

GOM 3D Metrology Conference

September 26 – 27, 2017

New Aspects in Industrial 3D Metrology,
Inspection and Testing

#GOMConference

Tuesday, September 26

08:30 Icebreaking Breakfast

09:30 Registration

10:30 Presentation Forum

GOM
Keynote

SAIC Volkswagen, China
Hans-Uwe Horlbeck
Series and Analysis Measurement in Car Body Production – Virtual First Sampling Storage

Clemson University, USA
Fadi Abu-Farha
Advanced Characterization of Lightweight Automotive Materials with Digital Image Correlation

Porsche, Germany
Dr. Torsten Putze
Digital Quality Assurance: 3D Data for Virtual Assembly and Augmented Reality Presentation

14:00 Solution Track 1

See detailed information on pages 4–9

Coffee · Technical Exhibition

16:00 Presentation Forum

VW Commercial Vehicles, Poland
Werner Steinert
Optical Full-Field Measuring Technology – the Future for People and Production

Opel, Germany
Dirk Kissinger
From Tactile to Automated Optical Metrology

GOM
Optical Measuring Machines

18:00 Bavarian Evening

Lunch · Technical Exhibition



Presentation Forum

In presentations on 3D testing and 3D metrology, GOM introduces cross-industry topics, providing insight into the workflows of renowned companies.



Solution Tracks

Interactive solution tracks cover industry-specific topics and introduce solution-driven applications.

Wednesday, September 27

09:00 Presentation Forum

GOM
Education Award Ceremony

GE Appliances, USA
Dave Leone
Redefining Product Development using ATOS

John Deere, Germany
Gerald Werner
Product Engineering with ATOS and TRITOP –
Stage Project for Dummies

Rolls-Royce, UK
Saika Akhtar
Using Optical Metrology to Speed up Final
Inspection of Complex Aerospace Assemblies

GOM
3D Testing

Coffee · Technical Exhibition

11:00 Solution Track 2

See detailed information on pages 4–9

Lunch · Technical Exhibition



Technical Exhibition

With the support of numerous partner companies, the accompanying technical exhibition presents trends and latest developments in metrology.

14:00 Solution Track 3

See detailed information on pages 4–9

Coffee · Technical Exhibition

16:00 Presentation Forum

Sandvik Coromant, Sweden
Anders Ivarsson, Johan Nilsson
ATOS Metrology in Product Development
of Metal-Cutting Tools

BMW, Germany
Jonas D'Haen
Characterization of Carbon Fiber Composites
with ARAMIS Kiosk Interface

Audi, Germany
Dr. Christoph Albiez
From Manual Scanning to Automated
Solutions in Pre-Series Production

GOM
Closing Notes

18:00 Wild West Night

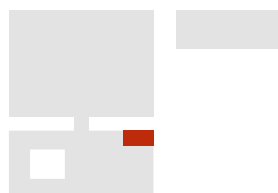


Factory Walk

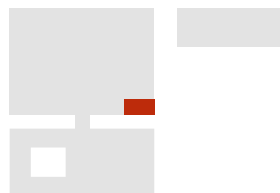
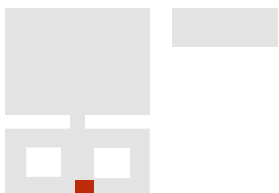
GOM showcases its new headquarters and gives an insight into the production of industrial 3D metrology.

Solution Tracks – Session Overview

	Session 1	Session 2	Session 3
Solution Track 1	1.1 Civil Engineering	1.2 Materials Testing	1.3 Numerical Simulation Verification
Topics	<p>Material characterization, component testing and structural testing</p> <p>Crack visualization</p> <p>High-strength construction materials</p> <p>Material model optimization</p> <p>Verification of numerical simulations</p>	<p>Technology preview: ARAMIS Kiosk Interface</p> <p>Standardized tensile testing (ISO, ASTM)</p> <p>Sheet metal forming parameters (FLC, bulge test)</p> <p>Lightweight materials</p>	<p>Technology preview: integrated FEA post-processor</p> <p>Optimizing simulations based on measurement data</p> <p>Material parameters and boundary conditions</p>
Solution Track 2	2.1 Structural Testing – Aerospace	2.2 Materials Testing	2.3 Casting
Topics	<p>Technology preview: ARAMIS high-resolution sensor</p> <p>Multisensor measurement</p> <p>Static load, fatigue, crash and impact testing</p> <p>Component behavior and simulation verification</p> <p>Lifecycle analysis</p>	<p>Technology preview: ARAMIS Kiosk Interface</p> <p>Standardized tensile testing (ISO, ASTM)</p> <p>Sheet metal forming parameters (FLC, bulge test)</p> <p>Lightweight materials</p>	<p>Technology preview: virtual assembly of dies and molds</p> <p>Pressure die, sand, and investment casting</p> <p>CNC machining and tool repair</p> <p>Simulation verification of shape and dimension</p> <p>Bionic lightweight components and structural castings</p>
Solution Track 3	3.1 Structural Testing – Automotive	3.2 Biomechanics	3.3 Numerical Simulation Verification
Topics	<p>Technology preview: ARAMIS high-speed sensor</p> <p>Crash and fatigue tests</p> <p>Tracking and positioning</p> <p>Wind tunnel, climate chamber, tire test benches</p> <p>Stiffness analysis</p>	<p>Dynamic analysis of biomechanical systems</p> <p>Bones, knees and spines, implants</p> <p>Strain, load and fatigue testing</p> <p>Motion analysis</p>	<p>Technology preview: integrated FEA post-processor</p> <p>Optimizing simulations based on measurement data</p> <p>Material parameters and boundary conditions</p>



Session 4	Session 5	Session 6	Session 7
<p>1.4 Advanced Airfoil Inspection</p> <p>Technology preview: ATOS Inline</p> <p>New airfoil inspection functions and workflows</p> <p>Assessment of manufacturing variability</p> <p>Performance-based evaluation</p>	<p>1.5 Production Control & SPC</p> <p>Metrology trends</p> <p>Automated production control</p> <p>Technology preview: ATOS Inline</p> <p>Trend analysis and statistical process control</p>	<p>1.6 Automotive Body Shop</p> <p>Auto Teaching in virtual measuring room (VMR)</p> <p>Surface defect map</p> <p>Technology preview: virtual assembly of car body</p> <p>Evaluation of flush and gap, character lines</p>	<p>1.7 Education</p> <p>Training concepts and management</p> <p>Knowledge transfer</p> <p>Education of future professionals</p> <p>Metrology packages for teaching</p>
<p>2.4 Aerospace and Power Generation Production Process</p> <p>Workflow for creating and maintaining an ATOS production process</p> <p>Virtual testing of the reference frame and measurement process</p> <p>Correlation with reference measurements</p> <p>Maintenance and control of an ATOS production process</p> <p>Business case development</p>	<p>2.5 Production Control & SPC</p> <p>Metrology trends</p> <p>Automated production control</p> <p>Technology preview: ATOS Inline</p> <p>Trend analysis and statistical process control</p>	<p>2.6 Automotive Press Shop</p> <p>Tool try-out and sheet metal formability</p> <p>Circle grid analysis 2.0</p> <p>Tracking and adjustment of fixtures</p> <p>Surface defect map</p>	<p>2.7 Automotive Design and Benchmarking</p> <p>Technology preview: assembly analysis</p> <p>Curvature analysis</p> <p>Character lines</p> <p>Digitization of complete car bodies</p>
<p>3.4 Management Session</p> <p>Replacing tactile metrology</p> <p>Effects of disruptive technologies</p> <p>Typical business cases in the aerospace and automotive industry</p> <p>From classical ROI to competitive advantage</p> <p>International roll-out – Knowledge transfer challenges</p>	<p>3.5 Production Control & SPC</p> <p>Metrology trends</p> <p>Automated production control</p> <p>Technology preview: ATOS Inline</p> <p>Trend analysis and statistical process control</p>	<p>3.6 Tools and Molds</p> <p>Technology preview: virtual assembly of tools and molds</p> <p>Press deformation monitoring</p> <p>Adaptive machining for tool correction</p> <p>Tool try-out</p>	<p>3.7 GD&T</p> <p>Standardized inspection language</p> <p>Dimensioning within CAD programs</p> <p>Transfer from CAD to inspection software</p> <p>GD&T inspection with full-field 3D data</p>





Solution Track 1 – Guest Speakers

1.1 Civil Engineering

DTU, Denmark | Rasmus Eriksen

Deformation Measurements with ARAMIS for Structural Testing of Wind Turbine Blades

TU Braunschweig, Germany | Sven Lehmborg

3D Testing for High-Strength Building Materials

TU Wien, Austria | Dr. Patrick Huber

Assessment of Shear Strength of Existing Concrete Bridges

1.2 Materials Testing

Audi, Germany | Tobias Schmack

Simulation Verification of Impact Tests on Structural Lightweight Components

Canmet, Canada | Dr. Jidong Kang

Recent Development in Shear Test for Aluminum Alloy Resistance Spot Welds

Clemson University, USA | Fadi Abu-Farha

Determination of Material Parameters for Crash Simulations

1.3 Numerical Simulation Verification

BMW, Germany | Marco Raupach

Mesh Refinement Study and Experimental Validation for Stretch Bending of Sheet Metals

ThyssenKrupp Presta, Liechtenstein | Thorsten Wiege

Determination of Material Parameters and Simulation Verification for Optimized Processes

TU Chemnitz, Germany | Norbert Schramm

Numerical Simulation Tools and 3D Metrology for Efficient Development of Fiber-Reinforced Plastic Parts

1.4 Advanced Airfoil Inspection

SVA Potsdam, Germany | Ulf Barkmann

Performance-Based Evaluation of Propeller Accuracy in Model Scale

Rolls-Royce, Germany | Dr. Marcus Meyer

Assessment of Manufacturing Variability of Engine Components

1.5 Production Control & SPC

Daimler, Germany | Franjo Habek

Production Quality Control with ATOS ScanBox

1.6 Automotive Body Shop

Topia, Japan | Yasunori Suzuki

Improving Trial Manufacturing Quality and Productivity with ATOS ScanBox

Volkswagen / Fraunhofer, Germany | Dr. Benjamin Hecht

Measurement of Quality Criteria in the Process Chain of Roller-hemmed Car Body Hang-on Parts

1.7 Education

BFW Leipzig, Germany | André Seidemann

Education of Quality Professionals for Metrology at the Berufsförderungswerk Leipzig

Fraunhofer IPT, Germany | Niels König

Metrological Laboratory for Students at RWTH Aachen

Solution Track 2 – Guest Speakers

2.1 Structural Testing Aerospace

Liebherr-Aerospace, Germany | Thomas Pfeilschifter
ARAMIS Plug & Measure: Accelerating Aerospace Certification Tests

2.2 Materials Testing

Audi, Germany | Tobias Schmack
Simulation Verification of Impact Tests on Structural Lightweight Components

Canmet, Canada | Dr. Jidong Kang
Recent Development in Shear Test for Aluminum Alloy Resistance Spot Welds

Clemson University, USA | Fadi Abu-Farha
Determination of Material Parameters for Crash Simulations

2.3 Casting

MMG, Germany | Dirk Schrang
Optical Metrology for Production of Large Cast Parts

2.4 Large Structural Casting for Aerospace and Power Generation

Rolls-Royce, United Kingdom | Eoin Stock
A Process for Automated Optical Metrology of Gas Turbine Blisks and Drums

2.5 Production Control & SPC

Daimler, Germany | Franjo Habek
Production Quality Control with ATOS ScanBox

2.6 Automotive Press Shop

Metalsa, Germany | Marcus Girndt
Production Monitoring of Hot-Formed Pressings with ATOS ScanBox 6130

Tata Steel, Netherlands | Eisso Atzema
The Power of Deformation Measurements

2.7 Automotive Design and Benchmarking

A2Mac1, France | Fabrice Robert
Real-Time Shading of 3D Scan Models

Bentley, United Kingdom | Ian Williamson
Bentley Digital Design and Modeling

Solution Track 3 – Guest Speakers

3.1 Structural Testing – Automotive

Ostfalia, Germany | Prof. Dr. Martin Müller
Dynamic and Static Testing of Automotive Components

Universität Paderborn, Germany | Julian Löseke
Static Validation Measurements on Automotive Components

3.2 Biomechanics

Philipps University Marburg, Germany | Dr. Friedrich Gockel
Optical Tracking of Jaw Movements with ARAMIS

University Hospital Heidelberg, Germany | Prof. Dr. Jan Philippe Kretzer
Fixation Analysis of Joint Replacement Implants

3.3 Numerical Simulation Verification

BMW, Germany | Marco Raupach
Mesh Refinement Study and Experimental Validation for Stretch Bending of Sheet Metals

ThyssenKrupp Presta, Liechtenstein | Hr. Wiege
Determination of Material Parameters and Simulation Verification for Optimized Processes

3.4 Management Session

Argon, Belgium | Geert Creemers
Optical Metrology Facilitating Adaptive Automotive Processes

Coloplast, Denmark | Carsten Lundø
Rolling Out a Central Control Strategy to Supplier Networks

GE, USA | Blake Spaman
Replacing Tactile Technologies and Eliminating Cost

Opel, Germany | Dirk Kissinger
International Rollout at Opel

SRAM, Taiwan | Robin Chen
Using GOM Software to Accelerate Technology Rollout

Topometric, Germany | Hermann Eiblmeier
Beyond the Product – Process Requirements

3.5 Production Control & SPC

Daimler, Germany | Franjo Habek
Production Quality Control with ATOS ScanBox

3.6 Tools and Molds

Coloplast, Denmark | Carsten Lundø
3D Metrology and Automation for Quality Control of Plastic Parts in Medical Engineering

3.7 GD&T

ZF, Germany | Holger Höppner
FTA Analysis in 3D Metrology

Technical Exhibition

ATOS ScanBox

The ATOS ScanBox is a complete optical 3D measuring machine which was developed by GOM for efficient quality control in the production and manufacturing process. The ATOS ScanBox has been installed several hundred times worldwide and is successfully used in a variety of industries.

ATOS Triple Scan

The industrial optical 3D digitizer captures up to two times 16 million measuring points per scan and is used as a high-end scanning and inspection system in quality control.

ATOS Capsule

The optical precision measuring machine is designed for full-field acquisition and digitizing of contoured part geometries. The fringe projection system is used for production quality assurance of small to medium-sized parts and excels by its high precision for fine details.

ATOS Compact Scan

The compact class excels by its flexible use. Along with the precise 3D scanner, laptop and stand fit into one case, such that tools and parts can be measured directly on-site.

ATOS Core

The optical 3D scanner provides 3D coordinate measuring data for inspection and adaptive manufacturing. ATOS Core serves as mobile measuring device and stationary desktop scanner. In addition, it supports automation processes within the ATOS ScanBox.

GOM Software

All 3D software solutions are a part of GOM's industrial metrology systems and also partly available as stand-alone packages.

TRITOP

The portable photogrammetry system measures coordinates of three-dimensional large objects, e. g. wind power plants or ships. The high-resolution images can be evaluated immediately on the laptop.

PONTOS Live

Mobile CMM for shop floors. Combined with the GOM Touch Probe, the optical measuring system is used for online part alignment, enabling an assembly analysis that is based on augmented reality and image mapping.

ARAMIS

GOM's 3D motion and deformation sensor for materials testing, part deformation analysis as well as crash and 6DoF evaluation. ARAMIS captures 3D coordinates, 3D displacements, velocities and accelerations of loaded specimens and components.

ARAMIS Adjustable

Flexible solutions for research

Variable measuring areas and variable measuring distances

ARAMIS 3D Camera

Robust sensor for industrial applications

Process safety due to defined measuring areas

ARAMIS SRX

Robust sensor for high-end applications

High resolution and high speed

Education

With "ATOS for Education" for 3D scanning and inspection applications as well as "ARAMIS for Education" for materials and components testing, GOM offers comprehensive education packages for theory and practice lessons at schools, higher education institutes and universities.

Sheet Metal Solutions

Measuring systems from GOM are used in stamping, bending, drawing, pressing, and forming process chains to guarantee consistent quality assurance: from determining the sheet metal properties, via accelerating tool try-out and first article inspection, up to series accompanying production control and assembly analysis. For design and simulation, GOM systems provide precise material properties by determining the forming limit curve (FLC).

Automotive Body and Press Shop Solutions

With its ATOS ScanBox, GOM presents automated measurement and software solutions for the inspection of large and heavy sheet metal parts. The measuring cells were particularly designed for full-field measurement of side panels, car interiors or complete body-in-whites in press and body shops.

Airfoil and Aerospace Solutions

GOM systems support the aerospace industry and its suppliers by providing precise part geometries and material characteristics. Furthermore, optical 3D scanners are suited for quality control of complex freeform surfaces. Therefore, they are used to inspect airfoils of aircraft engines, terrestrial gas & steam turbines and turbocharging systems.

Casting Solutions

GOM systems allow for inspection planning based on construction data. In pattern and mold making, targeted tool correction and inspection of fitting for mold halves, core allowance and sliders are possible. During try-out, cast parts are checked for shape and dimension: component geometry, material thickness, shrinkage and warpage. For series-accompanying quality control, all measurement and inspection processes are automated.

Injection Molding Solutions

In plastics engineering, 3D metrology supports and speeds up all phases in injection molding, blow molding and thermoforming processes: from prototype & tool construction to first article inspection reports up to assembly analysis and load testing.

Material and Component Testing Solutions

Materials research and component testing play an important role in product development. ARAMIS provides information about the properties of the materials used and the behavior of the products under load. These results form the basis for product durability, geometrical layout and reliable numerical simulation and validation.



Co-Exhibitors

CADFEM

Since 1985 CADFEM stands for CAE competence and work closely with ANSYS Inc. Today, we are an ANSYS Elite Channel partner and offer everything that leads to the success of the simulation from a single source: software and IT solutions. Consulting, support and engineering. Transfer of knowledge.

www.cadfem-international.com

DYNAmore

DYNAmore is dedicated to support engineers to solve non-linear mechanical problems numerically. Our tools to model and solve the problems include the finite element solver LS-DYNA, the pre- and postprocessor LS-PrePost, the optimization software LS-OPT as well as numerous finite element models (dummies, barriers, pedestrian, human models, ...).

www.dynamore.de

GNS

Owing to the expertise and ambition of over 60 engineering analysis experts, gns mbH is now providing services such as mesh generation for complex shell and solid structures, analysis using state-of-the-art finite element and boundary element codes, and development of customized software tools like user interfaces, graphic post processors, etc.

www.gns-mbh.com

HBM

Hottinger Baldwin Messtechnik GmbH – HBM offers measurement solutions for the electrical and optical measurement of mechanical quantities in all fields of industry as well as research and development. Fields of application are: experimental stress analysis, production control, power test benches, short-circuit tests, road tests, material and function tests, calibration and industrial weighing technology.

www.hbm.com

Hegewald & Peschke

Hegewald & Peschke develops and produces high-quality machines for the destructive material testing and the testing of components and finished products. The product and service range involves universal testing machines, machines for furniture testing and hardness testing devices as well as the modernization of measuring and testing technology.

www.hegewald-peschke.com

Materialise / RapidFit

RapidFit nv is part of the Materialise Group and with its RapidFit+ products and services it offers a revolutionary fixturing solution for the automotive industry. Top companies in the automotive industry work with the RapidFit+ team.

www.rapidfit.com

MF SOFTWARE

As an authorized Autodesk software reseller MF SOFTWARE GmbH exclusively concentrates on simulation solutions such as Moldflow Adviser and Insight and Computational Fluid Dynamics (CFD). MF SOFTWARE additionally offers Moldflow training, hotline and installation support with the experience of 24 years of consulting services.

www.moldflow.eu

Photron

With 40 years' experience designing and manufacturing digital high-speed imaging systems for use in research and industry, Photron is renowned for the performance, reliability and intuitive operation of its products backed up by excellent support throughout Europe and overseas. Photron continues to push the limits of sensor technology and camera design to deliver high light sensitivity, frame rates in excess of 2 million images per second and sub micro-second exposure durations.

www.photron.com

Automation Service Providers

PROSTEP

Prostep ivip/VDA's project activities "3D Measurement Data Management" were initiated to develop a standardized interface definition for exchange of measurement data over the PLM process. All participants of the Workflow Forum define use cases, the vendors in the Implementor Forum harmonize existing implementations and elaborate guidelines.

www.prostep.com

STIEGELE

STIEGELE develops hardware and software for 3D metrology. With 30 years of expertise in engineering software, the focus lies on mobile data acquisition, test rig control and evaluation.

www.stiegele.eu

Tebis

As a leading global provider of state-of-the-art CAD/CAM software technology and process solutions, Tebis has unrivaled expertise in consulting, implementation and support. High-complexity models, molding tools and components can all be generated quickly and cost-effectively with Tebis.

www.tebis.com

Witte

System solutions and measuring accessory for optical measurement / photogrammetry. Approved modular kits for assembly of measuring fixtures, system solutions from planning to after-sales-service as well as measuring accessory for efficient and fast working load of measuring machines.

www.witte-barskamp.de

Zwick / Roell

Customers of the Zwick Roell Group benefit from over 160 years' experience in materials and component testing. Zwick is the world leader in static testing and is experiencing significant growth with dynamic testing systems. The Zwick Roell Group employs more than 1,250 people.

www.zwick.de

GOM certified Automation Service Providers offer professional assistance for automated ATOS solutions including part programming, measurement and operating support.

a3Ds

a3Ds is a full service provider for automated 3D optical measurement and analysis. Our experts are able to plan, program, implement and deliver complete measurement solutions for various industries. We are offering our services in any place of the world.

www.a3ds.de

Topometric

Topometric is the leading industrial metrology expert centre for optical and tactile metrology, individual planning and making automated optical measuring cells, industrial computer tomography as well as CAD construction incl. devices and gauges.

www.topometric.de

ARGON

ARGON offers 3D scanning and tactile measuring services and solutions. We support your GOM solution with Kiosk implementations, templates, scanning fixtures, and expert placement. We further offer dedicated software solutions and implementation of automated part handling.

www.argon-ms.com

Meet our certified Automation Service Providers in the Technical Exhibition.

Vision Lab

The “Vision Lab” on the ground floor offers a preview into tomorrow’s GOM software.

In terms of industry 4.0, comparing and exchanging data becomes more important in metrology. Users want to transfer measurement plans, product manufacturing information (PMI) and inspection results between different software applications. In addition, an intuitive but powerful user interface is required to complete measuring tasks without a huge number of manual adjustments. Facing these challenges, GOM’s software engineers develop the next generation of intelligent automated scanning.

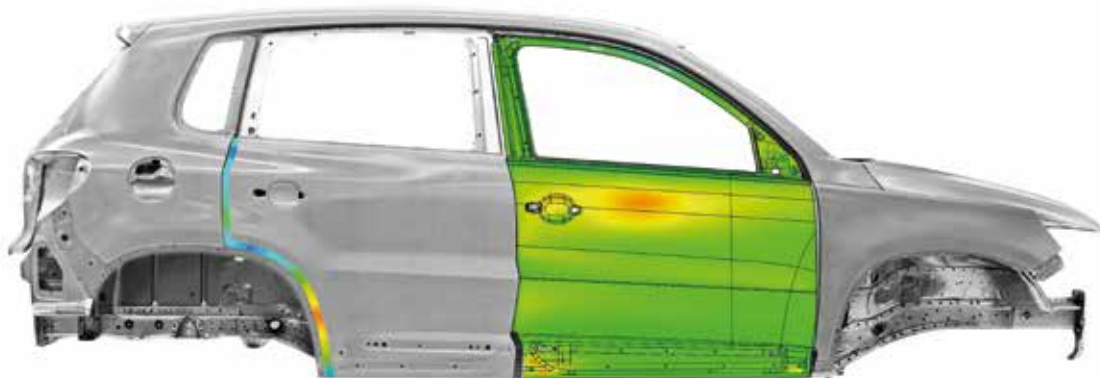
Even new visualization concepts for mobile devices up to augmented reality are tried out. One of the goals is to depict complex contents and inspections on mobile devices in an appropriate manner.

Software Insight

To get information about the powerful GOM Software solutions, meet our software engineers in the room “Software Insight” on the first upper floor. Feel free to ask questions and directly give feedback.

Work stations provide information about surface inspections, GD&T, airfoil inspection, virtual assembly and many other topics. For example, you can learn how to compare measurement data against simulation data. Software developers explain functions and workflows for different applications. As a sneak preview, casting inspections are shown in the GOM Software 2018.

You can benefit of the wide expertise of the engineers and get tips and tricks. Exchange your experiences to continuously improve the GOM software solutions.



GOM Services – Support and Training

GOM provides its customers with support and advice throughout the entire product life cycle. GOM application engineers are employed worldwide to commission measuring systems for customers on site and in the local language, or to provide user-specific advice on a measuring task. By email and on the phone, the GOM Support Team not only provides answers to questions relating to software and hardware, but also to applications and processes. An individual update program allows GOM customers to benefit from the latest product developments.

The aim of GOM is not only to provide measuring systems, but also the corresponding technological expertise. GOM provides standardized training courses worldwide for beginners and advanced users for this purpose. In the GOM Service Area under support.gom.com, registered customers are given access to user manuals and application-specific video tutorials. A knowledge database also provides various articles with information on hardware and software. In discussion forums, users also have the option of asking questions and sharing their experiences with other users and GOM experts.

Meet our support and training teams in the GOM Services room on the first upper floor.

Shuttle and Directions

Parking

Please use the parking area right in front of the building.

Open Workspace

During the event, you can use our open workspace to check your emails and for charging phones and laptops.

Internet Access (Wi-Fi)

SSID: GOM_Guest
Password: guestofgom

Shuttle Service

Book your hotel room or shuttle service from and to Hanover Airport at www.gom-conference.com/service. In case of questions during the event, please contact us in our shuttle office or call us at +49 151 16056906.

A daily shuttle bus between selected hotels and GOM headquarters will be provided for conference guests.

Departure Hotel: 8:00 a.m.

Vienna House Easy Braunschweig
Best Western Hotel Braunschweig
Pentahotel Braunschweig
Intercity Hotel Braunschweig
Parkhotel Altes Kaffeehaus Wolfenbüttel

Departure Hotel: 8:10 a.m.

Mercure Hotel Atrium Braunschweig

Departure Hotel: 8:20 a.m.

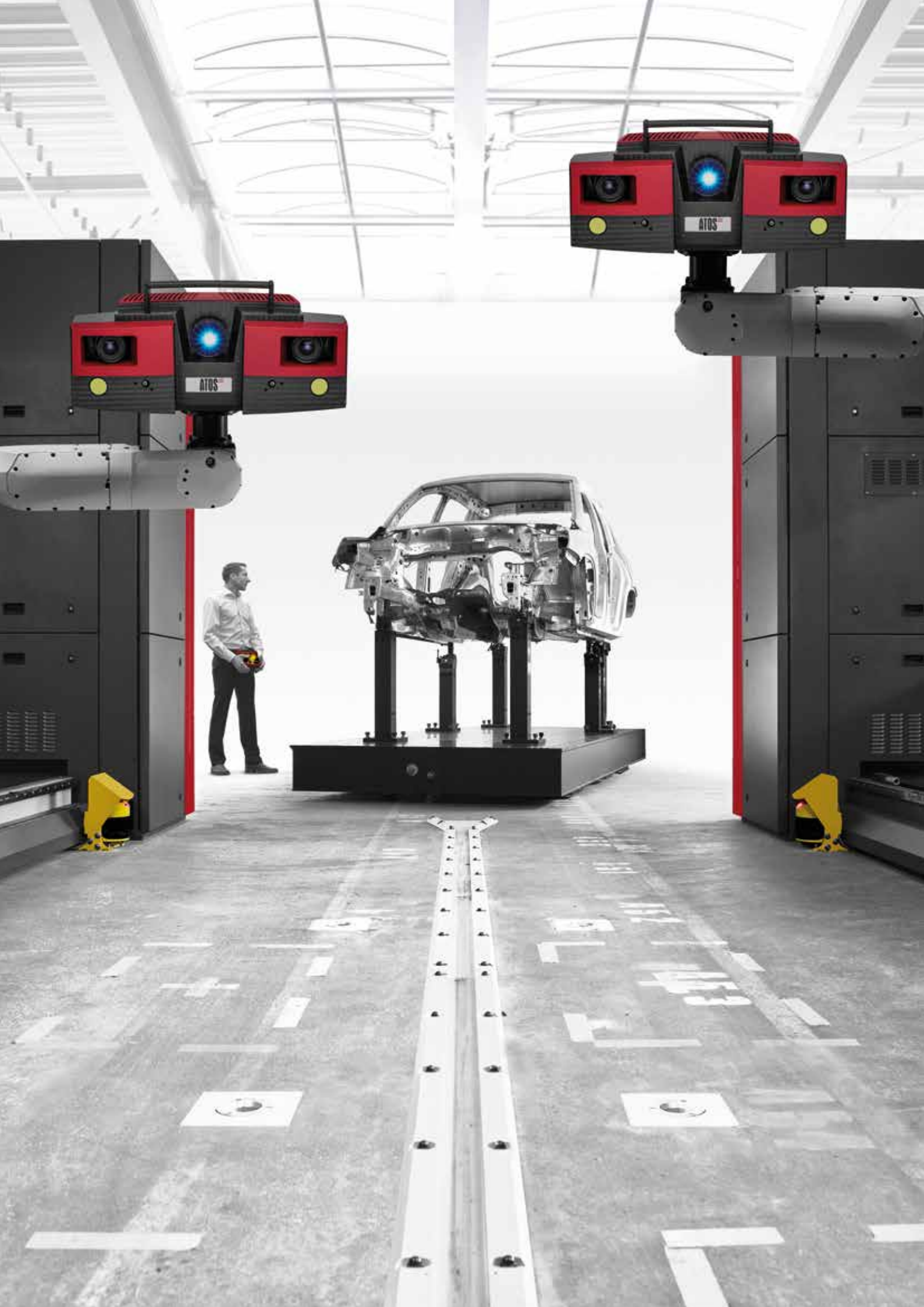
Hotel Restaurant zum Starenkasten

A shuttle bus back to your hotel will leave at 10 p.m.



GOM GmbH

Schmitzstraße 2 • 38122 Braunschweig • Germany
Phone +49 531 390290 • info@gom.com



GOM Conference Participants

3Dimetik · a3Ds · ADAC Automotive · Advanced 3D Technologies · Advanced Industry and Education · Aesculap · Agrotech
Agrodrur · Airbus · Aircraft Philipp · Alap Europa · APM Technologies · Apple · Arconic · Audi · Auma Gruppe · Autograph Dimensions
Automotive Lighting · Aut-Tech · Aviation Safety Council · Axis Communications · B&H Schneider · BAM · Bang & Olufsen
Bauhaus-Universität · Benteler · Bentley · Bertrandt · BFW Leipzig · BGU Murnau · BMW · Borcelik · Bosch · Brand
Brandl Maschinenbau · Bravilor · Bridgnorth Aluminium · Brose · Cadem · Canmet · Capture 3D · Cascade · CG Rail · Cimco
Citim · Clemson University · Coloplast · Comet · Comtes FHT · Continental · Cooper Standard · Corning · Dacia · Daimler
Davoscan · DeCon Group · Defence Technology Institute · Deutsche Messe · DGA Techniques Aéronautiques · DLR
DMF Werkzeugbau · DOM 3D · Doncasters · Dörries Scharmann · Dräxlmaier · Dunkel Werkzeugbau · Dura Automotive Systems
Eberspächer · Electrolux · Encotre Valente · Ethosenergy · ETS Power Group · Fadat Sanat Gostar · Fahrzeug-Entwicklung Sachsen
Famot · Faurecia · FH Nordwestschweiz · FH Vorarlberg · Fiat · First High Tech Metrology · Ford · Fraunhofer · FTE automotive
Garlin Technology Group · GDV Systems + Solutions · GE · Gealan · Gedia · General Atomics · Georg Fischer · GGW Gruber
Gienanth · GKN Aerospace · Globus Technical Equipment · Group Effort of Tennessee · Grundfos · Gruner Engineering & Design
HafenCity Universität · HCM Department of Technology and Science · Heck & Becker · Helmholtz-Zentrum Geesthacht
Hewlett-Packard · Hitachi · HS Osnabrück · HS RheinMain · Huazhong University of Science and Technology · Hujer Lasertechnik
Hyundai · IAC Group · IHI · IMT · Inergy Automotive Systems · Integration Innovation · IPG · Jaguar Land Rover · John Deere
Kamaz · Kesseböhmer · KIMS · Kingsway Legend Technology · Kirchhoff Gruppe · Klostermann Ingenieurbüro · Kolb & Baumann
Kolektor Group · Krug Group · KS Huayu Alutech · Lego · Lenso · LeoMess · Level 3 Inspection · Liebherr · Liechti Engineering
Linde + Wiemann · Lions Racing Team · Lohmann Edelstahlgießerei · Lovink Technocast · LTH Castings
Lublin University of Technology · Lulea University of Technology · M&H 3D Reverse · M/S Bajaj Auto · Magna · Mahyaran
MAN · Marubeni · Matrici · MBtech Group · MCAE Systems · Mecklenburger Metallguss · Mentel · Messtechnik Neth
Metallgiesserei Wilhelm Funke · Metalsa · Metronic · MGG · Miele · Mitrovica University · Mitsubishi · Mobin Petrochimi
Moravská Modelárna · MR Chemie · MTC · MTU Aero Engines · National Centre for Nuclear Research · Niko · Nissan · NLR
Noecon · Nolato · Nordex Energy · Nordmetall · Obuda University · OMA · Omco Metals · OMM · Opel · Ostfalia HS
Otto Fuchs · PCC Group · Perschmann · Phi Group · Phoenix Mecano · Physical Digital · Piap · Plast Met · Ponsse · Porsche
Poznan University of Technology · Pratt & Whitney · Preh · Premium Aerotec · Progress-Werk Oberkirch · Promens Zevenaar
Pro-Technic · PTB · Quin · Rampf Gruppe · Rapidfit · R-Design · RGC Engineering · Ringhals · Road Ahead · Rolls-Royce
RWTH Aachen · S3D · Sabic · Salzgitter Group · Samsung · Saphirwerk · Scania · Scan-Xpress · Schiffbau-Versuchsanstalt Potsdam
SD Automotive · Sebastian Wolff · Seco Tools · Sensofar · Siebenwurst Werkzeugbau · Siemens · Sitech · SixSigma
Sandvik Group · Skoda · Societe Panafricaine de Metrologie · Solartron · Spectromas · SRAM · Standard Profil · Stedings Maskinbyra
Stork · Sulzer · Suzhou University of Science and Technology · Swerea · systemworkx PLM · Széchenyi István University · Takata
Tata Steel · Technical University of Denmark · Technikakademie · Tecosim · TEI · TH Wildau · TH Zürich
The 3D Measurement Company · ThyssenKrupp · Topia · Topomatika · Topometric · Topsil · Trillion · Trimetric
TRW Automotive · TU Braunschweig · TU Chemnitz · TU Darmstadt · TU Dresden · TU München · TU Wien · Ubbink
Ultimate CAD Solutions · Unicar Plastics · Universitätsklinikum Heidelberg · University of Cape Town · University of Oslo
University of Southern Denmark · University of Strathclyde · University of Texas at Arlington · University of Turin
University of Valencia · US Army · USM Colombia · VDL Group · Velux · Vermessungsbüro Hermann · Vestas · Voestalpine
Volke · Volkswagen · Volvo · Vtech · Walther Wolf · Wefo-tec · Weso-Aurorahütte · Westcam · Witte Automotive
Wolpert Gruppe · WSK Rzeszów · XP Power · Zahnklinik Marburg · Zebicon · Zenith · ZF · Zwick Roell Group

gom

www.gom.com