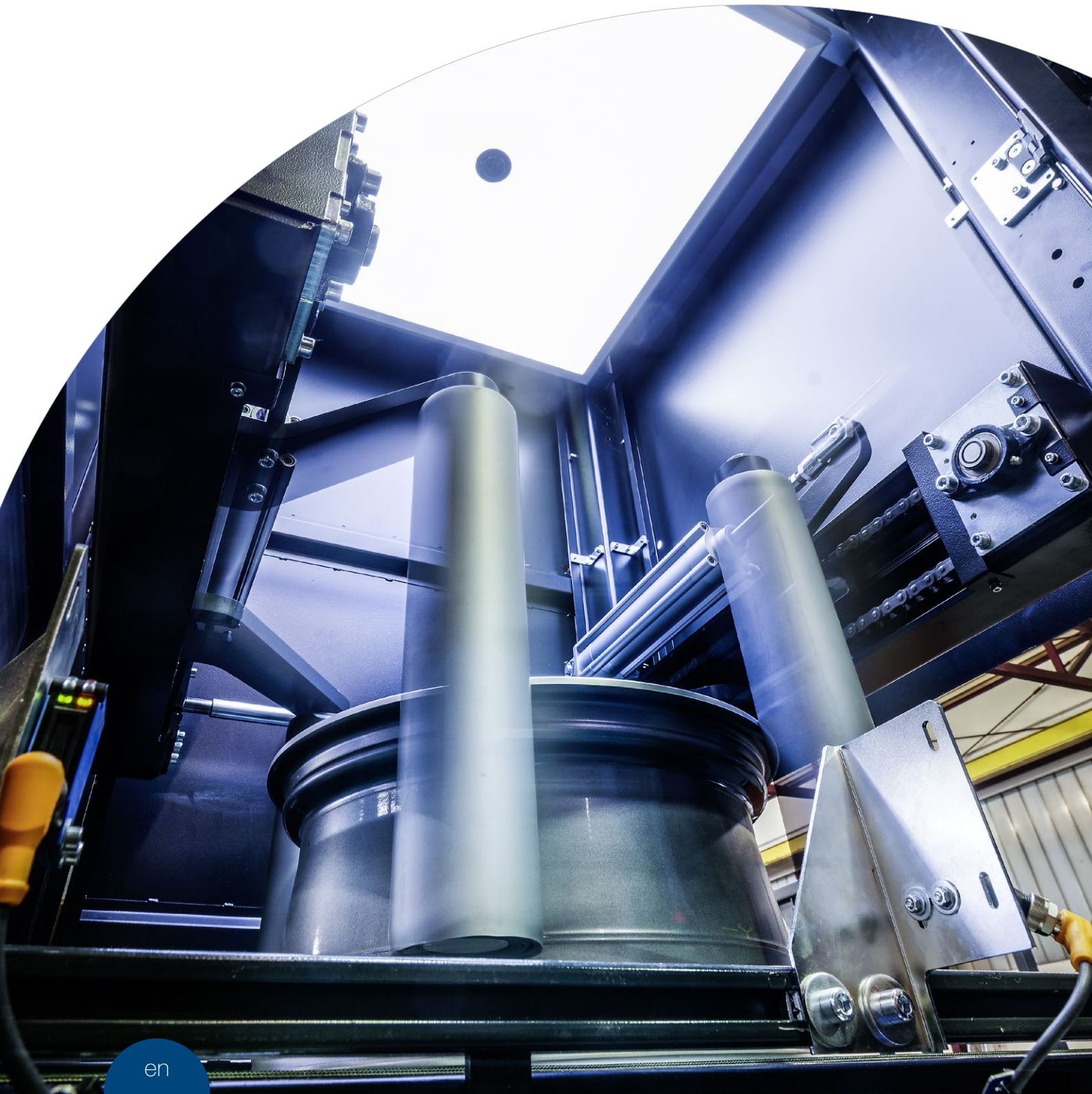# MD825

Design recognition for wheels

The **NUMTEC MD825** is a fully automatic
design recognition system for aluminum wheels.

MD825

Design recognition for wheels

The NUMTEC MD825 is a fully automatic design recognition system for aluminum wheels. After machining, the wheels are uniquely assigned to one wheel type.

In the production of aluminum wheels, the automatic recognition and differentiation of different wheel types is one of the most important prerequisites of an automated production process. This identification task has become more demanding in recent years. On the one hand, the difference between the various wheel types has become smaller and smaller (e.g. identical design and size, only different A-value); on the other hand, more and more wheel models are produced simultaneously. These criteria increase the complexity of automation and require ever better and more reliable recognition systems. The NUMTEC MD825 camera system was developed and optimized especially for these requirements. With the available options, the system no longer works exclusively with the design characteristics of the wheels. In addition, wheel parameters such as bolt hole, wheel height, wheel diameter and other characteristics are used to distinguish reliably even between very similar wheel types. The software was developed completely by Alpine Metal Tech and can therefore be quickly and easily expanded to meet specific customer requirements. The use of 3-D geometry characteristics in combination with image data results in robust, fast and reliable recognition and is largely insensitive to surface changes of the wheels. The standardized interface, with all established industrial interfaces (Profibus, Profinet, EtherNet/IP), enables fast integration into the production line.

YOUR ADVANTAGES

» ## High level of reliability
The NUMTEC software with the 3D model comparison guarantees a very high level of reliability of the system and offers many extension possibilities.

» ## Industrial hardware
All components used comply with industrial standards. High-performance industrial PCs and cameras of protection class IP67 are used.

» ## Database
All wheel information is stored in a database. If several MD825 stations are networked, data can easily be transferred to other stations without having to teach the wheels in again.

» ## Ready-to-use machine
All machine components are integrated into the housing. All mechanical and electrical components are installed and tested before delivery.

FEATURES

NUMTEC software

The NUMTEC software was specially developed for the recognition of aluminum wheels. It follows the general NUMTEC requirements for the user interface, which makes handling very easy. The software is an in-house development of Alpine Metal Tech and therefore provides best support for extensions by additional features. For service and updates, Alpine Metal Tech offers the option of remote access via Ethernet/Internet. The system runs on an industrial PC with Windows.


3D geometry recognition

The NUMTEC software uses a 3D model generating process. Through the teach-in process, the software detects the geometry of the wheel design, including the size and shape of the spokes, outer diameter, etc. The data is used for the comparison process. This algorithm has a decisive advantage over conventional systems. The 3D comparison makes the system very fast; it can distinguish very similar wheels reliably and is not sensitive to surface changes (e.g. heat treatment).
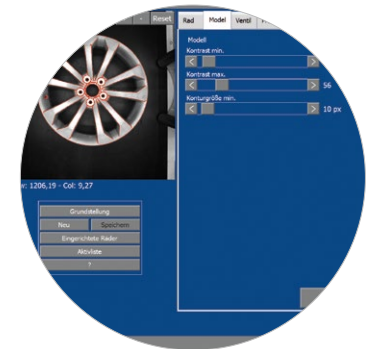
Measurement of geometric parameters

The MD825 offers a choice of additional measurement options for geometric wheel parameters. For example, a fully automatic A-value measurement can be integrated into the system. Other parameters such as wheel height and wheel diameter are also possible. These supplementary measurements greatly improve performance and ensure reliable differentiation even with identical front and rear wheels.
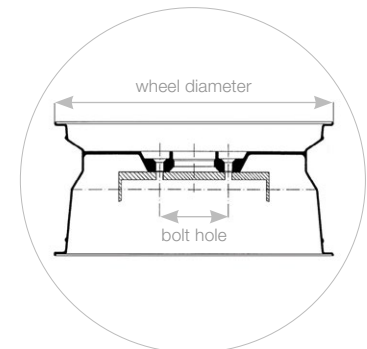
Valve hole detection

The NUMTEC software package offers the possibility to detect the valve hole position and valve hole angle. This feature is used to find the valve hole casting for the drilling process or to find the drilled valve hole on finished wheels. In addition, each wheel type with several different valve hole shapes or pocket shapes can be taught into the system.

Wheel handling

Highest level of reliability in wheel handling by means of belt conveyor and pneumatic centering. The control system of the machine is based on industrial components such as a high-end PC and a camera (protection class IP67). The LED surface panel used creates homogeneous illumination and thus the best prerequisites for image processing.

All-in-one concept

All components are fully assembled and tested. Quick installation on site; only electricity and compressed air need to be connected.

Remote maintenance

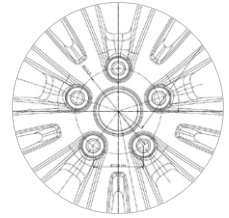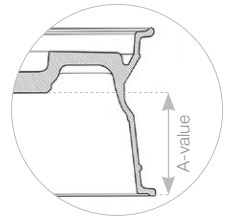Optimum access via remote maintenance for quick assistance or extensions

OPTIONS

Bolt hole diameter check

The bolt hole diameter check can be used as a supplementary differentiation criterion.

A-value measurement

The mechanical A-value measurement integrated in the belt conveyor can be used as an additional distinguishing characteristic.

Multi-camera system

Extension of the MD825 control system for the connection of up to four industrial cameras to one NUMTEC software package. All cameras can use a common wheel database.

Rotating unit

For automatic angular alignment of the wheels. Typically, this is used together with an unbalance measuring machine.

Centralized wheel database

Possibility of sharing the wheel database if the MD825 is installed multiple times in one plant. Newly taught-in wheels can easily be transferred to other stations.

TECHNICAL DATA

Machine features	measurement method	optical / mechanical
	measuring characteristics	design / geometry
		front side outer diameter
		wheel height (for differentiation)
		bolt hole diameter (option)
		offset (option)
Wheel parameters	wheel size	14 – 24"
	wheel height	3.4 – 12"
	wheel weight	max. 35 kg
Performance characteristics	machine capacity	approx. 600 wheels/hour (depending on the version)
Technical components	HMI	19" touch display
	control system	industrial PC
	software basis	NUMTEC, design and geometry recognition
	camera type	industrial camera, 3 megapixel camera (IP67)
	lighting	industrial LED panel, size 800 x 800 mm
Interfaces		Profibus, Profinet, EtherNet/IP, Parallel I/O
Media	electric connection	3 x 400 VAC, 50 Hz, 1 kVA
		optional 3 x 460 VAC, 60 Hz, 1 kVA
	pneumatic connection	at least 6 bar
Machine dimensions	L x W x H	1184 x 1150 x 2562 mm
Weight		650 kg

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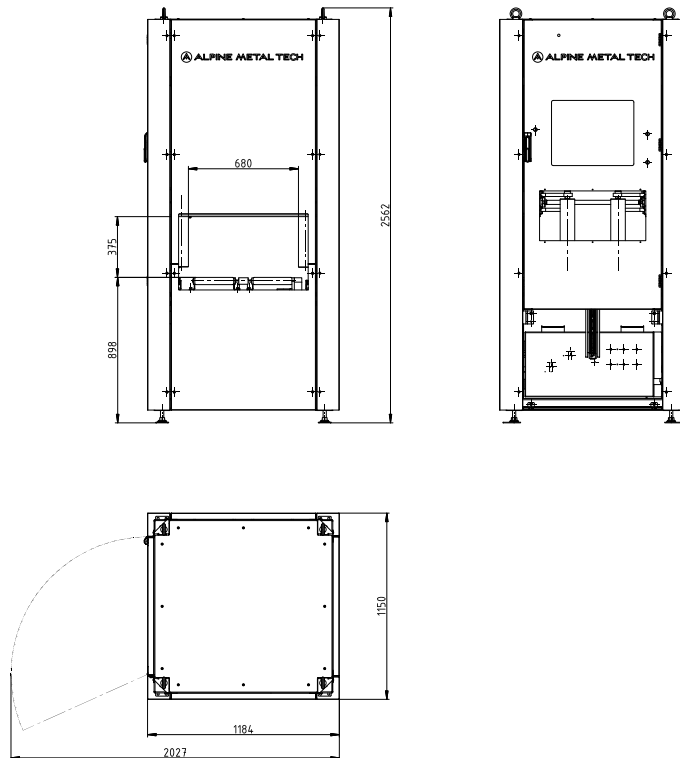
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