

PRUFTECHNIK Condition Monitoring Product and Service Overview



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Fault Diagnostics and Monitoring	4
Handheld devices	5
Online Monitoring Systems	5
Software – Condition Monitoring	7
Machine Protection Systems & Sensors	7
Corrective Measures	8
Shaft alignment	9
Balancing	10
Correction with Shims	10
Software	11
Geometrical Measurements	11
Induction Heaters	13
Services and Training	14
Roller Alignment	15
Service, Training	15

Our solutions for more efficient production

Unscheduled downtimes reduce productivity and thus the operating result. Condition-based maintenance (CbM) keeps your assets fit. PRUFTECHNIK Condition Monitoring supports you with innovative products and competent services.

Your advantages

- ▶ Reducing unplanned machine failures
- ▶ Avoiding unscheduled downtimes and production interruption
- ▶ Ensuring fault-free production processes
- ▶ Improving availability and thus productivity of the assets



Machine Diagnostics and Monitoring

Portable data collection, online condition monitoring and machine protection

Handheld vibration data collectors are used for regular machine condition monitoring in assets with low probability of failure, slow damage progress, and smaller secondary damage in the event of a failure and for redundant machine trains. Data is collected within the scope of regular inspections and single measurements (damage analysis). In the case of increased readings, the device provides information about possible damage causes.

Permanently installed systems monitor production-critical machine around the clock. They are particularly suited for machine trains with high criticality, high failure costs for production or fast damage progress. For example, the online system can be easily integrated into the process control environment at the customer's using the bidirectional Modbus connection. Malfunction messages are automatically sent per e-mail or SMS to operator or service partner.



Handheld measuring devices

VIBXPERT® II

- ▶ Powerful, 2-channel vibration analyzer
- ▶ Fast measurement data collection and field balancing
- ▶ Comprehensive measurement and analysis functions
- ▶ Lightweight and compact with high operating comfort
- ▶ Also available as EX version (Zone 1)

**VIBSCANNER®**

- ▶ Universal, 1-channel vibration measurement device
- ▶ Route data collection and field balancing
- ▶ Integrated sensors for vibration, running speed and temperature, connection of other sensor types possible
- ▶ Also available as EX version (Zone 1)

**VIBROTIP®**

- ▶ Practical route data collector
- ▶ 5 measuring functions in one device
- ▶ Easy operation
- ▶ Also available as EX version (Zone 1)



Online Monitoring Systems

VIBGUARD®

- ▶ Online system for continuous monitoring and diagnostics of production critical machines
- ▶ Measures time wave form, FFT spectrum, orbits, torque and much more fully synchronously on up to 20 analogue channels
- ▶ Up to 6 operating states for alarm evaluation of dynamic processes
- ▶ Different mounting options

**VIBGUARD® compact**

- ▶ Online system with 6 fully synchronous analogue channels
- ▶ Integration into process control environment via Modbus
- ▶ Optional "event recording" function saves transients for post-processing analysis
- ▶ Different mounting options



VIBRONET® Signalmaster

- ▶ Online system for monitoring of many measurement (up to 162) channels
- ▶ Suitable for widely distributed industry assets (conveyor belt drives, pumping stations, etc.)
- ▶ Frequency-selective monitoring
- ▶ Ideally suited for applications in hazardous areas (Zone 1)



VIBCONNECT® RF

- ▶ Wireless monitoring system
- ▶ Ideal for distributed assets
- ▶ No complex wiring necessary
- ▶ Autonomous power supply
- ▶ Also available as EX version (Zone 1)



PERMALIGN®

- ▶ Laser measuring system for position monitoring of machines, components, and assemblies
- ▶ Suitable for temporary installations, e.g., for the determination of thermal growth in rotating machines
- ▶ Also available as EX version (Zone 1)



VIBGUARD® portable

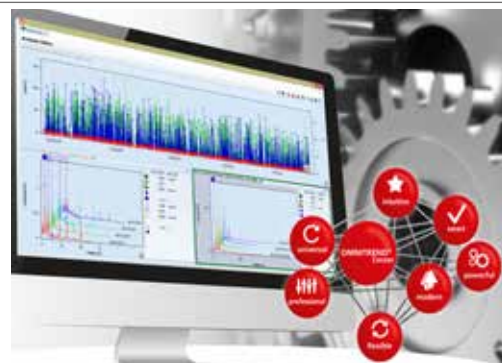
- ▶ Portable variant of the VIBGUARD® Online system
- ▶ Continuous diagnostic monitoring of complex assets
- ▶ Ideal for troubleshooting and in-depth diagnostics



Software – Condition Monitoring*

OMNITREND® Center

- ▶ PC software for PRUFTECHNIK data collectors and online monitoring systems
- ▶ Central data management and measurement data analysis
- ▶ Practical analysis tools and interactive reporting
- ▶ Configuration of routes for handheld data acquisition
- ▶ Support of many languages and high operating comfort

**ONLINE VIEW 4.0**

- ▶ Machine condition monitoring in real time from any location
- ▶ Visualizes measurement data of online systems and machine conditions
- ▶ Browser-based display for PC and mobile devices



*Free software and firmware updates

Machine Protection Systems & Sensors

VIBROTECTOR®

- ▶ Cost-effective vibration transmitter
- ▶ Robust and easy installation
- ▶ Ideal for fans, blowers, pumps
- ▶ Also available as EX version (Zone 1)

**VIBREX®**

- ▶ System for one- or two-channel overall value monitoring of vibration and rolling bearing condition
- ▶ One 4-20 mA output per channel
- ▶ Machine protection via relay outputs via digital alarm outputs
- ▶ Ideally suited for applications in hazardous areas (Zone 1)

**Accelerometer / triaxial sensor**

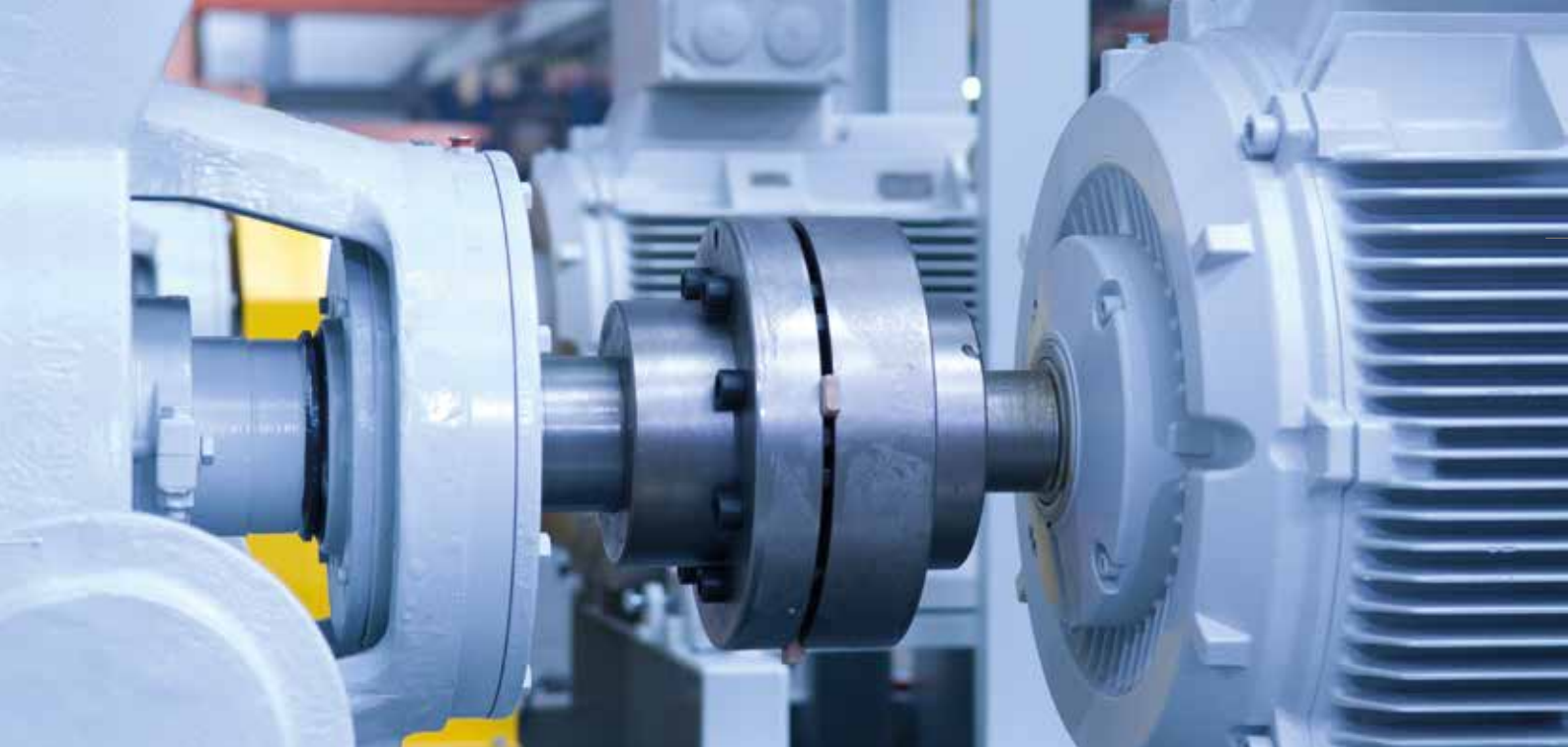
- ▶ For almost all application areas in industrial vibration measuring technology
- ▶ Different designs for every type of mounting
- ▶ Triaxial sensor measures vibration in X, Y and Z direction

Other sensors

- ▶ RPM sensors
- ▶ Temperature sensors
- ▶ Inductive RPM switches

Smart sensors

- ▶ VIBCODE® vibration sensor for automatic measurement location recognition
- ▶ WEARSCANNER® online particle size distribution counter monitors wear debris in oil



Corrective Measures

Shaft alignment, balancing and other corrections

Inaccurate alignment of rotating machines is a frequently occurring problem. If machines are precisely aligned during startup and regularly recalibrated later on, the operating costs as well as the maintenance costs of the machine can be lowered very quickly. The service life of the assets increases significantly as well and the product quality is improved, as vibrations are reduced to a minimum.

Besides products for shaft alignment, balancing devices made by PRUFTECHNIK are perfect for the detection of damage to rotating machines caused by imbalance and their fast correction, e.g., suitable for industrial fans of all sizes and designs or rotor blades of wind turbines.

PRUFTECHNIK also offers solutions for numerous geometrical measurements, such as measurements of edge straightness and surface flatness as well as the alignment of bores and turbine shells.



Shaft alignment

ROTALIGN® touch

- ▶ cloud-enabled laser shaft alignment system
- ▶ Touchscreen monitor with 3D display
- ▶ Very high measuring quality, extremely robust and sturdy
- ▶ Comprehensive connectivity through integrated RFID, Wi-Fi, Bluetooth®, integrated camera



ROTALIGN® Ultra iS

- ▶ Comprehensive alignment platform for complex alignment tasks
- ▶ Graphical analysis of the alignment condition and live display of machine corrections
- ▶ PDF measurement report and optional expert modules



OPTALIGN® smart RS5 BT

- ▶ Modularly designed alignment system for rotating machine maintenance
- ▶ Ergonomic design and large feature scope
- ▶ Integrated MEMS inclinometer and Bluetooth® module
- ▶ Also available as EX version (Zone 1)



ROTALIGN® smart RS5 EX

- ▶ Alignment of rotating machines and shafts of all types
- ▶ Hundreds of measurement locations are measured automatically during shaft rotation (SWEEP).
- ▶ System and case ATEX/IECEx-certified
- ▶ Wireless data communication with ATEX/IECEx-certified Bluetooth® module (optional)



SHAFTALIGN®

- ▶ Entry-level alignment system
- ▶ Automatic measuring mode eliminates operating errors
- ▶ Wireless Bluetooth® data communication



tab@lign

- ▶ Shaft alignment via smart app (Android and Apple devices)
- ▶ For mobile devices (smartphone or tablet)
- ▶ Wireless Bluetooth® data communication
- ▶ Entry level device for the occasional user



PULLALIGN®

- ▶ Laser tool for fast and precise alignment of belt pulleys, belt drives and other force-transferring machine parts



Balancing

VIBXPERT® II Balancer

- ▶ Powerful and user-friendly device for 1- and 2-plane field balancing
- ▶ Easy one-hand operation
- ▶ Integrated vibration analyzer plus machine diagnostics
- ▶ Powerful reporting function
- ▶ Upgradeable the fully featured VIBXPERT® II vibration analyzer



Correction with Shims

PERMABLOC®

- ▶ Ready-made stainless steel shims
- ▶ Different dimensions and thicknesses
- ▶ Deburred for higher accuracy in machine alignment and to reduce the risk of injury



Shim case

- ▶ All-in-one: Different size of shims in one case
- ▶ Clear arrangement of shims and thickness marking
- ▶ Industrial protected case (IP67)



LAMIBLOC®

- ▶ Ready-made stainless steel shims
- ▶ 1 mm thick and easily peeled down in steps of 0.05 mm
- ▶ Available in 9 sizes

**MYLAR®**

- ▶ Cost-effective, lightweight shims
- ▶ Long-term corrosion-resistance
- ▶ 1 mm thick and easily peeled down in 0.1 mm layers to the required thickness



Alignment Software*

ALIGNMENT CENTER

- ▶ Preparation, analysis and organization of measurement files
- ▶ Generation of professional, application-specific reports

**ALIGNMENT RELIABILITY CENTER 4.0®**

- ▶ PC software for measured machine data management
- ▶ Real time communication via Cloud
- ▶ Library with adjustable templates for couplings, tolerances, etc.



*free software and firmware updates

Geometrical Measurements

CENTRALIGN® Ultra Standard

- ▶ Laser system for bore alignment
- ▶ Including patented universal pointer brackets
- ▶ Ideal for aligning of internal combustion engines, piston compressors and pumps as well as for alignment of extruders and stern tubes

**CENTRALIGN® Ultra Expert**

- ▶ Specially designed for steam and gas turbine alignment
- ▶ Precision measurement of internal turbine elements, such as bearing rings, turbine shells, inner jackets and housings



ROTALIGN® Ultra Hydropower

- ▶ Time-saving solution for plumbness and leveling of hydroturbines
- ▶ Precise, repeatable and documented measurements
- ▶ Wireless Bluetooth® data transfer



OPTALIGN® smart straightness

- ▶ Cost-effective solution for straightness measurements
- ▶ Straightness results for machine beds on both axes with only one measurement
- ▶ Ease of use
- ▶ Wireless Bluetooth® data transfer



LEVALIGN® Ultra iS

- ▶ Rotatable laser system
- ▶ For high-precision measurements of surface flatness, levelness and perpendicularity
- ▶ Fast and efficient measurements
- ▶ Typical applications: Machine foundations, segments of wind turbines, etc.



LEVALIGN® expert

- ▶ Easy flatness and levelness measurements
- ▶ Self-leveling spinning laser with 100 m measurement range
- ▶ One person operation
- ▶ Suitable for machine foundations, round/square flanges, etc.
- ▶ Comfortable operation via Bluetooth® remote control



INCLINEO®

- ▶ High precision electronic inclinometer for measurement of absolute or relative angles
- ▶ Rotatable housing allows measurement on surfaces with any inclination
- ▶ Measurement of flatness, evenness or parallelism of surfaces as well as plumbness of vertical shafts



PENTALIGN®

- ▶ System for high-precision measurements of plumbness and parallelism of axes and planes
- ▶ Perfect supplement for geometrical alignment systems (parallelism and perpendicularity of surfaces)
- ▶ Suited for measuring of tower segments or base plates

**Sensor brackets**

- ▶ Wide variety of high-quality and precise brackets for different alignment applications (e.g. magnetic mounts, chain type bracket or extra thin brackets)

**Induction Heaters****EDDYTHERM® portable**

- ▶ Portable induction heater
- ▶ For bearings up to 10 kg
- ▶ Magnetic temperature probe up to 180 °C

**EDDYTHERM® 2x**

- ▶ Induction heater with a swivel arm
- ▶ For small and midsize bearings up to 80 kg
- ▶ Fast and efficient heating
- ▶ Magnetic temperature probe up to 240 °C

**EDDYTHERM® 4x**

- ▶ Mobile and powerful induction heater for bearings, couplings, wheels and sleeves etc.
- ▶ For large workpieces up to 300 kg
- ▶ Heavy-duty casters for on-site mobility
- ▶ One person operation possible
- ▶ Magnetic temperature probe up to 250 °C





Services and Training

Worldwide support for our customers

The quality of our products and the wishes of our customers are of highest priority for us. For this reason, we established service centers worldwide that are quickly available to our customers at all times.

We also offer intensive, customized seminars to ensure that our systems and applications are used with the greatest possible expertise and efficiency.

We offer a variety of highly professional services as supplement to our product portfolio. Our experts support you in maintaining large and complex systems as well as in comprehensive alignment tasks, such as turbine alignment, shaft alignment, monitoring of position changes as well as geometrical alignment and roller alignment.



Roller Alignment

PARALIGN®

Our expert team uses PARALIGN®, the revolutionary PRUFTECHNIK system with inertial measurement technology for precise roller alignment, e.g. in the paper, process, metal, film and print industry. The result is better product quality and lower manufacturing costs.



Service, Training



Measure, analyse and reduce vibrations



Ensuring geometrical precision through high precision laser based expert tools



Remote machinery services and telediagnosis



Starting up PRUFTECHNIK products and providing technical support



Communicating knowledge and delivering customized training also in-house

PRUFTECHNIK

Reliable technology for all industry sectors

Products, processes, and services for condition monitoring and availability optimization of machines and assets are our business.

In other words, we help in ensuring fault-free machine operation and consistent high-quality production. This also includes

systems for automatic process control and quality assurance that are integrated into production assets and detect faulty parts during running operation.

PRUFTECHNIK offers solutions in the following areas:



Alignment Systems



Condition Monitoring



Nondestructive Testing



Service & Support

Laser measurement systems and services for optimum machine and asset alignment.

Vibration measurement systems for machine and asset monitoring, as well as services, e.g., for machine problem diagnostics.

Systems and services for quality assurance and process control in semi-finished goods production.

We offer professional services worldwide to support our customers in the areas of alignment and condition monitoring.



"Known consignor" in
airfreight traffic
with LBA (German Federal
Aviation Authority)
registration

www.pruftechnik.com

VIBROTIP®, VIBSCANNER®, VIBXPERT®, VIBCODE®, VIBREX®, VIBROWEB®, VIBNODE®, VIBRONET®, VIBGUARD®, VIBCONNECT®, OMNITREND®, ALIGNEO®, CENTRALIGN®, EDDYTHERM®, HYDRALIGN®, INCLINEO®, LEVALIGN®, OPTALIGN®, PARALIGN®, PERMALIGN®, PULLALIGN®, ROTALIGN®, sensALIGN®, intelliSWEEP®, and SHAFTALIGN® are registered trademarks of PRUFTECHNIK Dieter Busch AG. Copying or reproduction of the information in this document, in whatever form, is only permitted with express written approval by PRUFTECHNIK Dieter Busch AG. The information in the brochure is subject to change without notice, as PRUFTECHNIK products are continuously further developed. PRUFTECHNIK products are covered by issued or pending patents registered worldwide.
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