Hofmann.
Intelligent Balancing Solutions

Measuring and Correcting Runout

Horizontal Runout-Testing-Machines, Type UHR

Advantages

- High precision, independent measuring machine
  - V-block bearings with high repeatability
  - No blocking of production machines when measuring and correcting runout
  - Compensation of measuring faults, for example due to chucks used in lathes
- Ergonomic working place
  - Simple machine setup
  - High productivity due to fast changeover
  - Optimal access to shaft measuring tracks
- Measuring software Orbistar
  - intuitive interface
  - comprehensive data analysis and display
  - customizable protocol design

Application

- Measurement of shaft surface profile / runout with high resolution
- Measurement of
  - mechanical runout
  - total runout
  - electrical runout
    with precise angular reference
- Correction of the runout of shaft measuring tracks used for monitoring of shaft vibrations acc. to ISO 7919-1 or API 670

Description

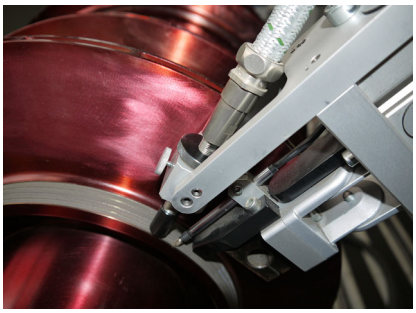
For vibration monitoring of gas and steam turbines or compressors in operation, the relative shaft vibrations will be measured by means of non-contact eddy current sensors. Those sensors are being positioned at special measuring tracks of the rotor in proximity to the bearing locations.

The measured vibrations are influenced by geometrical deviations of the measuring tracks as well as systematic measuring errors of the eddy current sensors. Thus, the runout of a measuring track must be within certain tolerances.

The Runout-Testing-Machines UHR use V-block bearings to support the rotor journals.

The mechanical runout is measured with a tactile sensor and simultaneously the total runout is measured with an eddy current sensor. The difference of those values is the electrical runout (systematic error of the eddy current sensor).

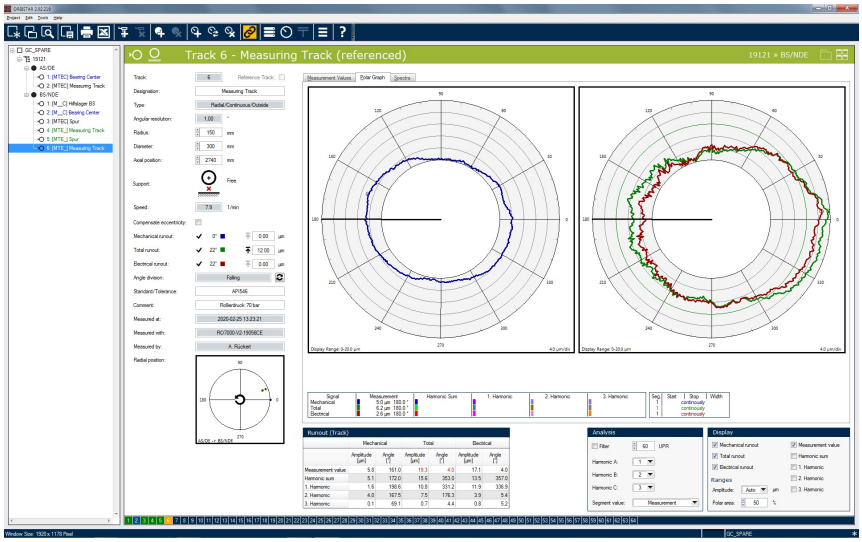
Rotor bending can also be detected with runout measurements at additional axial rotor positions. Axial runout can be measured with supplementary devices.



Measuring head with sensors

The precise V-block bearings can be adjusted to a wide range of journal diameters. They comprise low-friction plastic inserts which can be easily exchanged, when they show wear.

The rotors are driven without jerk at very low speeds using an end-drive. By pushing a button the rotor can be turned into the required angular position.



Measuring track analysis

Software

With the Runout-Measuring-System Orbistar the measuring parameters are setup and sensors are adjusted.

Obistar provides various options for analyzing, displaying, and protocoling measuring data.

A special feature of Orbistar is the compensation of the rotor movement within V-block bearings induced by runout deviations.

Technical data

Type	UHR	25	27
Max. total rotor weight	kg	8,000	20,000
Max. rotor diameter above machine bed	mm	2,200	2,200
Bearing distance min. / max.	mm	250 - 2,200	250 - 5,200
Journal diameter	mm	30 - 355	60 - 450
Diameter range of measuring head	mm	30 - 630	50 - 800
Measuring resolution			
- digital indicator	µm	0.1	0.1
- eddy current sensor	µm	0.1	0.1
- encoder	∢°	0.1	0.1
Speed (infinitely variable)	1/min	1 - 10	1 - 10
Power supply	V / Ph	400 / 3	400 / 3

Scope of supply

- 1 Machine bed
- 2 Measuring pedestals with axially and radially adjustable measuring head and V-block bearing
- 1 End drive with electrical control
- 1 Runout-Measuring-System Orbistar

Options

- Counter V-block and measuring head for overhung rotors with negative bearing load
- Separate measuring station with radially adjustable measuring head movable alongside the machine bed
- Measurement of axial runout
- Machine bed extensions
- Additional encoder with thrust stops for manually driven rotors
- Protocol printer

Portable solution

Portable Runout-Testing-System RO 7000 with Orbistar as alternative or supplementary solution

All information without obligation, subject to change without notice!

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