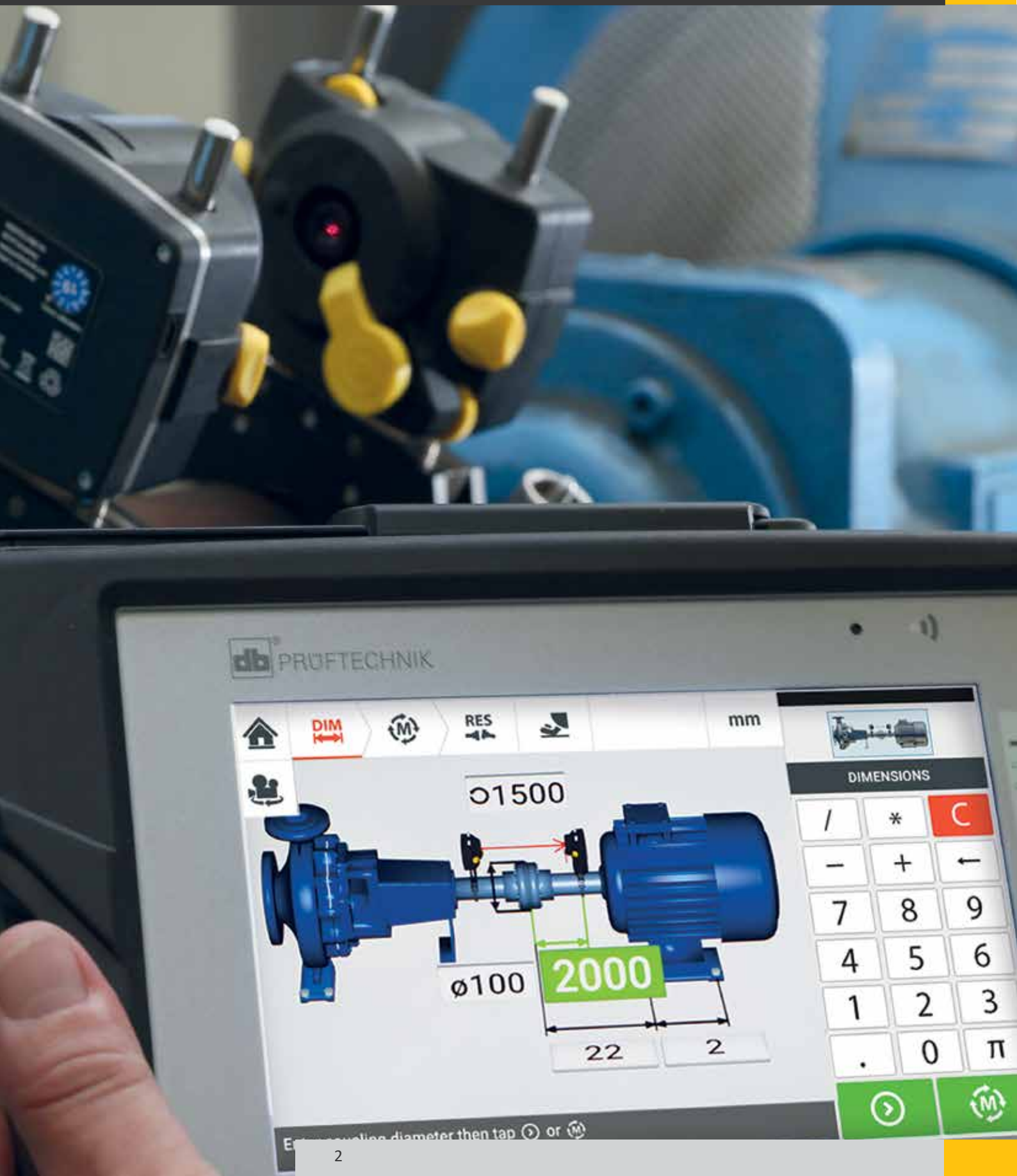
FLUKE®
Reliability

Laser Alignment Systems for Shafts, Turbines, and Machines

PRÜFTECHNIK®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Here is why you have to align shafts, turbines, and machines precisely

- Improved efficiency
- Longer service life of all machine components
- Improved quiet running with reduced vibrations
- Decreased energy consumption
- Reduced temperatures at bearing, coupling, and lubrication
- Reduced wear
- Lower spare parts storage costs
- Avoiding flow problems in turbines

Single-laser technology helps you get quicker, more precise results

RotAlign® Touch

RotAlign® Touch EX

OptAlign® Touch

ShaftAlign® Touch

PullAlign®

CentrAlign® Ultra RS5

GEO CENTER

Alignment and measurement of:

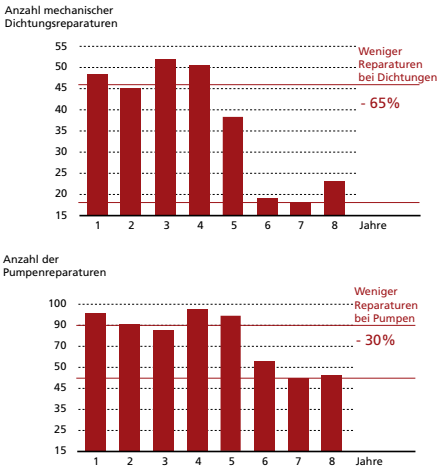
- Shafts
- Vertical machines
- Flanges
- Couplings
- Bores
- Turbines
- Joints
- Belt pulleys
- Machine foundations
- Cardan shafts

Machine alignment – all advantages in numbers

1. Fewer repairs

Repair work on seals can be reduced by up to 65 percent if the system is correctly aligned.

Repair work on pumps can be reduced by up to 30 percent. If laser optical alignment is an integral part of the maintenance measures, all maintenance costs are reduced to a minimum because the acquisition costs for spare parts and their storage costs are reduced.



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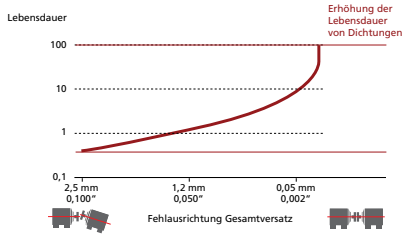
2. Longer machine running time

Precise laser optical alignment sustainably reduces mechanical wear on all rotating components.
If a machine is misaligned, it has a negative effect on the mechanical wear of bearings and couplings.
With laser optical alignment and reduced wear, machine running time and efficiency are increased considerably.



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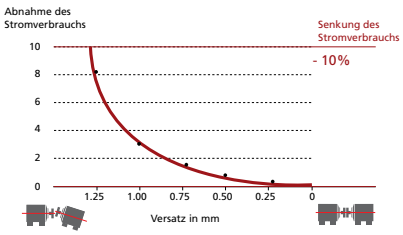
3. Reduced energy consumption

The precise laser optical alignment saves energy that would otherwise be lost due to increased friction. Unnatural tensions in the machine are reduced. The energy consumption can thus be reduced by up to 10 percent.



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Adaptive Alignment with PRÜFTECHNIK

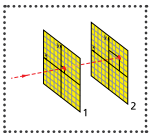
In the early 1980s, Prüftechnik laid the foundation for a worldwide evolution of machine alignment with the laser optical process. High-precision lasers and sensors have since replaced the ruler and dial gauge and are contributing to unprecedented alignment precision. But Prüftechnik has continued to innovate. Its Adaptive Alignment systems, including RotAlign®, OptAlign®, and ShaftAlign®, can adjust to any alignment challenge, asset, or user experience level. Quick, simple, and intuitive application is always a top priority for Prüftechnik. The numerous features listed below support the user in performing every single measurement safely, repeatably, and precisely.

Single-laser technology

Prüftechnik laser alignment systems leverage technology that uses only a single laser beam. That makes them easy to install and guarantees maximum precision, even in the event of extreme angular misalignments.

Active Situational Intelligence

Active Situational Intelligence (ASI) is a groundbreaking problem-solving technology, exclusive to the Adaptive Alignment systems from PRUFTECHNIK. ASI helps the user avoid mistakes while working quickly to measure and align machines.



SensALIGN®

The patented SensALIGN® sensor technology features a built-in inclinometer. This is based on the use of a microelectromechanical system (MEMS) that measures over a total of seven axes. The XXL HD PSD sensor forms the basis for this.
With this superior SensALIGN® technology, our intelligent intelliSWEEP®, Simultaneous Live Move, and Quality Factor measuring modes, we achieve repeatable and precise measurement results in every area of misalignment.

intelliSWEEP®

With the intelligent intelliSWEEP® HD measuring mode, interference factors such as coupling play, angular misalignment, or external vibration sources can be easily found by the user and eliminated from the system in order to avoid poor data quality. As soon as the shaft rotates, a large amount of data is automatically and continuously recorded.
The repeatability and the measuring precision are thus many times higher than with conventional measuring methods based on a three-point measurement.

intelliPASS®

With the intelligent intelliPASS® measuring mode, based on intelliSWEEP®, decoupled shafts can be measured and aligned to each other. For this purpose, the two measuring heads- sensor and laser- are rotated past each other in different angular positions. The measurements are taken automatically as soon as the laser beam hits the center of the sensor.

... fast, easy and precise!

Quality Factor

The Quality Factor determines the data quality in real-time and takes into account disturbing factors such as clutch and/or gear play and rotation speed. The inclusion of ambient vibrations in the calculation is unique and only available from Prüftechnik. Measurement results with poor data quality are automatically deleted or can be manually removed by the user.

Simultaneous Live Move

Simultaneous Live Move is a special feature that saves a lot of time during the alignment process. Horizontal and vertical corrections are monitored and displayed in real-time. The Live Move can be started at any sensor position.

Move Simulator

The Move Simulator makes it possible to see how the machine will behave during alignment and whether the actual alignment will ultimately lead to the desired result even before the actual alignment with the prepared shims. This is a very helpful tool, especially when space is limited.

vertiSWEEP®

The intelligent vertiSWEEP® measuring mode, based on intelliSWEEP®, allows for the measurement of vertically mounted input shafts. This makes aligning vertical shafts just as easy as aligning horizontal shafts.
Measurement occurs automatically through continuous rotation.

Cardan Shaft Alignment

The unique and patented measuring method enables cardan shaft alignment on site, i.e. without dismantling the shaft.

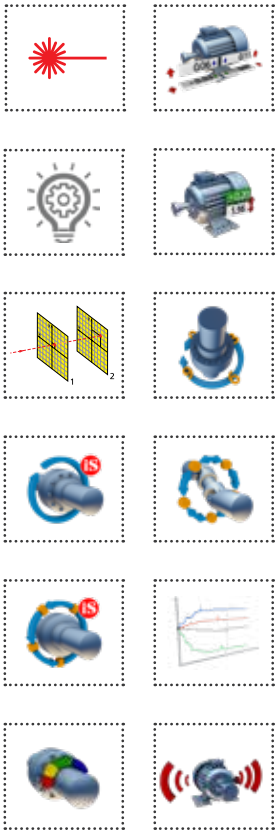
Live Trend

The name Live Trend is self-explanatory. Live Trend is a function for monitoring and analyzing thermal or process control changes in the position of the machine during the start-up and shutdown phases. At the same time, Live Trend records the machine vibrations. The resulting set points or alignment presets can be used during shaft alignment in a cold condition to ensure optimum alignment of the machine in a warm condition.

Vibration Check

The SensALIGN® sensor measures the vibration velocity (ref) via the vibration test probe. The vibration measurement after alignment confirms the perfect alignment condition and ensures optimum operation.

Sets new standards!



ROTALIGN® Touch

Unrivaled precision alignment

Thanks to its unmatched SensALIGN® 7 laser sensor technology, RotAlign® Touch is the measure of all things when it comes to aligning machines. As the industry-wide standard setting alignment system, ROTALIGN® touch offers a full set of Adaptive Alignment features to deliver new levels of accuracy, speed, and elimination of human errors.

- Single-laser technology, which reduces backlash and heightens accuracy
- Active Situational Intelligence, which applies corrective feedback and filters out low-quality measurements and errors
- Alignment of coupled and uncoupled shafts
- Alignment of rotating axes, flanges, couplings, intermediate shafts, and Cardan shafts
- Motion simulator
- Alignment of up to six sequential couplings simultaneously
- WLAN, RFID, cloud transfer

Solution AWARDS 2016

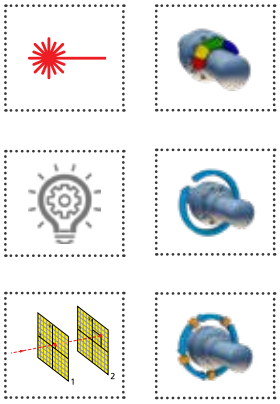
2017 Plant Engineering PRODUCT of the YEAR Silver Award

INDUSTRIE PREIS 2017 FINALIST

The new dimension of laser optical alignment

OPTALIGN® Touch

Everyday tool that no workshop should be without



The OptAlign® Touch is the perfect device for everyday alignment and measuring tasks in the industry – an alignment system that no maintenance organization can afford to be without. Thanks to its Adaptive Alignment features such as single-laser technology and Active Situational Intelligence, the OPTALIGN touch adapts to the situation, asset, and technician experience level.

- Unmatched SensALIGN® 5 laser and sensor heads
- Industrial design: waterproof and dustproof (IP65), oil proof and waterproof (IP65), dirt resistant, scratch-resistant, and impact-resistant
- Continuous recording of measured values during laser/sensor rotation (SWEEP MODE)
- Real-time display of the alignment process (Live Move)
- Wireless data communication (Bluetooth & WLAN)
- Fast, intuitive installation

2018 Plant Engineering PRODUCT of the YEAR Grand Award

SHAFTALIGN® Touch

Sets the benchmark for solving common alignment problems

This user-friendly system combines single-laser technology with Active Situational Intelligence to empower teams of varying experience levels to align most any asset with new levels of precision and speed. The ShaftAlign Touch offers Adaptive Alignment capabilities and related features such as:

- Single-laser technology, which reduces backlash and heightens accuracy
- Active Situational Intelligence, which provides corrective feedback that guides users to filter out low-quality measurements and errors
- A maximum of eight measurement points (versus only three for competitor systems)
- Thermal Length Calculator
- Wi-Fi and PC software, enabling cloud transfer and collaboration
- Integrated RFID machine identification reader

ROTALIGN® Touch EX

Adaptive Alignment for EX/ATEX areas

RotAlign® Touch EX reaches machines and systems in potentially explosive areas that are not accessible with normal devices: ATEX /IECEx zone 1 certified.

- Industrial design: waterproof and dustproof (IP68), oil proof and waterproof (IP65), dirt resistant, scratch-resistant, and impact-resistant
- Touchscreen display suitable for gloves
- Alignment of up to six consecutive shafts
- Alignment of vertical machines (vertiSWEEP)
- Alignment of uncoupled shafts and cardan shafts
- RFID detection and integrated camera
- Wireless data communication (Bluetooth & WLAN)

PULLALIGN® / PULLALIGN® Lite 2

Alignment of belt pulleys by laser precision

The easy-to-use PullAlign® laser alignment device allows belt pulleys to be aligned quickly and efficiently.

- Available with red or green laser
- High magnetic holding force
- Easy to use
- Laser reflector for high precision
- Height-adjustable targets for quick application

ARC® 4.0 alignment software

Planning and documenting alignment processes

This exclusive software is the ideal solution for the cloud storage of a system's measurement data and tracking the alignment condition profile in a graphical trend chart.

- Customizable templates for systems, couplings, tolerances, various measuring modes and reports
- The measuring mode is automatically suggested depending on the bearing type
- Compatible with devices of the RotAlign®, OptAlign® and ShaftAlign® Touch series
- Data import and export possible
- Saves and manages machine data
- Ideal for large, decentralized companies, maintenance teams, and service companies

ALIGNMENT
RELIABILITY CENTER 4.0

CENTRALIGN® Ultra RS5

Alignment of bores and measurement of turbines

When it comes to measuring bore holes (in internal combustion engines, compressors, pumps, gearboxes, stern tubes or steam/gas turbines, etc.), CENTRALIGN® Ultra RS5 is the system of choice.

- Measurement of diameters from 120 mm to 4,000 mm
- Control sensor for laser drift monitoring
- Highest precision due to resolution in the micrometer range
- Faster and more accurate than any traditional method
- Maximum alignment distance 50 meters (with long range laser)
- Compatible with Alignment Center software

SensALIGN® 7 sensor & laser

Measurement of parallelism, straightness, and perpendicularity

The SensALIGN® 7 sensor-laser unit is the most powerful Prüftechnik alignment tool. Its unique dual-mirror technology on the inside outshines all other comparable systems – especially in the extreme areas at maximum and minimum distances.

- 7-Axis measuring system
- Integrated MEMS inclinometer
- Geometrical measurement with GEO CENTER
- Bluetooth data communication

LEVALIGN® Expert

High-power laser for all geometrical measurements

LevAlign® Expert is a precision high-power laser with a range of up to 100 meters without drift. The ideal system for all leveling, flatness, and straightness measurements.

- Self-leveling
- Control via remote app possible
- Measurement in horizontal and vertical direction
- Compatible with SensALIGN® 7 sensor

Applications

- Hall floors measurement
- Test bench foundations measurement
- Verification of flatness/plane parallelism of large presses, for example

INCLINEO®

High-performance inclinometer

Inclineo® measures the flatness and parallelism of surfaces regardless of the angle of inclination. Likewise, the angularity and leveling can be checked.

- Measurement of relative and absolute inclination
- Profile calculation of machined surfaces and flanges
- Housing can be rotated by 360°

Applications, including

- Pressure cylinders of large presses
- Measurement of the plumbness of vertical machines
- Checking the geometry of CNC machines

Geo Center Software

Multidimensional visualization of geometrical measurements

During the planning and design phase in the CAD program, all lines and levels of a machine or its foundation are 100 percent straight and flat. However, heat, cold, humidity and mechanical forces limit the material properties in reality. Geometric deviations of surfaces to each other, once straight planned rails or even foundations, come about completely “naturally.”

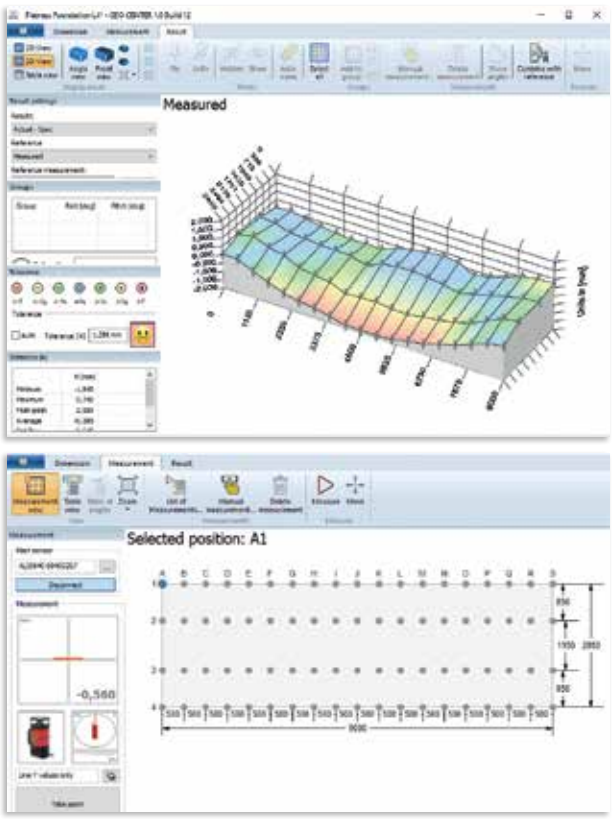
With the Prüftechnik Geo Center Software, these deviations from the ideals can be visualized clearly, quickly, and easily. The measurement data from the Prüftechnik laser measuring systems are transferred directly to a laptop/PC with the installed Geo Center Software via Bluetooth.

The Geo Center Software unites a multitude of geometric measurement possibilities:

- Straightness measurement (e.g., on rails, guides or bores)
- Flatness measurement (e.g., machine tables or foundations)
- Leveling (e.g., of machine halves)
- Plumbness (e.g., of vertical shafts or surfaces)
- Parallelism measurement (e.g., of rails or surfaces)

Prüftechnik has the appropriate laser and sensor units for every special task. GEO CENTER allows individual measurement templates to be created and measurement levels to be defined independently and freely.

GEO CENTER uses a modern graphical user interface for quick and easy operation. The measurement results are displayed in colored 2D and 3D models.
Deviations from the norm can thus be detected at a glance.



Mounts

Essential accessories for every standard and special application

Perfect alignment results can only be achieved with the right laser/sensor mount – everything is possible.

Mounts for standard and special applications

- For Cardan shafts
- For non-rotatable shafts
- For extremely tight spaces

Shims

You just can't do without them

Prüftechnik shims are available in many different thicknesses and sizes. They can be transported quickly, easily and comfortably from the workshop to the machine in the practical transport case.

- From 60x50 mm with 0.025 mm thickness (M12)
  Max. 200x165 mm with 3 mm thickness (M52)
- Made of high-quality stainless steel
- Size information on each shim
- Deburred for injury-free use

EDDYTHERM®

Bearing heating via induction

Prüftechnik not only supplies premium alignment systems for aligning machines and shafts, but also the right tools for mounting bearings on shafts.

In just a few minutes, the bearings are preheated by induction to such an extent that they expand and glide effortlessly onto the shaft. When the bearing cools down, it assumes its original size and thus guarantees the desired tight fit on the shaft and in the machine. Due to the induction heat, all tolerances and material properties are maintained without losses. No further work steps are necessary. EddyTherm® is a safe tool that heats only the workpiece, not the tool.

EddyTherm® is available in two different versions, depending on the size of the bearing or workpiece.

EddyTherm® portable:

- For workpieces from 20 mm inside diameter
- Max. 10 kg load
- Max. 180 °C induction heat

EddyTherm® 2x:

- Max. 80 kg load
- Max. 240°C induction heat
- Available options: 200- 575 V at 50/60 Hz

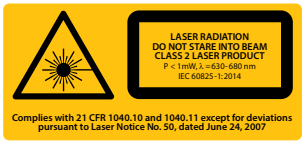
PRUFTECHNIK delivers world-leading Adaptive Alignment systems and more

Machine and shaft alignment

Machine and system monitoring

Non-destructive material testing

www.pruftechnik.com



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