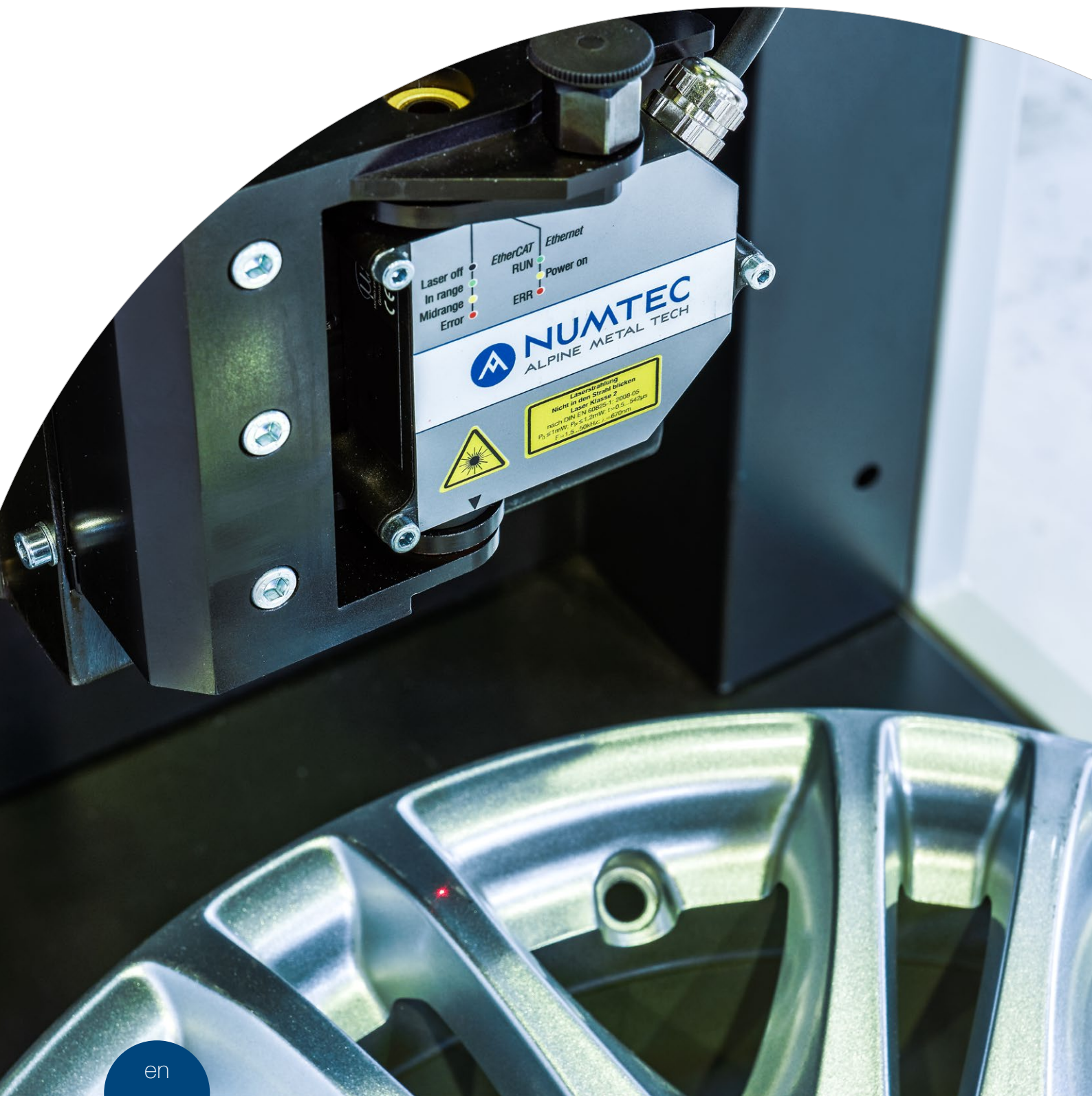
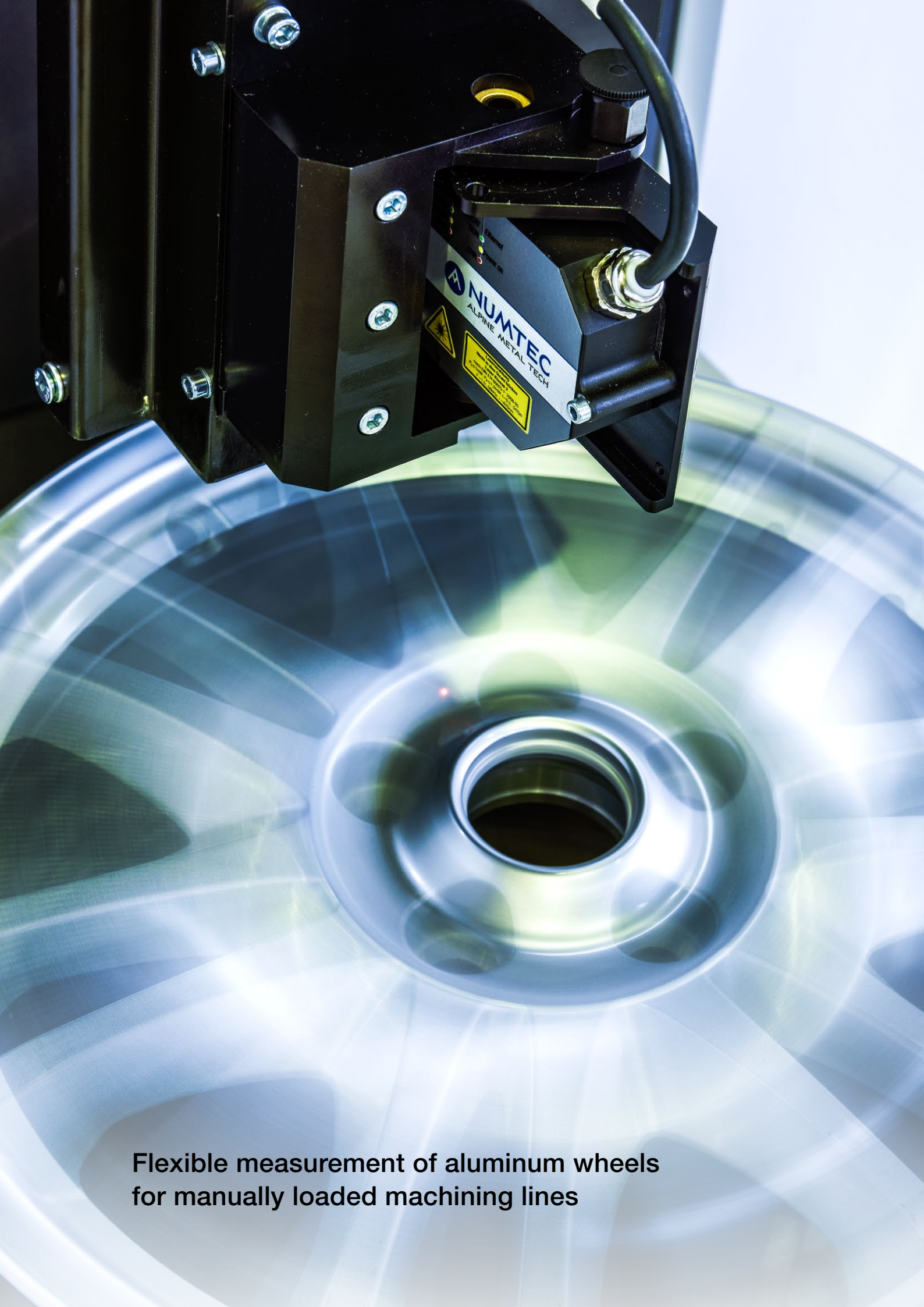


MD30

Manual distortion measurement





**Flexible measurement of aluminum wheels
for manually loaded machining lines**

MD30

Manual distortion measurement

The flexible MD30 laser measuring machine is used for distortion measurement of aluminum wheels during two decisive production steps – in mechanical machining and in the diamond cut process.

For blank casted wheels in manually loaded CNC machines, the hub distortion and the optimum loading angle in the chucking area are determined for the first CNC operation. The reduced imbalance as well as the improved radial and axial runout properties result in a massive reduction of scrap and rework wheels. A further application of the MD30 is the measurement of finished wheels before the diamond cut process. The painted wheels are measured at the visible flange, at the individual spokes and in the cap area. The correction values determined from this measurement are used for the CNC contour adaptation in the diamond cut process. The resulting gain in the OK rate

after the first lathe process causes a significant increase in total system capacity. With the manual height adjustment of the high-precision NUMTEC laser sensor, wheels from 4 to 12 inches in wheel height can be measured. During a measuring process, the operator loads the wheel into the system and centers it in the 3-jaw clamping by means of manual operation. The correction values are then determined fully automatically and can be transferred to the CNC machines manually or via interface. The MD30 is delivered completely assembled and tested and is ready for operation immediately after connecting the power supply. Thanks to its compact design, the distortion measuring machine can be quickly transported to other locations by means of a lift truck. This flexibility and the variable area of application are two of the greatest advantages of the MD30.

YOUR ADVANTAGES

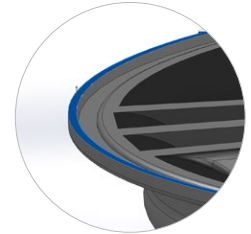
- » **Flexible area of application**
Rapid change of location from mechanical machining (distortion measurement/resting pad determination) to diamond cut area (design measurement) possible.
- » **No safety equipment necessary**
Operation without protective equipment in manual machining lines possible.
- » **Cost-effectiveness**
Massive reduction of scrap and rework wheels as well as low acquisition cost with a concurrent wide range of applications.
- » **Laser measurement**
The laser measurement process guarantees high-precision measurement without wear and without ongoing maintenance costs.
- » **Data interface**
Interface for the transmission of the correction values to downstream CNC machines available as an option.

FUNCTION

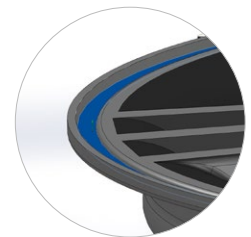
Measurement of rough casted wheels

After measuring the position of the wheel at the measuring position, the laser sensor measures the flatness of the entire outboard flange. The laser sensor moves the complete 360° along the outboard flange and records a height value every 0.1°. The exact shape or deformation of the chucking area is calculated from these 3600 distance values. If the deformation exceeds adjustable tolerances, the wheel is ejected as NOK, saving valuable processing capacity in CNC machining. In addition, the measured values can be used to initiate corrective measures in the foundry and heat treatment.

The software then determines the optimum chucking position from the measured values of the distortion measurement on the resting pad surface in the chucking area. This individual chucking position is used for loading into the chucking in the OP1. As a result of this optimization of the machining, the wheel quality can be significantly improved. Optionally, the calculated resting pad point will automatically be marked with a color point.



Possible measuring position 1:
Top edge of outboard flange

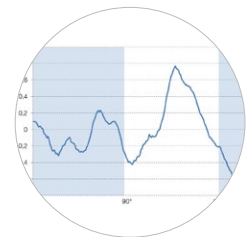


Possible measuring position 2:
Resting pad surface of
chucking area

Measurement of finished wheels (diamond cut area)

The MD30 is used for design measurement in the area of the inboard flange and the cap area. After the loading of the already painted wheel, it is centered in the NUMTEC quick chucking system and clamped on the rear flange. The measurement is made with the laser sensor from above on the design side of the wheels. As a standard, two measuring circuits are run on the wheel. One on the outside of the flange and a second one in the inner area in the vicinity of the cap seat. For special designs, more measuring positions can be defined. From these measuring circuits, the deepest points are determined; based on this, the necessary correction values for the subsequent CNC machining are calculated. With these measurements, distortions and irregularities on the casting are detected prior to turning, and the lathe parameters can be adapted accordingly (parallel shifting or tilting).

With the laser systems used, all common paints can be measured. The range extends from unpainted surfaces up to differently colored paints.



Determination of the
optimum resting pad points



Design measurement
in the diamond cut area



Painted surface

FEATURES

Intuitive software

For operating and teach in of new wheel types; software available in various languages



Positioning / centering

Precise lathe positioning and centering of the wheels for the measurement process



All-in-one concept

All components are fully assembled and tested. Quick installation on-site; only power supply needed.



Communication

Correction data can be transferred by standard interfaces to the CNC machines.



Imbalance / wheel quality

Reduction of the imbalance and general improvement of the wheel quality by determining the best possible clamping position



Color point marker

The optimum chucking position is optionally marked with a color point.



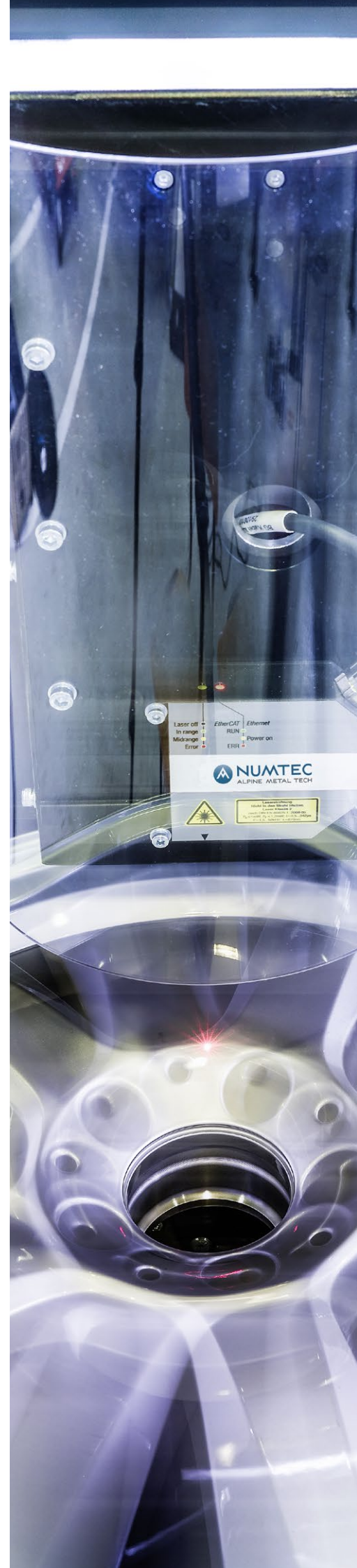
Remote maintenance

Optimum access via remote maintenance for quick assistance



Paint layer thickness measurement

The contact-free measurement of the paint thickness (option) can be used to identify wheels to be reworked as well as for the adjustment of the machining parameters (e.g. cutting speed, correction value)





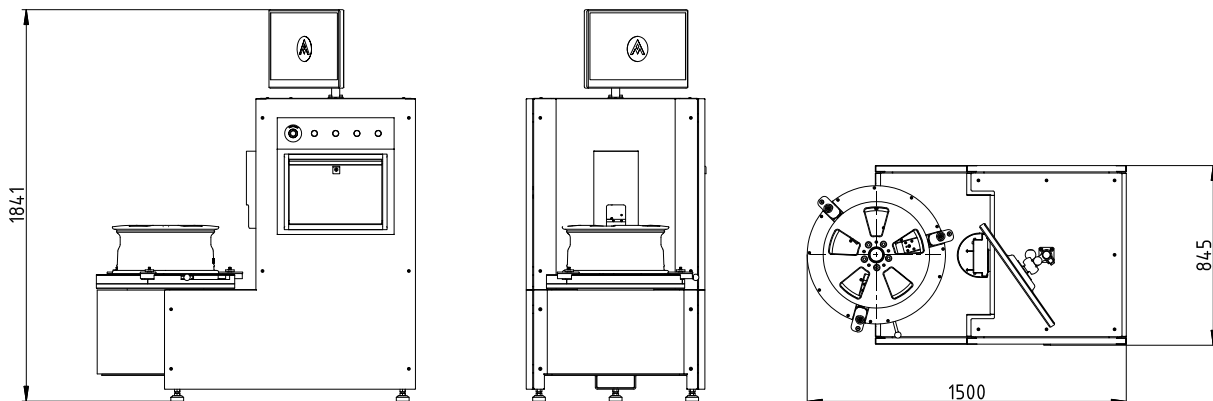
- ① Height-adjustable measuring sensor
- ② Rotating unit
- ③ Manual centering lever
- ④ Fold-out keyboard
- ⑤ Control cabinet



TECHNICAL DATA

Machine features	<p>measurement method</p> <p>measuring characteristics rough casted wheels</p> <p>measuring characteristics finished wheels</p> <p>measuring position rough casted wheels</p> <p>measuring position finished wheels</p> <p>type detection</p>	<p>triangulation laser</p> <p>the resting pad level on the outboard flange (optimal loading position OP1)</p> <p>distortion in the hub area</p> <p>height at 2 measuring circuits</p> <p>paint layer thickness (optional)</p> <p>front outboard flange, hub area</p> <p>visible spokes area</p> <p>2 measuring circuits with adjustable radius</p> <p>manual pre-selection of types on PC</p>
Wheel parameters	<p>wheel size</p> <p>wheel weight</p>	<p>14" – 24"</p> <p>max. 35 kg</p>
Performance characteristics	<p>machine capacity</p> <p>capacity turning unit</p> <p>traversing ranges axle units</p> <p>centering unit</p>	<p>50 – 60 wheels/hour</p> <p>3 – 10 revolutions per sec.</p> <p>precision bearings with electrical connections</p> <p>X-axis: fully automatic, 400 mm</p> <p>A-axis: fully automatic, endlessly rotating</p> <p>Z-axis: manual, 200 mm</p> <p>manual quick clamping</p>
Technical components	<p>operation</p> <p>machine control system</p>	<p>standard 24" monitor</p> <p>industrial PC (Windows) and PLC</p>
Interfaces		<p>Profibus, Profinet, EtherNet/IP, Parallel I/O</p>
Media	<p>electrical connection</p> <p>pneumatic connection</p>	<p>230 VAC, 50 Hz, 1 kVA</p> <p>optional 110 VAC, 50/60 Hz, 1 kVA</p> <p>at least 6 bar</p>
Machine dimensions	L x W x H	1500 x 845 x 1841 mm
Weight		500 kg

All rights reserved including errors and technical changes.



Alpine Metal Tech GmbH

Buchbergstraße 11

4844 Regau, Austria

Tel.: +43 7672 78134-0

E-mail: office@alpinemetaltech.com

Web: www.alpinemetaltech.com

