GOM
Optical Measuring Techniques

Company Presentation

Gesellschaft für Optische Messtechnik
Full-field surface measurement systems have become a standard for industrial measurement.

The measurement data from these systems is now an indispensable tool for quality control in modern product development and production processes. Guaranteeing faster time to market and high production quality.

GOM has been an important part of this development over the last 20 years.
GOM - Worldwide Sales & Support Network

Europe

Worldwide Sales & Support Network
- 6 GOM Offices in Europe with headquarter in Braunschweig, Germany
GOM - Worldwide Sales & Support Network

Worldwide

- 6 GOM Offices in Europe with headquarters in Braunschweig, Germany
- More than 45 technical offices handled by local distributors worldwide
GOM - Established Customer Base
System Installation

Established customer base with over 3500 systems worldwide

- Automotive and aerospace manufacturing, consumer goods, and all their suppliers as well as research institutions and universities
- Product development, toolmaking, first article inspection and quality assurance as well as material and component testing
GOM Customers
(Excerpt)

Automotive
- Audi D
- AvtoVaz RU
- Bentley UK
- BMW AT, D, UK
- Chrysler USA
- Daimler D
- Fiat IT
- Ford BE, D, UK, USA, BR
- Freightliner USA
- General Motors AU, AT, BR, USA
- Hyundai KR
- Isuzu JP
- Jaguar UK
- Kia KR
- Land Rover UK
- McLaren UK
- Modenas MY
- NAVA MY
- Nissan JP, UK, USA
- Opel D
- Porsche D
- PSA FR
- Renault FR, ES, TR
- Seat ES
- Skoda CZ
- Subaru JP
- Suzuki CN
- Tata Motors Limited IN
- Toyota D, J, TR, USA, CA
- Volkswagen CN, D, MX, PL
- Volvo SE
- Temsa TR

Automotive Supplier
- Autopal CZ
- Batz ES
- Bertone IT
- Bertrandt D
- Bosch D, CH
- Bridgestone JP
- Carroux LI
- DAAZ RU
- Delphi JP
- Faurecia D, FR
- FES D
- Goodyear USA
- Hella Leuchtensteme D
- IAV D
- Italdesign Giugiaro IT
- Kautex Textron D
- Läpple D
- LUK D
- Magna CA, AT
- Mahle D
- Matador SK
- Matrici ES
- Metalbages ES
- Michelin FR
- Montupet FR
- Nothelfer DE
- OLHO Technik DE
- Pierburg Kolbenschmidt AG, D
- Pininfarina IT
- Solvay BE
- ThyssenKrupp D

Aerospace
- Airbus D
- Airforce Research Laboratories USA
- Aselsan TR
- Boeing USA
- Cessna USA
- Chrom Alloy USA, TH
- DLR D
- EADS D, FR
- ELBAR SULZER NL
- Eurocopter D
- Federal Aviation Administration USA
- FOI SE
- Gorbunsyov Aviation Production RU
- Honeywell IE, USA
- Howmet UK, USA, JP
- IMA Dresden DE
- IMPO RU
- Lockheed Martin USA
- MTU D
- NASA USA
- Northrop Grumman Systems Corp. USA
- ONERA FR
- Pratt & Whitney USA, NO
- RollsRoyce UK, USA
- Saturn RU
- Snecma Propulsion Solide FR
- Solar Turbines USA
- Triumph USA
- Turbine Services USA
- Vulcan Air IT
- VZLÚ CZ
GOM Customers
(Excerpt)

**Consumer Goods**
- 3B Scientific DE
- Adidas DE, USA, KR + 13 suppliers
- Apache Footwear DE
- Asics JP
- Balda CN
- BenQ CN
- Blaupunkt DE
- Bosch DE, CH
- Braun DE, CN
- Ching Luh Shoes CN
- Ecco DK
- Embraco BR
- FisherPrice USA
- Fuji JP
- Green Point CN, TW
- Head Tyrolia AT
- Hitachi Taga JP
- Lego DK
- LG Electronic KR
- Luxottica IT
- Mattel Tools MY
- Microsoft USA
- Nolato SE
- Oakley US
- Olympus JP
- Playworks USA
- Samsung, KR
- Siemens DE, DK
- Sony/Ericsson SE
- Sony JP, USA
- Sun Microsystems USA
- VDO DE
- Vertu UK
- Villero+Boch LU, DE
- Walt Disney USA

**Research**
- BAM DE
- EPFL Lausanne CH
- ETH Zürich CH
- Forschungszentrum Karlsruhe DE
- Fraunhofer DE
- GKSS Geestacht DE
- Imperial College UK
- Int. Automotive Research Centre, UK
- Istanbul Technical University TR
- IUC SE
- Kaitich KR
- KTH SE
- KU Leuven BE
- Laurence Livermore National Labs USA
- Max Plank Institute DE
- Nagasaki Industrial Research Center JP
- Naval Research Lab USA
- Nottingham University UK
- PCC Leoben AT
- Queen Mary College UK
- RWTH Aachen DE
- Sandia National Lab USA
- Shenyang Aircraft Research Inst CN
- TU Delft NL
- TU Dresden DE
- TU Eindhoven NL
- TU Graz AT
- TU München DE
- Uni Padova IT
- US Army Research Lab USA
- Warwick University UK

**Material Supplier**
- ACTech DE
- Alcan (Alusuisse) CH
- Arcelor BE
- BASF DE
- Bayer DE
- DuPont US
- Hydro (VAW) DE
- Salzgitter DE
- Tata Steel IN
- Thyssen Krupp DE
- Thyssen Nirosta DE
- Tokai Rubber Industries JP
- Voest Alpine Stahl AT

**Other**
- Alfa Laval SE
- Bundeskriminalamt DE
- Corning US
- EXXON US
- Hidrostal CH
- Sea Ray Boats US
GOM is a global industrial partner for optical 3D coordinate measurement with over 20 years experience.

GOM has comprehensive know-how in 3D coordinate measurement, material and component testing, quality control and analysis, digital image processing:

- material testing
- 3D shape and dimensional inspection
- dynamic structural tests

GOM Measurement Systems:

- ATOS Full-field 3D Digitizing
- TRITOP Mobile Optical CMM
- PONTOS Dynamic 3D Analysis
- TRITOP\textsuperscript{Def} Vectorial Deformation Analysis
- ARAMIS Full-field 3D strain measurement
- ARGUS Deformation Analysis in sheet metal forming
GOM – Industrial 3D Measurement Techniques
All under one Roof

GOM is a global industrial partner for optical 3D coordinate measurement with over 20 years experience

· In-house development, production, distribution, training & support
  · enables quick and efficient reaction to the requirements customers
GOM – the Single Source Provider
Everything from one source

- GOM is a single source for measuring systems, software solutions, technical services and professional support

- Integrated solution reduces implementation problems and shortens inspection ramp-up time and offer long term support due to secured compatibility
Integration into industrial processes

Increased integration into industrial development and production processes with great potential for:

- reduction of development times
- optimization of production procedures
- enhancement of process security
ATOS
3D Digitizer

3D Surface Measurement

- Full-field part measurement
  - Inspection / quality control
  - Reverse engineering / design
  - Rapid manufacturing

- Evaluation in
  - Injection molding and plastics industry
  - Sheet metal and forming industry
  - Casting industry
  - Tooling and molding
TRITOP\textsuperscript{CMM}  
Mobile optical CMM

**Mobile Measuring of 3D Coordinates**

- Markers / discrete measurements  
- Adapters / basic shapes  
- Contrast lines / inspection sections

- Inspection of large parts  
  - 3D-Coordinate points versus CAD  
  - Distances, angles, radii  
  - Mating dimensions, boreholes, bolts

- Measuring and analysis of large parts by a single person in short time  
  - Ship building  
  - Train building  
  - Gas turbine casings  
  - Rigs
**TRITOP Deformation**

Static Deformation Analysis

**Displacement of 3D Coordinates**

- 3D deformation measuring in different loading conditions
  - Vectors of movement for each marker
  - Movement analysis
  - Deformation analysis

- Deformation of parts by:
  - Climate chamber
  - Mechanical load
PONTOS
Dynamic Deformation Analysis

**Dynamic Analysis of 3D Coordinates**

- Real-time deformation analysis through online measuring and evaluation
  - Deformation (Torsion, bending, displacement, etc.)
  - Velocity
  - Acceleration
  - Analysis of vibration

- Dynamic behavior of components
  - Deformation in wind canal
  - Drop tests
  - Door slam tests
  - Structural vibrations
ARAMIS
Material and Component Testing

3D Deformation Analysis

- 3D deformation measurement
  - Determination of material properties
  - Component testing

- Flexibility for all applications
  - Standard applications, e.g. tensile tests, ...
  - High temperature measurements
  - High speed measurements
  - Validation of FE simulation
  - Real-Time measurements

- Integration in existing testing environment
  - Tensile testing devices, load frames, ...
  - Replacement for extensometers and strain gauges
ARGUS
Deformation analysis in sheet metal and forming industry

Forming Characteristics of Sheet Metals

- Material deformation analysis
  - Detection of critical forming areas
  - Localization of overstretched areas prior to visible cracks
  - Verification and improvement of forming simulations

- Fast improvement of forming tools in try-out phase
  - Adjusting the tool parameters (Binders, dies, support plates)
  - Changes in tools
Thank you for your attention

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