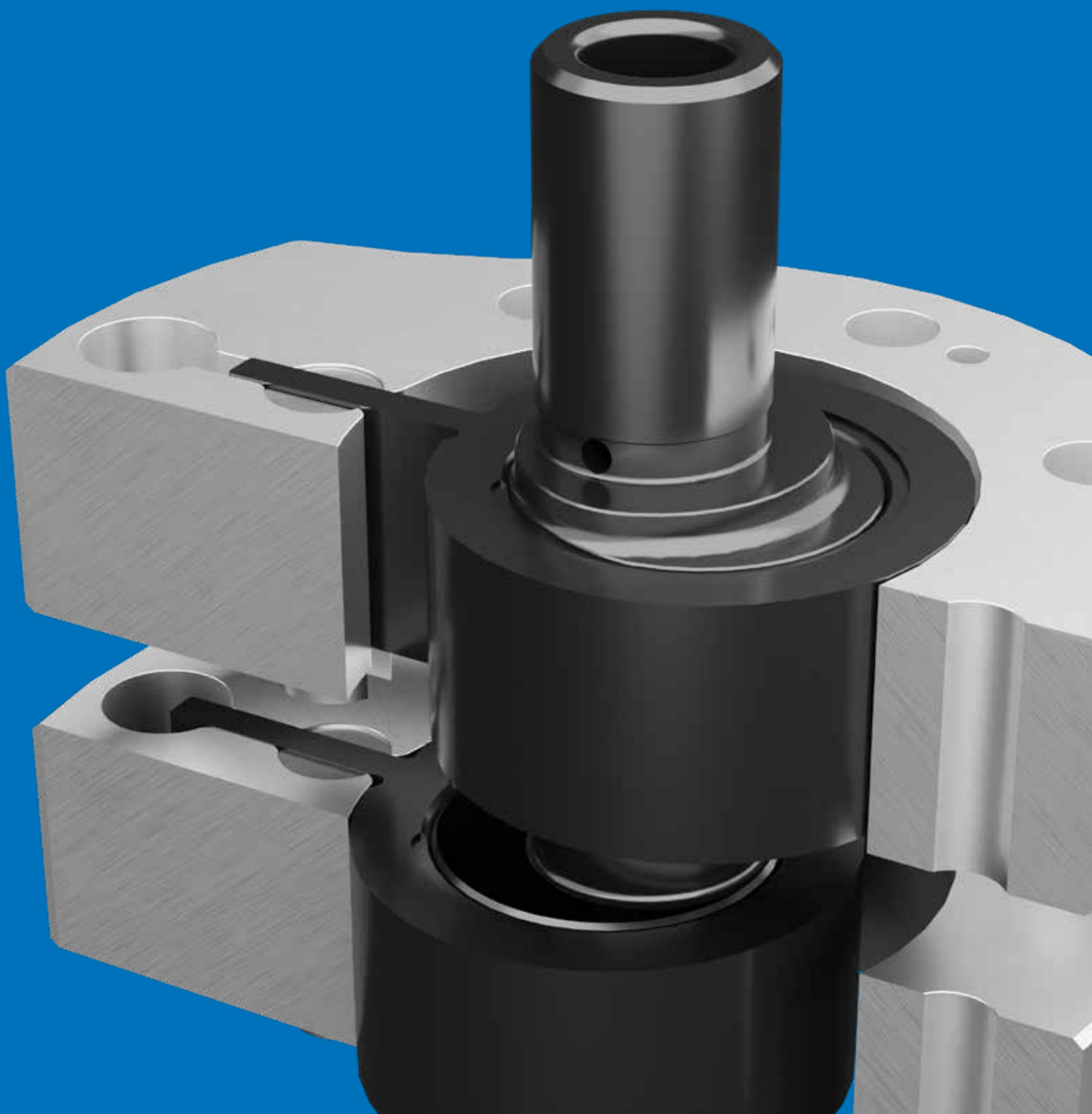


MARPOSS

HVAC-R INDUSTRY
Gauging solutions
for rotary compressors





OSS

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MAAPROSS IWAVE2

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mm
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GAUGING SOLUTION FOR ROTARY COMPRESSOR

MOBILE GAUGES AND COMPACT WORKSTATIONS

Mobile gauges for the shopfloor pag. 6

Compact multi-functional workstations. pag. 7

WORKSTATIONS WITH MULTIPLE GAUGING FUNCTIONALITIES

Solutions for ring quality control Pag. 8

Solutions for the shaft quality control Pag. 10

OPTICAL INSPECTION FOR TOTAL PART VALIDATION

Solutions for the shaft quality control Pag. 14

Improving overall equipment effectiveness. Pag. 18



MOBILE GAUGES AND COM

from 35.000€ to 80.000€
OPTICAL INSPECTION FOR
TOTAL PART VALIDATION

WORKSTATIONS WITH MULTIPLE
from 7.500€ to 25.000€

from 1.500€ to 6.000€
IMPACT WORKSTATIONS



GAUGING FUNCTIONALITIES

MOBILE GAUGES AND COMPACT WORKSTATION

MOBILE GAUGES FOR THE SHOPFLOOR

mobile gauge

manual loading

real-time results

cost effective



Marpos hand-held gauges are industrial-grade products for precision measurements during manufacturing operations. M1STAR is the product model dedicated to internal diameters, M3STAR for outside diameters

M1 and M3 Star are a cost-effective solution for quality control in line, since they are “All-In-One” products. In fact, they integrate the measuring sensor and the display inside the same structure. No additional accessory is necessary.

The rugged structure of this hand-held gauge has been designed for the use inside harsh manufacturing environments. The industrial-grade measuring sensor is capable of millions of measurement cycles without any performance degradation. The product robustness is fundamental for efficient operations since it allows an easy and fast handling of the gauge.

Thanks to the digital integrated display, the operator can take advantage of the total mobility across the production line, with an instantaneous feedback after the measurement operation.

The measuring head is interchangeable, so enabling a high level of gauging flexibility, available directly at production environment level.

$\varnothing 31.4 \begin{smallmatrix} -0.017 \\ -0.026 \end{smallmatrix}$



$\varnothing 45 \begin{smallmatrix} -0.008 \\ -0.028 \end{smallmatrix}$



$\varnothing 31.4 \begin{smallmatrix} +0.009 \\ 0 \end{smallmatrix}$



COMPACT MULTI-FUNCTIONAL WORKSTATIONS



multiple sensors



manual loading



data transfer



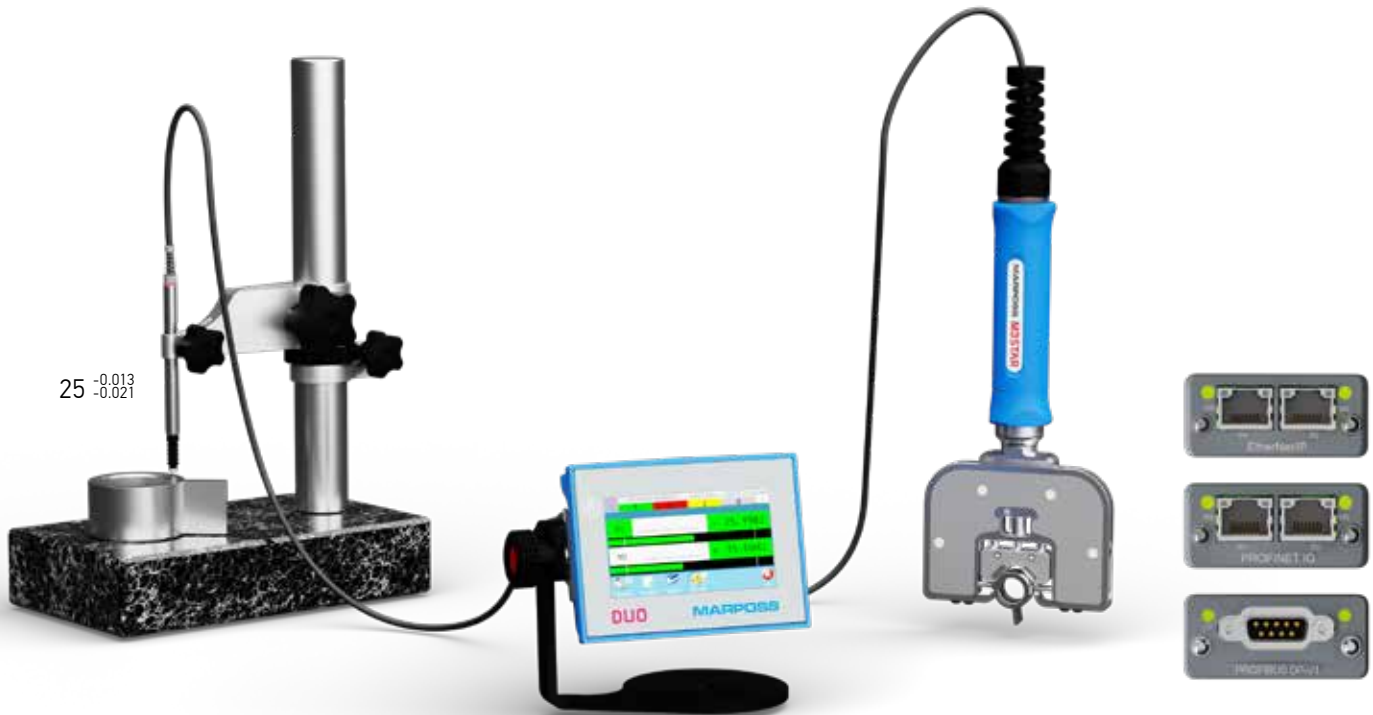
real-time results



cost effective



essential data management



By using Marpos gauge controllers, it is easy to create workstations with multiple gauging functionalities

Inside the controller product line, Marpos DUO is the compact model offering a high level of configurability and a wide toolkit of standard gauging functionalities.

Duo is purposely designed to be extremely cost-effective: it can interconnect 2 Marpos gauges directly, without any additional junction box. Its color touch-display is of industrial-grade, to allow easy interactions by line operators. Fieldbus interface is also integrated in the structure, so it can directly connect to PLC without external accessories.

Air gauging option for tight tolerances

When manufacturing tolerance is ultra-tight, air technology is the right one to meet the application demands.

By DUO Air accessory, a DUO control unit can apply inside the same workstation two different gauging technologies, like for instance one mechanical gauge and one air gauge unit.



VIDEO

WORKSTATIONS WITH MULTIPLE GAUGING FUNCTIONALITIES

SOLUTIONS FOR RING QUALITY CONTROL



multiple sensors



real-time results



many part programs



manual loading



essential data management

QUICKSET CHUCK is an integrated solution, operator loaded, for gauging multiple features simultaneously on a workpiece

To accomplish this task, it can be configured with multiple contact sensors, integrated in this structure. Sensors can be installed both in a radial and axial pattern in order to perform diameters and height controls on the same workpiece.

Using QUICKSET chuck is easy. In fact, the operator just needs to slide the workpiece into the measuring elements. The mechanical robustness of the structure allows a high performance of the system, both in terms of repeatability and reproducibility of the measurements. Its industrial grade is also the guarantee of system reliability all over the time.



diameter sensors

$\varnothing 45$ $\begin{matrix} -0.008 \\ -0.028 \end{matrix}$

ring height sensors

25 $\begin{matrix} -0.013 \\ -0.021 \end{matrix}$



VIDEO

Marposs NEMO control unit is a perfect combination with QUICKSET CHUCK: it collects measurement data from multiple sensors and generates a comfortable visualization of the measurement results on its 5.7" color display

NEMO performs complex controls in real-time

Its industrial-grade and powerful architecture allows several complex tasks within a few milliseconds: NEMO acquires simultaneously the signals from the connected sensors, elaborates the measurements and displays the results instantaneously for the operator.

SUPERIOR EASE-OF-USE

Its color touch-display features an IP54 protection grade. The graphical layout is designed to be intuitive and optimized for touch interactions. This enables a real ease-of-use for line operators.

GAUGING CONTROL

With NEMO it is possible to create and manage structured measurement programs with a large number of controls inside. Moreover, NEMO implements functionalities to synchronize the execution of the measurements with production batches, collecting results and calculating statistics consistently with the specific batch in process.

DATA MANAGEMENT

In addition to the visualization of the current measurement result, NEMO displays the history of the measuring values on a summary chart, giving the operators clear information of the manufacturing trends.

SCALABILITY

By a large offer of connectivity accessories and software functionalities, it is easy to create large gauging networks or to interconnect different products together inside a single system. Solution scalability is a crucial advantage since it allows to fit, always and perfectly, the specific application requirements.



MULTI-TECHNOLOGY INTERCONNECTION.

By using A/E Interface Box, it is easy to extend the workstation gauging capabilities with air gauges for high precising bore diameters validation.

WORKSTATIONS WITH MULTIPLE GAUGING FUNCTIONALITIES

SOLUTIONS FOR THE SHAFT QUALITY CONTROL

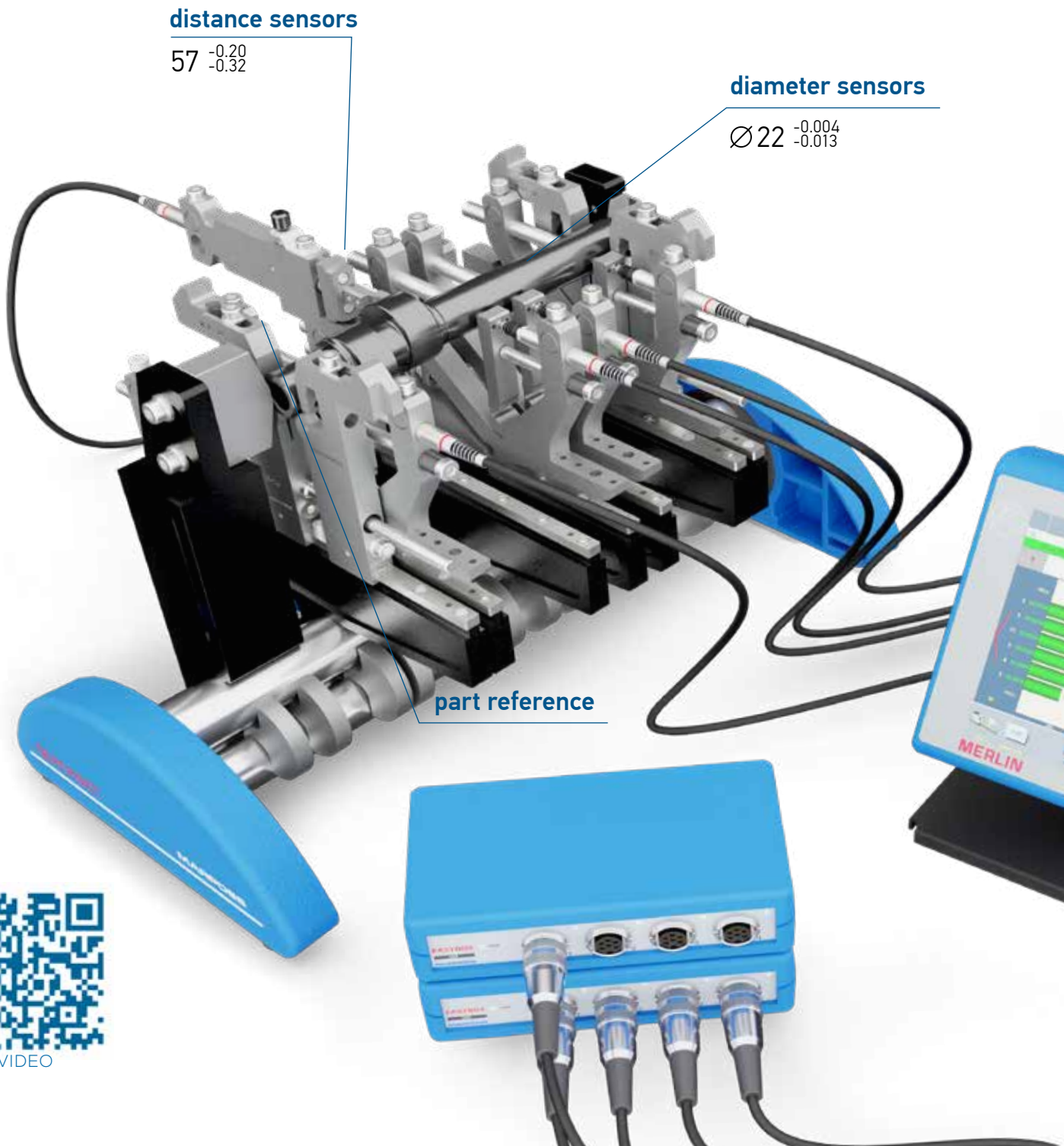
multiple sensors

real-time results

many part programs

manual loading

advanced data management



distance sensors

57 -0.20
 -0.32

diameter sensors

Ø 22 -0.004
 -0.013

part reference



VIDEO

QUICKSET Horizontal is a gauging solution to control precision shafts in multiple features, simultaneously, so with an instantaneous cycle time.

QUICKSET Horizontal is a modular system that can be easily configured with appropriate measuring cells, according to the specific shaft geometry: for instance, sensors can be configured to measure radial and axial features of the workpieces. On a single shaft, multiple diameters and axial position can be validated within a measuring cycle.

The architecture of QUICKSET Horizontal is purposely designed to allow operators a quick re-configuration of the measuring sensors. It results in a high flexibility of the system, that can be used to measure different types of workpiece or even simply reconfigured for future applications.

MERLIN Control Unit is the solution for gauging workstation integrating several measuring sensors

The wide display makes comfortable the management of complex measurement programs, typically with a large number of controls inside. MERLIN implements functionalities to synchronize the execution of the measurements with production batches, collecting results and calculating statistics consistently with the specific batch in process.



DATA VISUALIZATION.

It integrates a 8.4" touch display, IP54. The best ease-of-use is guaranteed thanks to the wide display, the simple graphical layout, the high display contrast, the use of colors. In addition to the current measurement results, MERLIN can display the history of the measuring values on a summary chart, giving the operators immediate information of the manufacturing trends.

DATA MANAGEMENT

In background, measurement results at the end of each cycle are stored into the embedded memory. Optionally, data can be transferred to remote locations, as networks folders or servers, by using the integrated Ethernet connectivity.

STATISTICAL PROCESS CONTROL

On MERLIN, there are functionalities dedicated to validate the efficiency of production process as the automatic calculation of the Gauge Capability and Machine Tool Capability. In fact, MERLIN is capable to elaborate in real time measurements into statistical parameters of the production process, as Cp and Cpk. On top of this, MERLIN implements functionalities for the active surveillance of the process: basing on the actual statistical figures, warnings and alarms are automatically generated.



WORKSTATIONS WITH MULTIPLE GAUGING FUNCTIONALITIES

SOLUTIONS FOR
THE SHAFT QUALITY CONTROL

real-time
results

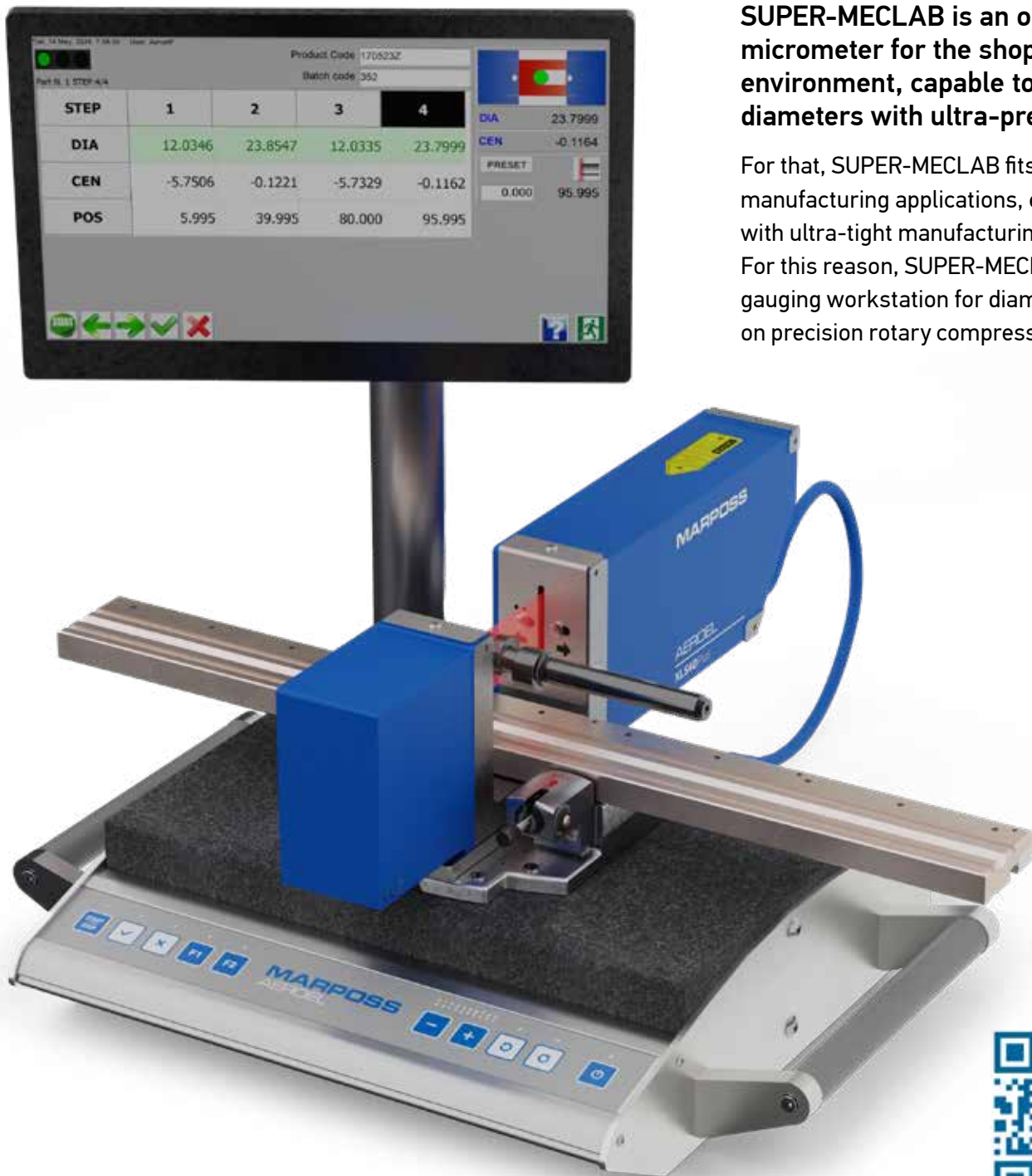
clean and
dry part

flexibility
measurements

many
part programs

manual
loading

essential
data
management

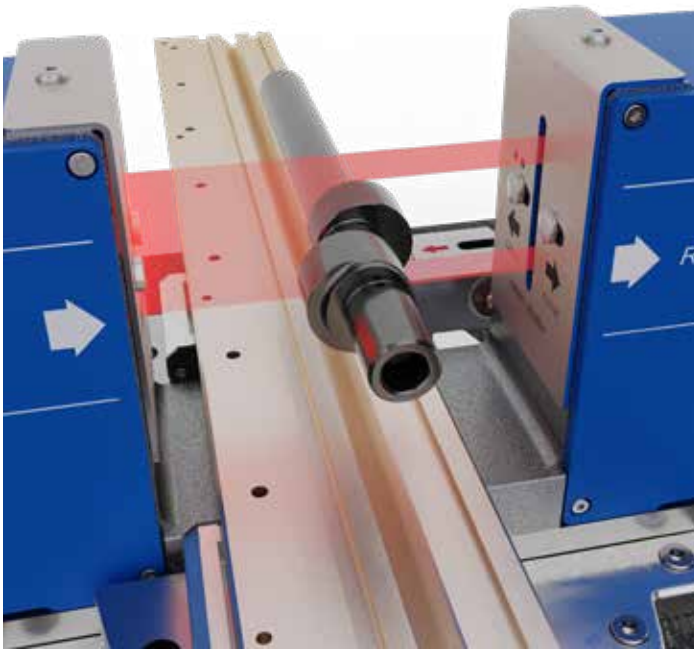


SUPER-MECLAB is an optical micrometer for the shop floor environment, capable to measure diameters with ultra-precision

For that, SUPER-MECLAB fits several manufacturing applications, even the ones with ultra-tight manufacturing tolerances. For this reason, SUPER-MECLAB is a perfect gauging workstation for diameter control on precision rotary compressor shafts.



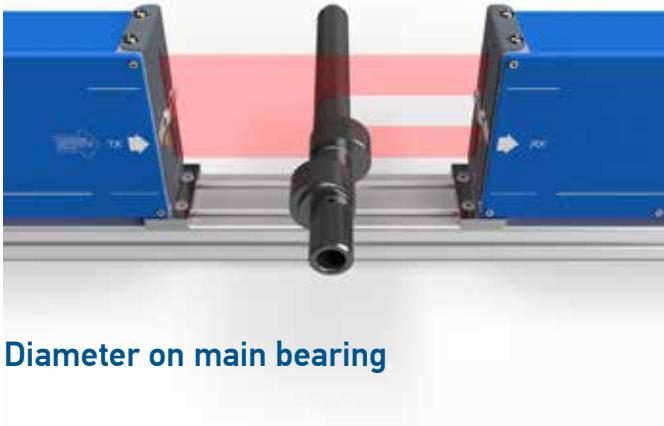
VIDEO



It performs an unrivalled accuracy, up to $\pm 0.05\mu\text{m}$.

SUPERMECLAB is based on laser technology, that enables performance and flexibility at the same time. As result, SUPERMECLAB can measure multiple and different diameters sizes on the same shaft workpiece. As additional benefit of flexibility, one single SUPER-MECLAB unit can operate at the plant as a quality control workstation for different manufacturing operations or even different shaft models. Optical architecture and its flexibility eliminates the need of any mechanical re-tooling.

The measuring range covered by the laser beam is wide 50 mm.



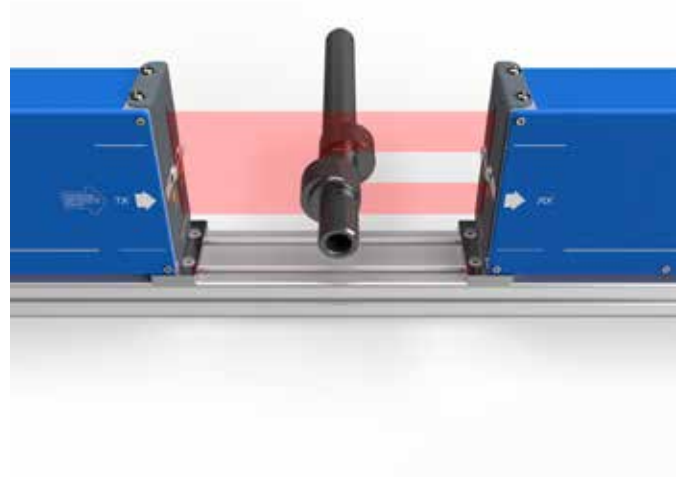
Diameter on main bearing

Diameters on grooves

SUPER-MECLAB can execute even most complicated measurements like out-of-the-center diameters on the pin bearing.

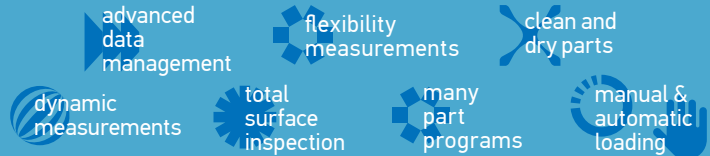


Diameters on pin bearing



OPTICAL INSPECTION FOR TOTAL PART VALIDATION

SOLUTIONS FOR THE SHAFT QUALITY CONTROL



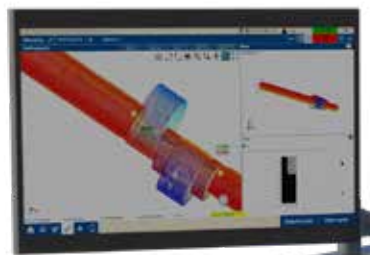
OptoFlash is perfect to meet applications of extensive validation at the end-of-line

End-of-Line is the final manufacturing stage, where quality control assurance means checking each single feature on the workpiece and validating the perfect compliance to specifications.

MEASUREMENTS ARE CONFIGURED BY SOFTWARE

Through intuitive actions like “drag and drop”, it is extremely easy to create measurement programs.

As result, a single OPTOFLASH can be used to validate different component typologies in a plant. Through the OptoFlash software interface, it is sufficient to activate the appropriate measurement program.



UNIQUE OPTICAL ARCHITECTURE

OptoFlash is based on a unique 2D optical architecture. Thanks to fixed-position 2D sensors and the absence of axis in motion, this product is actually the first-in-its-class for speed in measurement. A complete measuring cycle takes typically 10 seconds, regardless of the number of executed measurements.





AUTOMATIC LOADING FOR 100% VALIDATION

OptoFlash is largely used in automatic applications where workpiece are loaded by robot and where measuring cycle time is actually demanding, in the range of 10 seconds. In fact, thank to its unrivalled speed in measurement, Optoflash fits the most totality of automated applications, even the most complicated.

HIGHER THE MEASUREMENT SPEED, CHEAPER IS THE AUTOMATION SYSTEM OF THE LINE

A single optoFlash unit is normally sufficient to fulfil the target line throughput. In fact OptoFlash is normally two times faster in measurement than a traditional system based on part scanning.

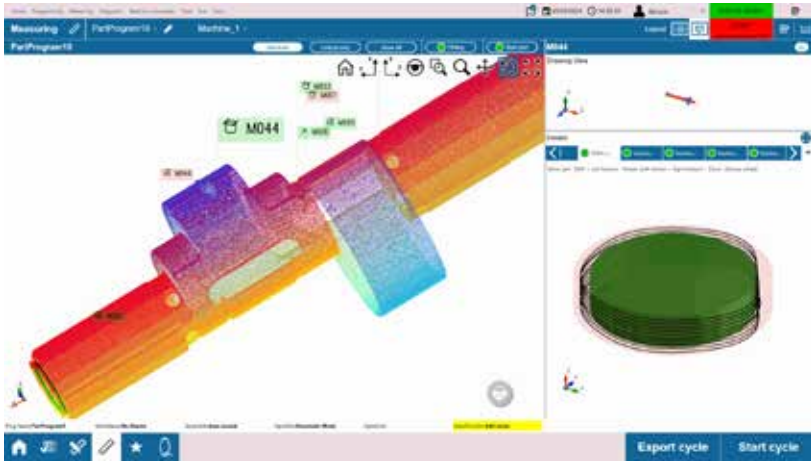
EASE-OF-INTEGRATION

OptoFlash comes with standard connectivity accessories for PLC and the most common fieldbus interfacing as Profinet, EthnetIP or Profibus.



VIDEO

OPTICAL INSPECTION FOR TOTAL PART VALIDATION



3D DIGITAL TWIN OF THE SHAFT.

The 3D-engine of the OptoFlash is a big advantage for the manufacturing operations. First, measurement results are visualized in 3D style, delivering a superior ease-of-use to line operators. Moreover, measurements calculated on the 3D Point Cloud are definitively more accurate and detailed. In fact, measurements algorithms use the 3D Point Cloud, that is simply a digital reconstruction of the complete surface, at a super-high resolution.

On main bearing:

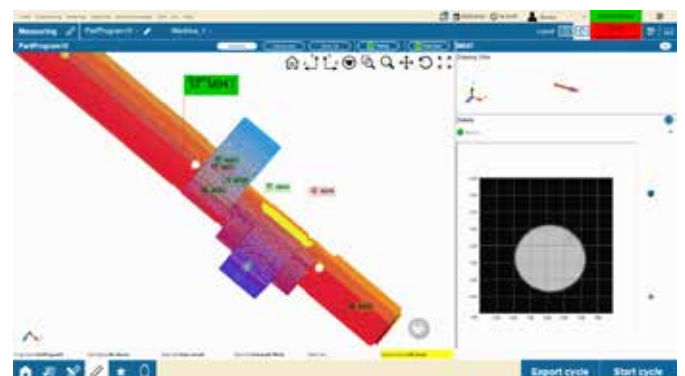
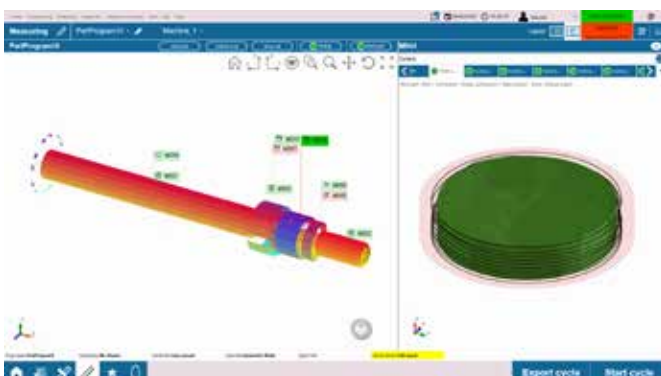
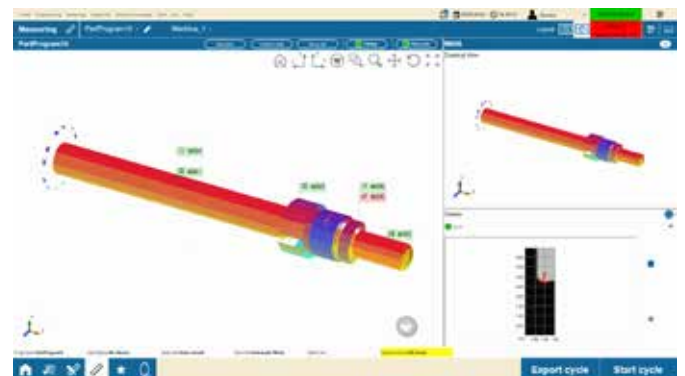
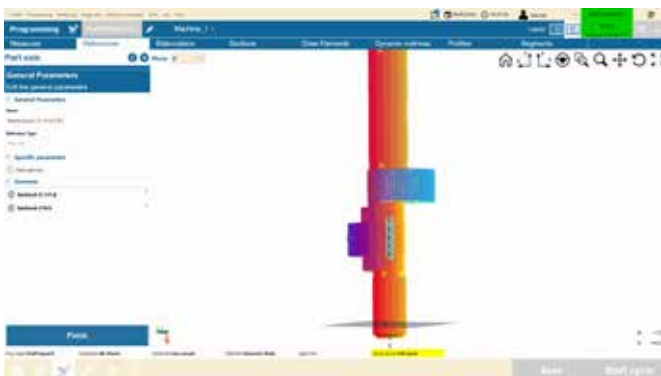
- ▶ Axis calculation
- ▶ Keyslot angle
- ▶ Radial runout
- ▶ Diameters
- ▶ Thu-hole diameter
- ▶ Thu-hole Z-Position

On Eccentric bearing:

- ▶ Roundness
- ▶ Cylindricity
- ▶ Parallelism
- ▶ Stroke
- ▶ Angular shift

On diameter changes:

- ▶ Small radii
- ▶ Distances and lengths



WHATEVER THE GAUGING CHALLENGE IS

Beyond our wide range of standard products and standard solutions, MARPOSS is also a leading player in “APPLICATION-SPECIFIC” solutions. Marposs is specialized in designing and manufacturing high-end measurement systems, with elevated level of integration into line automations.



IMPROVING OVERALL EQUIPMENT EFFECTIVENESS (OEE) THROUGH MEASUREMENT DATA

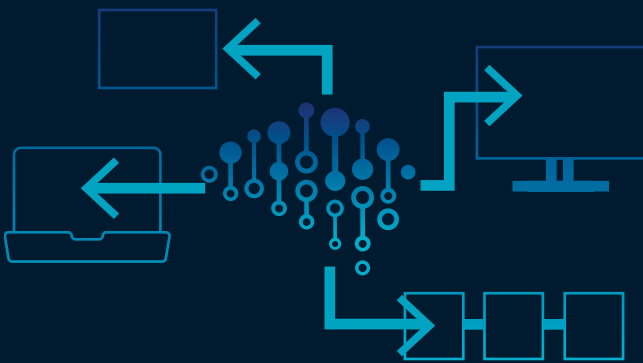
**X****X****AVAILABILITY****PERFORMANCE****QUALITY**

Data produced by Marposs gauges, both stand-alone units and multi-sensors solutions, are normally utilized for different activities along the product manufacturing process.

As primary usage, Marposs gauges are tools to validate the compliance of each workpieces actually during the manufacturing operations. This is a fundamental task for the quality assurance, but definitely not the only for the gauges. Measurement data contains precious information, usable for the production process improvement.

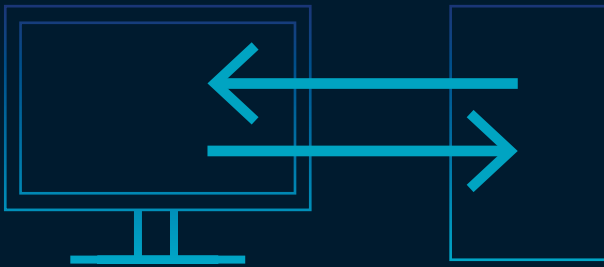
For instance Marposs control units can elaborates in real-time operational production statistics, in order to monitor in real-time the production trending through the measurements on the workpieces, and automatically warn or feedback operators for machines fine tunings and consequent efficiency increase.

Measurement datasets are also precious for production operational improvements on a large time span. In fact each single measurement cycle, together with available information as part ID or ambient temperature value, can be saved and archived on remote folders, for off-line evaluations, statistical studies, or even simply for extensive traceability.



CONNECTIVITY

Marposs offers a large range of industrial connectivity options designed to meet any typical need in the manufacturing environment. For instance Ethernet or Profinet or Ethercat are always available, built-in on devices or through dedicated boxes.



DATA TRANSFER

Measurement data generated at the level of the single device can be automatically archived on remote folders. Marposs control units offers a large toolkit for measurement data transfer, with a series of options and parameters configurations in order to fit the customer infrastructure.



STATISTICAL ANALYSIS

Q-DAS® statistical software is embedded and it allows on-line control charts, machine and process capability analysis.

MARPOSS

For a full list of address locations, please consult the Marposs official website

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