

In-situ balancing of rotors

Balancing of machines without disassembling

In-situ balancing: Benefits

Without disassembling the rotor ("in-situ") many machines can be balanced which significantly improved vibration levels. Poor balancing is one of the main causes for premature machine failure. With only a minor break in operation in-situ balancing yields a well balanced, smooth-running machine with the following advantages for you:

- Low vibration ensures little load on bearings and supporting structure
- Wear und fatigue possibly leading to unpredicted failure can be prevented - longer operating time
- Vibration limits of acceptance tests, standards, and periodical tests can be reached more easily

Applications

Fans / ventilators

Due to adhesion of dust the balance of many fans deteriorates over time; even cleaning of fans cannot always reestablish good balance. Moreover, vibration levels of fans are often sensitive to poor balancing due to the low stiffness of their supporting structures. Here, in-situ balancing can improve balance and vibration immediately.

Mills, gas turbines and jet engines

Any machine can be balanced in-situ, if:

- Vibration measurements are possible
- a balancing mass can be mounted

How is in-situ balancing done?

In-situ balancing is a simple and proven method. A lot of machines can be balanced by causing only little downtimes. When carrying out balancing in-situ, all action is done with the machine assembled. For a successful balancing, only five steps a necessary:

1. Determination of vibration state "as-is"
2. Mounting of a little mass onto the rotor intending to perturb the system
3. Determination of the vibration state of the manipulated system
4. Knowing the vibration of the original and manipulated system a balancing software calculates the mass and angle needed to balance the system
5. Application of the final balancing mass and vibration measurement to check the success of the balancing process

To conduct two-plane balancing only one additional balancing cycle is needed.

Further services

In-situ balancing is part of our comprehensive services in the field of vibration assessment and condition monitoring:

- In-situ balancing according to ISO 14694
- Experimental modal analysis for solving

Fig. 2: Balanced fan with mounted balancing mass (red circle)

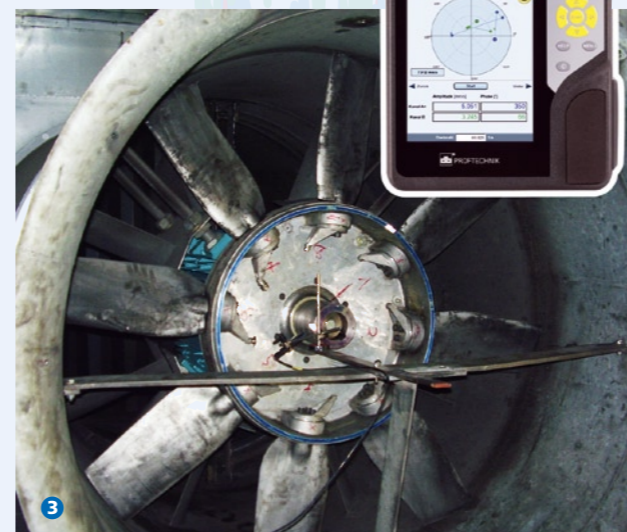


Fig. 3: In-situ balancing of a ventilator with the "VibXpert" analysis device

resonance problems

- On site troubleshooting for unresolved vibration problems
- Acceptance tests and condition monitoring of shafts with bush bearings
- Ball bearing diagnosis: Using acoustic emission techniques faults in ball bearings can be detected in an early state

Benefits

Focus of all our services is the immediate benefit for the person in charge of the machines:

- Prompt and clear reports and presentations
- Reliable statements to support decision making on further maintenance strategy
- Rapid response to orders and flexible work planning

Success stories

We have balanced several fans in power plants, all of which have improved vibration levels greatly.

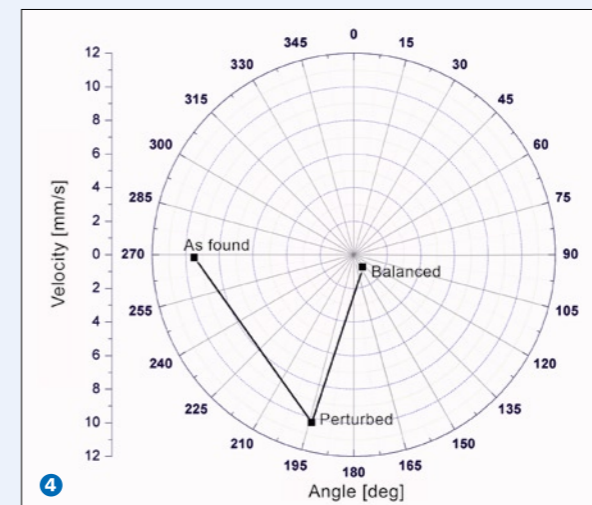


Fig. 4: The success of balancing as seen in a polar diagram: the closer to the origin the lower the vibration level

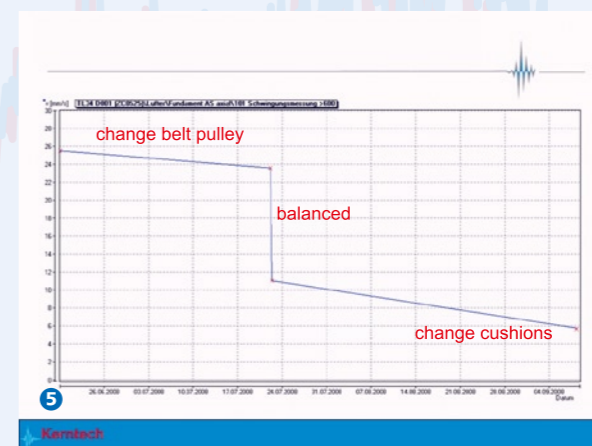


Fig. 5: Balancing as maintenance: the success of balancing is visible in the decline of vibration

How to find us...



Leave the A2 at the AS Bad Nenndorf exit (38) towards Barsinghausen and follow the B65. Leave the B65 and drive straight ahead following the L391. Turn to your right on Nienstedter Straße (L401) after about 3-4 kilometres. Follow this road for approximately 70 meters before turning left in the street Neue Rehre. Leave the Neue Rehre and turn to your left in the Steinradweg. You find your destination on the right side at the Forsthaus.

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References:

In particular we have many years of work experience with:

E.ON-Kernkraft
E.ON Kraftwerke
Vattenfall
MTU
VW
Sincor
Richter Chemietechnik



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