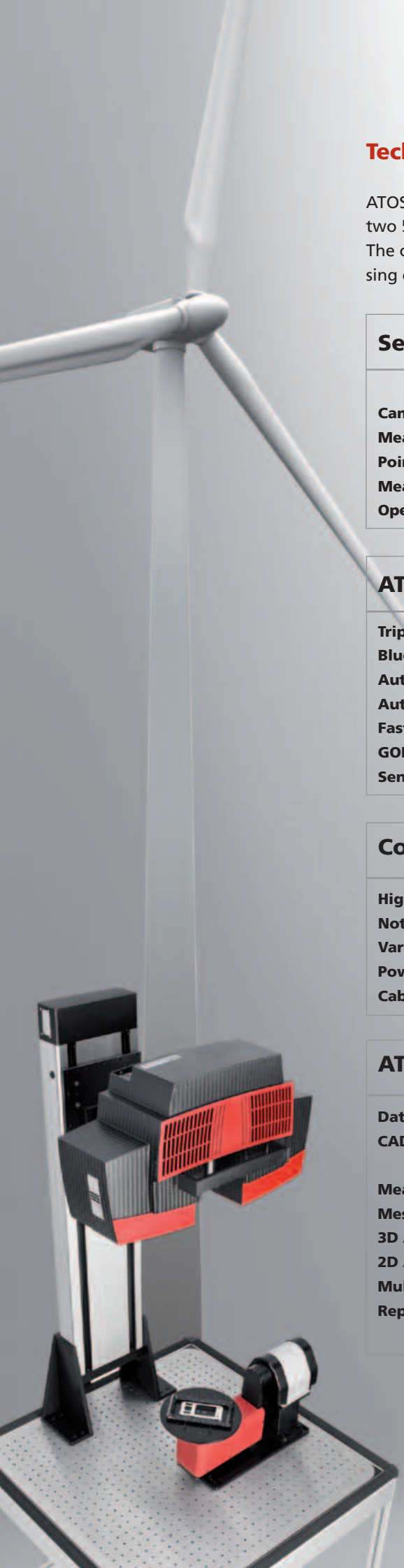
Share ATOS results, further analyze data and easily discuss and detect problematic areas with colleagues, suppliers, and customers for effective collaboration to speed-up decision making processes.

Free Inspection and Mesh Processing

GOM Inspect is more than just a viewer.
It also contains a complete set of tools for advanced mesh processing and evaluation. This free software not only analyzes ATOS data, but also 3D point clouds from laser scanners, CTs, and other white light scanners.

Import, process, and evaluate in one free software package.





Technical Data

ATOS Triple Scan is available in two turn-key variations; ATOS II Triple Scan with two 5 megapixel cameras and ATOS III Triple Scan with two 8 megapixel cameras. The complete ATOS Triple Scan package includes the sensor head, image processing computer and ATOS Professional Software.

Sensor Configurations

	ATOS II Triple Scan	ATOS III Triple Scan
Camera Pixels	2 x 5 000 000	2 x 8 000 000
Measuring Area	38mm² up to 1500mm²	38mm² up to 2000mm²
Point Spacing	0.02mm - 0.62mm	0.01mm - 0.61mm
Measured points per scan	5 million points	8 million points
Operating Temperature	5 - 40°C, non condensing	5 - 40°C, non condensing

ATOS Technology Features

Triple Scan	Easy scanning of shiny or dark surfaces and complex parts
Blue Light Technology	Scanning indepenent of environmental lighting conditions
Automation Level 1	Rotation tables, linear units, tilt and swivel units
Automation Level 2	Robots
Fast Scanning Mode	Yes
GOM Touch Probe compatible	Yes
Sensor Controller	Internal

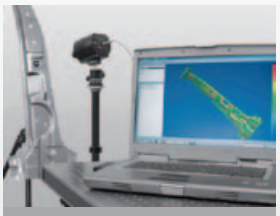
Computer Hardware

High-End PC	Yes
Notebook operation	Yes, for increased mobility
Variable Workstation	Standing and sitting working heights
Power Supply	90 - 230V AC
Cable Length to ATOS	Light weight cables up to 30m

ATOS Professional Software

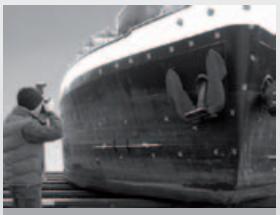
Data Capture	From ATOS 3D Digitizer
CAD Import	CATIA V4, CATIA V5, PRO/E, NX Unigraphics, IGES, STEP, JT-Open, Parasolid, ...
Measurement plan import	ASCII, CSV, FTA, ...
Mesh Processing	Polygon mesh generation, smoothing, thinning, hole filling, ...
3D Analysis	CAD comparison, GD&T analysis, primitive generation, ...
2D Analysis	2D section-based analysis
Multiple Part Analysis	Standard, without scripting using Teaching by Doing
Reporting	First article inspection, tables (e.g. VDA), free definable report templates, ...

ARAMIS



ARGUS

PONTOS



TRITOP

GOM - Optical Measuring Techniques

GOM is a global industrial manufacturer that develops and produces revolutionary optical measurement solutions and technologies for 3D coordinate measurement and deformation analysis. GOM's measuring systems are based on digital image processing and are used in product development, quality assurance, material and component testing.

Optical measuring technology and full-field surface measurement systems have become a standard tool within virtually all industries. The data from GOM's measurement systems are an invaluable tool for quality control in modern product development and production process chains.

Non-contact optical measuring systems for all measurement tasks

In addtion to the ATOS 3D Digitizer, GOM also offers:

- **TRITOP:** optical 3D coordinate measuring machine
- **ARAMIS**: optical 3D deformation analysis of materials and components
- **PONTOS:** dynamic non contact 3D analysis of displacements and deformations
- **ARGUS:** optical forming analysis for sheet metal forming processes

GOM customers (extract)

3B Scientific • Aardmann Features • ABB • ACTech • Adidas • AEG • Air Force Research Labs • Airbus • Alcan • Alcoa • Alfa Laval • Alstom • Altay Scientific • Apache Footwear • Arcelor • Aselsan • Asics • ASUS • Audi • Auto Parts Malaysia • Autodie International • Automotive Lighting • Autopal • Avtovaz • Balda • Bang & Olufsen • BAM • BASF • Batz • Bayer • Bentley • Bertone • Bertrandt • Blaupunkt • BMW • Boeing • Bombardier • Bosch • Bplas • Braun • Bridgestone • Bundeskriminalamt • Busch Jäger • Canon • Carcoustics • Carsun • Casio • Caterpillar • Cessna • Cherry Automotive • Chicago Mold • China Steel • Ching Luh Shoes • Chrom Alloy • Chrysler • Continental • Corning • DAAZ • Daihatsu Motor • Daimler • Delloyd • Delphi • DLR • Dodge • Dräxlmaier • DuPont • ETH Zürich • E.ON • EADS • EDAG • Ecco • Elasis • ELBAR SULZER • Electrolux • Embraco • ENDO manufacturing • Ensam • EPFL Lausanne • ESA • Eurocopter • Ever Tech Plastic • EXXON • FAA • Fachhochschule Nordwestschweiz • Faurecia • FES • Fiat • First Automobile Group • FisherPrice • Flextronics Plastics Technology • FOI • Ford • Forschungszentrum Karlsruhe • Foxconn • Fraunhofer • Fuji • GE Energy • General Motors • Georg Fischer • Gillette • Gintic • GKSS Geestacht • Goodrich • Goodyear • Gorbynov Aviation • Greenpoint • HANKOOK • Hansen Transmissions • Head Tyrolia • Heck + Becker • Hella Leuchtensysteme • Hidrostal • Hilti • Hitachi Taga • Honda • Honeywell • Howmet • Hydro • Hyundai • IAV • IBM • IMA Dresden • Imperial College • IMPO • Institute of Forensic Medicine Berne • International Automotive Research Centre • Intier Automotive • Istanbul Technical University • Isuzu • Italdesign-Giugiaro • IUC • IVM • Jaguar • JAXA • Jhi Soon Auto Metal • John Deere • Johnson Controls • Kautex Textron • Kewpump • Kia • Kitech • Krämer + Grebe • KTH • KU Leuven • Land Rover • Läpple • Laurence Livermore National Laboratories • Lego • LG Electronics • Liebherr • Lockheed Martin • Los Alamos Laboratories • LUK • Luxottica • Magna • Magneti Marelli • Mahle • Mann + Hummel • Matador • Matrici • Mattel • Max Plank Institute • McLaren • Metalbages • Michelin • Microsoft • Miele • Mitsubishi • Modenas • Montupet • Motorola • MTU • Nagasaki Industrial Research Center • NASA • Nautor • Naval Research Lab • NAZA • Nemak • Nike • Nissan • Nokia • Nolato • Northrop Grumman Systems • Nothelfer • Nottingham University • Nypro • OLHO Technik • Olympus • ONERA • Otto Fuchs • PCC Leoben • PCI • Peguform • Phiaro Corp. • Philips • Pierburg Kolbenschmidt • Pietro Rosa • Pilkington Automotive • Pininfarina • Playworks • Poong Won Che Hwa • Porsche • Pratt & Whitney • PSA • PURAST • Queen Mary College • Reebok • Renault • RIM • Robbe & Berking • RollsRoyce • RWTH Aachen • Saipa • Salzgitter • Samsung • Sandia National Lab • Sanyo • Saturn • Sea Ray Boats • Seat • Shell • Shenyang Aircraft Research Institute • Siemens • Skoda • SKS Coachbuilders • Snecma • Solar Turbines • Solvay • Sony • SonyEricsson • Standard Profile • Stihl • Stola • Subaru • Sun Microsystems • Suzuki • Tata Motors • Tata Steel • Temsa • Thomassen • Thule • ThyssenKrupp • Tianjin Motor Dies • Tokai Rubber Industries • Topia • Toyota • Triumph • TRW • TU Delft • TU Dresden • TU Eindhoven • TU Graz • TU München • Tubitak Marmara Research Center • Turbine Services • Tyco • Uni Erlangen LFT • Uni Padova • Uni Stuttgart • US Army Research Lab • Valeo • VDO • Vertu • Villeroy+Boch • Voest Alpine Stahl • Voith Siemens • Volke • Volkswagen • Volvo • Vulcan Air • VZLÚ • WAGO • Walt Disney • Warwick University • Whirlpool • Yamaha • Yulon • ZF Sachs

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