CONTOUR CHECK
REAL-TIME LASER PROFILE MEASUREMENT
QUALITY AND EXPERIENCE SINCE 1984

LAP laser measurement systems are successfully used worldwide in metals industries, mostly in steel industry. They prove themselves daily in the harsh environment of rolling mills and in similar working conditions. LAP profile measurement systems have been a part of it from the beginning – first with analog sensors, intricate frames and customized software for every customer. Today our systems are equipped with digital laser technology, decoupled carrier frame in solid steel housing with fixed or turning measuring axes, modular software and intuitive user interface with selectable views of profile, process and statistics. Furthermore, our systems are equipped with air purge for cleaning the sensor windows and staying in the temperature range for safe operation and always with minimal maintenance effort. LAP is always here with an open ear for you, our customers, and your special requirements.

LAP CONTOUR CHECK

Wire, rod, bar, tubes – CONTOUR CHECK is THE solution for inline measurement of long products before, during or after rolling. Profiles may be round, square or hexagonal, glowing, hot or cold – CONTOUR CHECK measures relevant dimensions, detects changes in shape, rolling defects and defects of surface. The system provides warnings if tolerances are exceeded so you can intervene before scrap is produced. Start-up times after product changes are reduced substantially by measuring from the first moment material comes through.

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THE RIGHT SOLUTION FOR YOUR ROLLING MILL

LAP CONTOUR CHECK provides all the information needed for fast and precise adjustment of rolling lines. Depending on model, it can measure rounds, rebar, flats, squares, hexagons, L-, U-, T-, H-shaped profiles or even rails. The patented TrueShape technology allows precise measurement of three-lobed or polygonal rounds, and of single-sided over- or underfill. Off-size conditions are immediately displayed and allow corrections during the runtime of a billet. Elimination of sample cutting reduces the ramp-up time after size or product change. Precise determination of off-size lengths at head and tail allows crop-optimization, further increasing the yield.

CONTOUR CHECK BENEFITS

**PROCESS OPTIMIZATION AND QUALITY CONTROL**

Your customers’ satisfaction depends on the quality of the products you provide. The quality depends on your control of the production process. For control you need precise, detailed, reliable information delivered in real-time. LAP CONTOUR CHECK provides this data for control and documentation.

- Real-time process monitoring
- Check dimensions and show trends
- Detect rolling defects and offer solutions
- Detect singular and periodic defects of surface
- Connect several CONTOUR CHECK systems for comprehensive process analysis

**DISCOVERY**

- Deliver optimum quality and stand out from your competitors. Quality equals saving money, as you increase efficiency and yield, and you reduce scrap as well as customer complaints.

**ANALYSIS**

- Use filed data for precise analysis of production parameters. Save money by using the optimum parameter set. Detect weaknesses before they have visible impact on your production.

**DOCUMENTATION**

- All data is recorded and saved to a database. You have access to parameters and measuring values for all jobs, batches and single products.

**REALTIME MONITORING**

- CONTOUR CHECK shows you what happens in your production. You can see trends, implement corrective action and check the impact before exceeding a limit. If sudden errors occur, they are documented for later handling.
CONTOUR CHECK WIRE

CONTOUR CHECK WIRE is a laser gauge profile measurement system that quickly and accurately quantifies the diameter for small round cross sections. In the version with 1 axis it can precisely measure wires. The CONTOUR CHECK WIRE with 2 or 3 axes is even suitable for hot bars and reinforced bars. The compact industrial design and use of CONTOUR CHECK WIRE software optimized for monitoring rolling processes makes the WIRE gauge extremely reliable and easy to integrate into production control systems. It is cost-effective, fast, flexible and increases levels of accuracy and excellent returns on investment.

- Dimensional measurement of wires and reinforced bars
- Measurement range up to 45 mm
- Two economic housing types
- Thermal protection by airflow
- 1 axis for diameter measurement
- 2 or 3 axes for measuring the diameter and ovality
- C shape frame for easy installation or mobile measurement
- Dirt and humidity protection with permanent airflow (air purge)

PRODUCT BENEFITS

- COST-EFFECTIVE
- QUICK PAY OFF
- FOR PRODUCTION LINES WITH LOW THROUGHPUT
- FOR HOT AND COLD APPLICATIONS (MAX 1200 °C)
- SMALL, MOBILE FRAME
ConTOUR CHeCK WIRE
TECHNICAL DATA AND SOFTWARE

Scan field width | 45 mm | 45 mm
Accuracy up to | ±15 µm | ±15 µm
Number of axes | 1 | 2–3
Frame width | 255 mm | 620 mm
Overall height | 630 mm | 710 mm
Overall depth (mm) | 75 mm | 150 mm
Inner diameter blower ring | 100 mm | 190 mm
Passline height | 315 mm | 358 mm
Blower | no
Air cooling unit (optional, dimensioning depends on ambient conditions) | no

STANDARD
Measuring frame with sensors
Control box with integrated Panel PC with touchscreen
1 x Client Software license software
Cable between measuring frame and control box

OPTIONAL
Alarm contact
Speed and temperature (material temperature) monitoring
Ethernet interface for level 2 connection
Software for rebar/ribbed steel

STANDARD VIEW FOR A 3 AXIS ROUND MEASUREMENT WITH CURRENT MEASUREMENT VALUES AND STATISTICS BY AXIS (TOP), LINE CHARTS FOR DIAMETER AND OVALITY (MIDDLE), NOMINAL AND LIMIT VALUES (BOTTOM LEFT) AND FUNCTION BUTTONS (BOTTOM RIGHT) DESIGNED FOR USE ON A TOUCH PANEL PC.
CONTOUR CHECK BAR & TUBE

CONTOUR CHECK BAR & TUBE is a non-contact, scanning laser beam diameter measurement for mid-size round cross sections. The LAP profile measurement system provides all the information needed for fast and precise adjustment of rolling lines and can measure rounds and rebars. Elimination of sample cuttings reduces the ramp-up time after a size or product change and precise determination of off-size lengths at head and tail allows crop-optimization, further increasing mill yield.

The CONTOUR CHECK BAR & TUBE is available with measuring ranges of 90 mm, 120 mm, 150 mm and can be exposed to material temperatures of up to 200 °C.

- Dimensional measurement of bars
- Measures diameter and ovality
- Measurement range of 90 mm / 120 mm / 150 mm
- Maximum material temperature 200 °C
- 2 or 4 axes
- Dirt and humidity protection with permanent airflow (air purge)

PRODUCT

CONTOUR CHECK BAR & TUBE

SPEZIALIZED IN BAR AND TUBE LINES WITH A MAX. MEASUREMENT RANGE OF 150 MM

QUICK AND EASY INSTALLATION IN EXISTING PRODUCTION LINE

COST-EFFECTIVE MEASUREMENT SOLUTION FOR PRODUCT UP TO 200 °C

DOCUMENTED QUALITY
## TECHNICAL DATA AND SOFTWARE

### CONTOUR CHECK BAR & TUBE

#### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CONTOUR CHECK BAR &amp; TUBE 90</th>
<th>CONTOUR CHECK BAR &amp; TUBE 120</th>
<th>CONTOUR CHECK BAR &amp; TUBE 150</th>
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<tbody>
<tr>
<td>Scan field width</td>
<td>90 mm</td>
<td>120 mm</td>
<td>150 mm</td>
</tr>
<tr>
<td>Accuracy up to</td>
<td>±20 µm</td>
<td>±25 µm</td>
<td>±30 µm</td>
</tr>
<tr>
<td>Number of axes</td>
<td>2 or 4</td>
<td>2 or 4</td>
<td>2 or 4</td>
</tr>
<tr>
<td>Frame width</td>
<td>1100 mm</td>
<td>1580 mm</td>
<td>1580 mm</td>
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<tr>
<td>Overall height</td>
<td>1194 mm</td>
<td>1674 mm</td>
<td>1674 mm</td>
</tr>
<tr>
<td>Overall depth [mm]</td>
<td>380 mm</td>
<td>380 mm</td>
<td>380 mm</td>
</tr>
<tr>
<td>Inner diameter blower ring</td>
<td>383 mm</td>
<td>583 mm</td>
<td>583 mm</td>
</tr>
<tr>
<td>Passline height</td>
<td>565 mm</td>
<td>805 mm</td>
<td>805 mm</td>
</tr>
<tr>
<td>Moving Rail (optional)</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Blower</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air cooling unit</td>
<td>(optional, dimensioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pyrometer (optional)</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Standard</td>
<td>Measuring frame with sensors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### STANDARD

- Measuring frame with sensors
- Switch box with Ethernet gateway
- Server PC with evaluation SW and data archive
- 1 x Client Software license software
- Cable set
- Calibration unit

#### OPTIONAL

- Alarm contact
- Speed monitoring
- Software for rebar/ribbed steel
- Level-2 interface
- Moving rail

*CROSSSECTION* SCREEN DISPLAY: THE CORE DIMENSIONS ARE DISPLAYED IN THE VISUALIZATION AREA. THE STRUCTURE AND SCOPE OF THE SCREEN DISPLAYS CAN BE CONFIGURED.
CONTOUR CHECK ROUND & EDGE

CONTOUR CHECK ROUND is the standard solution for dimensional measurement of round profiles and rebars up to 1200 °C. In the versions with 3 or 6 axes it can precisely measure 3-lobed shapes.

CONTOUR CHECK EDGE uses a set of sensors on a circular oscillating baseplate. This way square, flat or hexagonal profiles can also be handled. Both systems use LAP METIS laser micrometers, either in standard or in “big diameter” configuration.

- Slim housing, can be moved in and out of the production line on a rail
- Mechanically stress-free base plate carries sensors separated from the housing
- Thermal protection by airflow, heating optional

PRODUCT

- WIRE
- SQUARE
- BAR
- FLAT
- REBAR
- HEXAGONAL
- TUBE

STANDARD LAYOUT FOR ONE AXIS

“BIG DIAMETER” LAYOUT FOR ONE AXIS

BENEFITS

- STABLE DATA CAPTURING & PROCESSING FOR PRODUCTS UP TO 1200 °C
- SUPERVISION: SHOW DEVIATIONS AND ERRORS OCCURRING DURING THE PRODUCTION PROCESS
- INCREASED PRODUCT QUALITY
- ASSURES MINIMAL PRODUCT CHANGEOVER TIMES
## TECHNICAL DATA

### PROFILES

<table>
<thead>
<tr>
<th>2 AXES ROUND</th>
<th>3 AXES ROUND</th>
<th>3 AXES EDGE</th>
<th>4 AXES ROUND</th>
<th>4 AXES EDGE</th>
<th>6 AXES ROUND</th>
<th>6 AXES EDGE</th>
</tr>
</thead>
</table>

### DETECTABLE ROLLING DEFECTS

- **CONTOUR CHECK ROUND**
- **CONTOUR CHECK EDGE**

### DETECTABLE ROLLING DEFECTS

<table>
<thead>
<tr>
<th>45 mm</th>
<th>90 mm</th>
<th>120 mm/150 mm</th>
<th>180 mm/230 mm</th>
<th>500 mm</th>
</tr>
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<tbody>
<tr>
<td>Accuracy up to</td>
<td>±15 µm</td>
<td>±20 µm</td>
<td>±25 µm/±30 µm</td>
<td>±35 µm/±45 µm</td>
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<td>Number of axes</td>
<td>2, 3, 4, 6</td>
<td>2, 3, 4, 6</td>
<td>2, 3, 4, 6</td>
<td>2, 3, 4</td>
</tr>
<tr>
<td>Frame width</td>
<td>860 mm</td>
<td>1240 mm</td>
<td>1720 mm</td>
<td>2250 mm</td>
</tr>
<tr>
<td>Overall height</td>
<td>940 mm</td>
<td>1170 mm</td>
<td>1685 mm</td>
<td>2215 mm</td>
</tr>
<tr>
<td>Overall depth [mm]</td>
<td>81 mm/130 mm</td>
<td>302 mm</td>
<td>302 mm</td>
<td>302 mm</td>
</tr>
<tr>
<td>Inner diameter blower ring</td>
<td>140 mm</td>
<td>350 mm</td>
<td>350 mm</td>
<td>450 mm</td>
</tr>
<tr>
<td>Passline height</td>
<td>450 mm</td>
<td>570 mm</td>
<td>835 mm</td>
<td>1100 mm</td>
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<tr>
<td>Moving Rail (optional)</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Blower</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air cooling unit (optional, dimensioning depends on ambient conditions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pyrometer (optional)</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

### STANDARD

- **Server PC with evaluation SW and data archive & control cabinet**
- **Switchbox including Controller**
- **Measuring rate: 800 Hz**

### OPTIONAL

- **Control cabinet with external display**
- **Software for standard profiles**
- **Database**
- **Alarm reports**
- **Temperature monitoring in frame**
- **Software for 3-roll reducing/sizing technology**
- **Software for rebar/ribbed steel**
- **Temperature monitoring of rolling stock**
- **Uninterruptible power supply**
- **Big Display (4 rows)**
- **Air conditioning unit for cabinet**
- **Measuring rate: 1600 Hz**
CONTOUR CHECK SHAPE

CONTOUR CHECK SHAPE is a laser based measurement system for profiles and long products. The purpose of CONTOUR CHECK SHAPE is the control of all dimensions and detection of (dimensional) rolling defects during the production process of long products. The system can be applied for inline measurement of long products before, during or after rolling, and for both cold and hot material. The revised Rebar software offers even more measurement details for ribbed steel. The cameras are protected by 4 layers: heat-shield, airflow through frame (also used for air purging), airflow around sensor baseplate and water-cooling of the cameras. The laser lines are blue for optimal visibility on glowing surfaces. The rugged, robust design of CONTOUR CHECK SHAPE is based on more than 30 years of experience of supplying systems for rolling mills.

<table>
<thead>
<tr>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPROVED PROCESS CONTROL</td>
</tr>
<tr>
<td>APPLICABLE TO MULTIPLE CONTOURS WITH A MAX. TEMPERATURE OF 1200 °C</td>
</tr>
<tr>
<td>SCRAP REDUCTION/ INSTANT RECOGNITION OF ANOMALIES</td>
</tr>
<tr>
<td>AUTOMATIC DETECTION OF IMPORTANT ROLLING DEFECTS</td>
</tr>
</tbody>
</table>

CONTOUR CHECK SHAPE MEASURABLE DEFECTS OF SURFACE

- Standardized gauge with no moving parts
- Detection of size, geometry and defects of surface
- Temperature stabilized setup
- Supporting various profile types
- Closed thermal design for extreme conditions
- Standardized setup, measuring areas from 50 mm to 250 mm
- Virtually maintenance free
- High accuracy and simple calibration
- Intuitive software for visualization and documentation

An advantage of the Software is that production failures and their type can be recognized. Due to this feature CONTOUR CHECK SHAPE is able to provide useful information about the production failures. Also details like type and size of dimensional failure can be given out.
## TECHNICAL DATA

<table>
<thead>
<tr>
<th>CONTOUR CHECK SHAPE 50</th>
<th>CONTOUR CHECK SHAPE 100</th>
<th>CONTOUR CHECK SHAPE 150</th>
<th>CONTOUR CHECK SHAPE 250</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scan field width</strong></td>
<td>50 mm</td>
<td>100 mm</td>
<td>150 mm</td>
</tr>
<tr>
<td><strong>Measurement accuracy up to</strong></td>
<td>±20 µm</td>
<td>±40 µm</td>
<td>±60 µm</td>
</tr>
<tr>
<td><strong>Number of cameras</strong></td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Frame width</strong></td>
<td>1250 mm</td>
<td>1270 mm</td>
<td>1470 mm</td>
</tr>
<tr>
<td><strong>Overall height</strong></td>
<td>1460 mm</td>
<td>1580 mm</td>
<td>1800 mm</td>
</tr>
<tr>
<td><strong>Overall depth</strong></td>
<td>370 mm</td>
<td>470 mm</td>
<td>550 mm</td>
</tr>
<tr>
<td><strong>Passline height</strong></td>
<td>450 mm</td>
<td>540 mm</td>
<td>640 mm</td>
</tr>
</tbody>
</table>

- **Blower**

- **Air and water cooling unit** (dimensioning depends on ambient conditions)

- **Pyrometer (optional)** | yes | yes | yes | yes

### STANDARD

- Control cabinet with external display
- Switchbox including Controller
- Software for standard profiles
- Database Alarm reports
- Temperature monitoring in frame
- Measuring rate: 1000 Hz

### OPTIONAL

- Multi-client software
- Level-2 interface
- Temperature monitoring of rolling stock
- Speed monitoring of rolling stock
- Air-condition for cabinet
- Software for 3-roll reducing/sizing technology
- Software for rebar/ribbed steel
- Uninterruptable power supply
- Big Display
- Measuring rate: 2000 Hz

### DETECTABLE ROLLING DEFECTS

- Types of detectable defects
The functions and display of the new CONTOUR CHECK SHAPE software are optimized for monitoring rolling processes. The GUI offers the possibility to show line graphs, cross section, numerical values, visualization of rolling defects, tables and much more. Beside standard screens, customers can modify or create new screens to their needs. The SW offers the unique functionality to virtually rotate the wire or rod to mill orientation, to measure directly the real rolling defects.

- Finds defects of surface over the complete shape
- Presents profile cross section, numerical values, production history, pass/fail information and production details
- Visualization can be configured to specific user requirements
- Database for long-term storage of relevant data
- Multi-client capable even on Windows tablets
- Interfaces to data mining systems such as iba and level-2 network connectivity
- Up to 4 systems can be connected to and evaluated by one server
- Ready for Industry 4.0: Connection via Level2 interface for data exchange with the control system (as well as all other measuring frames of the LAP)
CONTOUR CHECK PROFILE

CONTOUR CHECK PROFILE is the modularized n-camera solution for all profiles. Like in CONTOUR CHECK SHAPE, the cameras are protected by 4 layers: heat-shield, airflow through frame, airflow through sensor baseplate and water-cooling of the cameras. A little slower than CONTOUR CHECK SHAPE, CONTOUR CHECK PROFILE offers more opportunities by building a customized system from a set of defined elements. You may handle concave profiles, rail profiles, profiles with flanges, profiles of varying type and/or size in production lines with centered or lateral guiding. Profile or size range requires more than 4 cameras? No problem. You tell us the possible variations, we design the system.

MEASURABLE PROFILES

- BAR
- FLAT
- L-PROFILE
- TUBE
- H-PROFILE
- U-PROFILE
- SQUARE
- T-PROFILE

BENEFITS

- FULLY CUSTOMIZED TO YOUR NEEDS
- HIGHER THROUGHPUT, HIGHER YIELD, HIGHER UTILIZATION
- HIGHER DIMENSIONAL ACCURACY FOR INDIVIDUAL PRODUCTS
- LOW MAINTENANCE DUE TO ROBUST HOUSING WITH AIR COOLING AND CLEANING

CONTOUR CHECK PROFILE

- The perfect solution for concave profiles, rail profiles, profiles with flanges, profiles of varying type and size
- Closed thermal design for extreme conditions
- Modular setup, typically 4 up to 12 cameras
- Virtually maintenance free
- Flexible measurement by recipe evaluation
CONTOUR CHECK PROFILE

TECHNICAL DATA

SAMPLE SOLUTIONS

4 CAMERAS 6 CAMERAS 8 CAMERAS

Application

- e.g. billets & merchant bars with max. measuring range: appr. 160mm x 160mm
- e.g. bar mills max. measuring range: appr. 400mm x 400mm
- e.g. medium section mill max. measuring range: appr. 500mm x 500mm

Profiles

- Round, square, hexagonal
- Round, square, hexagonal, U-Profile, T-Profile, I-Profile
- Round, square, hexagonal, H-profile, I-profile, U-profile, L-profile, Rails

Achievable accuracy

- ± 0.07 mm
- ± 0.1 mm
- ± 0.15 mm

Sampling frequency

- 60 Hz
- 60 Hz
- 60 Hz

Setup

- angles and distances depend on rolling stock variation

CUSTOMIZED SET-UP WITH 4 TO 12 CAMERAS SUPPORTING VARIOUS PROFILE TYPES
# Contour Check Model Overview

<table>
<thead>
<tr>
<th>Contour Check</th>
<th>Wire</th>
<th>Bar &amp; Tube</th>
<th>Round</th>
<th>Edge</th>
<th>Shape</th>
<th>Profile</th>
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</thead>
<tbody>
<tr>
<td>Round</td>
<td>diameter, ovality</td>
<td>diameter, ovality</td>
<td>diameter, ovality</td>
<td>diameter, ovality</td>
<td>diameter, ovality</td>
<td>diameter, ovality</td>
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<td>Square</td>
<td>height, width, diagonal length</td>
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<td>height, width, side length, diagonal length, corner radius, corner angle, convexity of sides</td>
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<td>height, width, side length, diagonal length, corner radius, corner angle, convexity of sides</td>
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<tr>
<td>Flat</td>
<td>height, width, diagonal length</td>
<td></td>
<td>height, width, side length, diagonal length, corner radius, corner angle, convexity of sides</td>
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<td>height, width, side length, diagonal length, corner radius, corner angle, convexity of sides</td>
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<td>Hexagonal</td>
<td>distance between centers, width across flats</td>
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<td></td>
<td>side relations, side length, distance between centers, width across flats, corner radius, corner angle, convexity of sides</td>
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<tr>
<td>Other Profiles</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>UTHL</td>
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<tr>
<td>Rebar</td>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>lengths, thickness, corner angle</td>
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<td>Material Temperature</td>
<td>1200 °C</td>
<td>200 °C</td>
<td>1200 °C</td>
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<tr>
<td>Rolling Errors</td>
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<td>detection of irregularities, interpretation required</td>
<td>detection of irregularities, interpretation required</td>
<td>detection and identification</td>
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<td>Defects of Surface</td>
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<td>not detected</td>
<td>not detected</td>
<td>detected within the specified limits</td>
<td>not detected</td>
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<tr>
<td>Measurement Scope</td>
<td>Outer dimension (Shadowing)</td>
<td>Outer dimension (Shadowing)</td>
<td>Outer dimension (Shadowing)</td>
<td>Surface profile (Laser Light Section)</td>
<td>Surface profile (Laser Light Section)</td>
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<tr>
<td>Compact</td>
<td>Standard</td>
<td>Modular</td>
<td></td>
<td></td>
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</table>
MEASURING METHODS

SHADOWING METHOD

One sensor consists of an emitter and a receiver in separate housings. In the emitter, a laser beam hits a rotating polygon mirror. The deflected beam is converted into a beam that periodically runs through the measuring area, building a virtual light-band. In the receiver, the parallel moving beam is focused on a light-sensitive diode. Any object within the measuring field partially shadows the receiver. The time interval of shadowing precisely determines the dimension of the object. LAP uses METIS laser micrometers of our own design and production.

LASER LIGHT SECTION METHOD

The sensor contains a line laser, a high dynamic matrix camera and electronics for processing the camera signals. The laser projects a straight line perpendicular to the surface to be measured. The camera is fixed at a certain angle to the laser line. Any deformation of the surface causes a deformation of the laser line from the camera’s angle of view. Using the basic calibration as reference, the sensor calculates the dimensional values. LAP designs and manufactures laser light section sensors, using own laser technology and high-end industry cameras that best fit the customer’s requirements.

REFERENCES

Worldwide, more than 250 systems of CONTOUR CHECK’s predecessor, RDMS, prove their reliability in daily use. The systems CONTOUR CHECK ROUND and CONTOUR CHECK EDGE follow in their footsteps. The new laser light section systems CONTOUR CHECK SHAPE and CONTOUR CHECK PROFILE start where micrometer technology reaches its limits.

Examples of installations:

- **CHINA**: Fully automated in-line profile and full dimensional measurement of octagons with a diameter of 121–122 mm before shear.
- **CZECH REPUBLIC**: Measuring the profile of steel rods with 4.5–35 mm behind finishing mill.
- **GERMANY**: Measuring full profiles of flat, round and square products in a billet mill, large frame.
- **POLAND**: Using the CONTOUR CHECK SHAPE 50 measurement systems for rods up to 28 mm in wire rod mill behind the finisher block.
- **SWITZERLAND**: Three CONTOUR CHECK ROUNDs in use with scan field width of 90 and 120 mm for measuring full profiles of rounds behind finisher for optimizing the rolling process.
- **SOUTH KOREA**: Fully automated in-line profile and full dimensional measurement in a merchant bar mill, lateral guiding.
- **USA**: Using two CONTOUR CHECK EDGE 120 measurement systems for round and rebar profiles of 19–99 mm in a bar mill.
- **USA**: CONTOUR CHECK SHAPE measures the profile of flats, channels, rounds, squares, hexagons and equal and unequal angles, fully automated.

SERVICE

**MAINTENANCE – INSPECTION – REPAIRS**

**SOFTWARE ENHANCEMENT**

LAP stays right by your side before, during and after the installation of a LAP system. International experience acquired over decades in the installation and maintenance of laser systems across virtually all industries makes us a reliable and competent partner. For detailed information you can download our service brochure.
CONTOUR CHECK,
HIGH-TECH QUALITY BY LAP

For more than 30 years, LAP has been developing, manufacturing and distributing laser measurement systems, line lasers and laser template projectors for industrial and medical applications. LAP products are high-precision devices Made in Germany. Using LAP laser systems, our customers improve performance and increase the quality of their products as well as the effectiveness of their processes.

As a result of continuous product innovation, LAP has become a world leader in lasers for projection and measurement. LAP products are setting the standards in a wide range of markets from manufacturing to heavy industrial environments and medical applications.

Environmental protection is important to us. We use solar panels, green electricity and roofs planted with grass. Our production is planned by standards of sustainability. Quality has always been part of our commitment. We are content if you are. We know your high demands. To meet your requirements, the quality management of LAP is certified by DIN EN ISO 9001:2008 for industrial products and by EN ISO 13485:2007 for medical engineering products.

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