

PRUFTECHNIK ServiceCenter
In-situ balancing under
challenging conditions

- Analyze the cause of Vibration
- Improve the machine condition by fine balancing the rotor
- Increase plant availability.
- Vibration under control even at varying speeds.



High machine vibrations

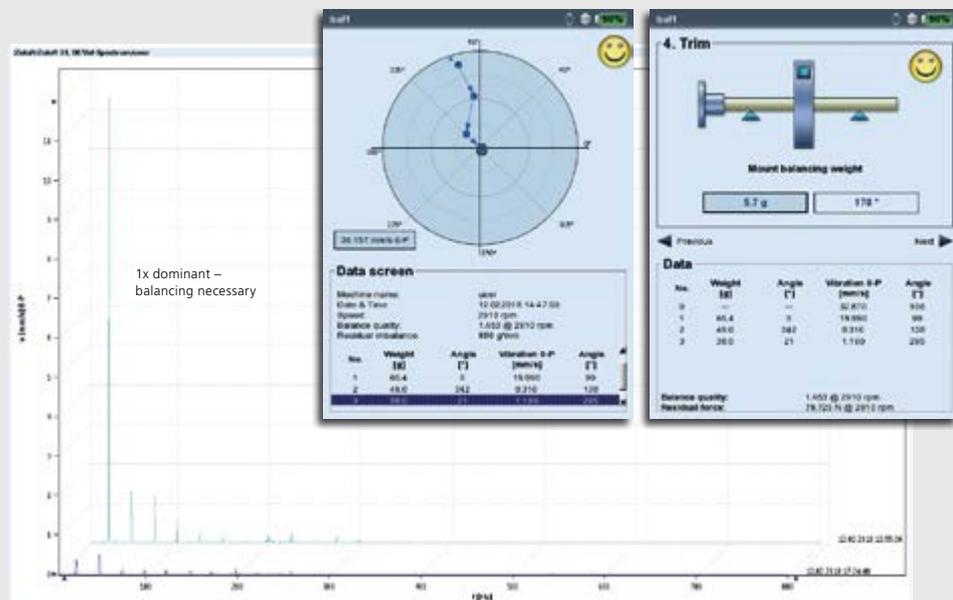
High machine vibration is an undesirable phenomenon. It not only affects the product quality but also operational safety as well as reduce the component life. Unbalance is the most common cause of increased vibration. Usually we find unbalance on blowers, fans, couplings, pulleys etc. Our goal is to limit stresses generated due to unbalance.

The service and diagnostic specialists at PRUFTECHNIK can identify and quickly eliminate unbalances, even under challenging conditions, for example with VIBXPERT®II. Unbalances and the balancing results are automatically compared with the evaluation standards for the balancing state of rotating, rigid bodies, DIN ISO 21940.

The frequency spectrums for abnormalities are measured and evaluated before executing balancing. As, it only makes sense to balance when the rotational frequency in spectrum is dominating. All results are also documented in a measurement reports as per customer request.

Does in-situ balancing consume more time?

The measuring itself only takes a few minutes. Most of the time is needed to start up and shut down the machines, let the machines stabilize, set balance weights and add on the rotor and cleaning deposits on the rotor. Specialists need a maximum of four balancing runs.



Picture above: Frequency spectra of the vibration velocity before and after the In-Situ balancing.

Picture on the title page: Supply air fan of the central air system of an administration building.

Causes of imbalances

Manufacturing defects

- Interference fitment error between shaft & fan.
- Uneven mass distribution.
- Rotor geometry uneven due to deform blades
- Blade cracks.
- Improper paint or coating
- Thermal stress (tension from welding)

Assembly error

- Faulty mounting of axial blades.
- Non-precision mounting and assembly of rotor with the shaft
- Rotor assembled on bend shaft.
- Imbalance on pulleys

Unbalance from operation

- Dust deposits on the impeller.
- Local corrosion
- Droplet erosion.
- Heat deformation.
- Wear by solids.
- Shifting unbalances
- Solid and liquid inclusions in the hub body

Imbalances from Repair

- Missing balance weights.
- Imbalance on the coupling.
- Improper paint or coating.
- Coating erosion.



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