

Every Tenth Saves Money

Did you know that more than fifty percent of all pump damage is caused by misalignment? Laser measurement systems as the ones provided by world market leader PRUFTECHNIK do not only ensure a longer service life of seals and bearings, they also increase energy efficiency.

"Not many people know that more than 50 percent of all machine damage is caused by incorrect shaft alignment," says Marco Boëtius, Sales Engineer at PRUFTECHNIK Condition Monitoring. For somebody, who already successfully uses common alignment methods, such as straightedges, feeler gages, or dial gages, in his plants, this percentage may seem unusually high. However, the numbers speak for themselves.

What happens if the alignment is inaccurate? A misalignment of a few tenths of a millimeter leads already to machine overload and causes machine vibrations. Excess machine loading can result in bearing damage, seal wear, coupling damage, or machine vibrations that drastically reduce the service life of the different components and - in the worst case - cause expensive production losses.

Last but not least, the energy consumption increases. Thus, operating companies can save money with accurate shaft alignment.

It can be that simple

"The main problem of mechanical measuring methods is that they align the surface of two couplings only. If these surfaces have a paint or rust layer, they cannot be correctly aligned anymore", emphasizes Boëtius.

A laser system, however, determines the actual rotational axis by rotating the shafts – the surface quality has no influence. For example, a shaft can also be aligned using a dial gage.

The problem: If the measuring arms sag one tenth of a millimeter, measuring with a precision to the hundredth does not make sense. Rounding and readout errors accumulate quickly.

"Only an expert knows which errors occur and how to handle them to ensure a good measurement result. It looks much easier than it actually is", highlights the Sales Engineer.

However, using a laser measurement system does not require any expert skills.



Shaft alignment made easy with ROTALIGN® Ultra IS made by PRUFTECHNIK

keeps your world rotating

It only takes three steps to complete a measurement

1. Enter dimensions
2. Rotate shafts
3. Read out results

Done.

PRUFTECHNIK rewards the user with a smiley emoticon.

Laser alignment

The company from Bavaria offers a whole series of shaft alignment systems covering a wide area of applications – from simple coupling systems, frequent pumps and motors, to complex systems with multi-stage turbines and compressors.

The company is the world market leader in shaft alignment – and not without reason. *"PRUFTECHNIK invented laser alignment. We have several patents that simply make our equipment better"*, says Boëtius not without pride.

Thermal imaging of inaccurately aligned pumps shows impressively, how hot couplings, roller bearings and seals are. As a result, they wear significantly faster.

Unnecessary power guzzlers

With increased component wear, power draw and thus power consumption increase exponentially. At an offset of 0.75 mm, the pump already draws 1.5 % more power.

This may not sound too dramatically at first. However, this adds up to an impressive total for a year of non-stop operation. At an electricity price of 0.15 €/kWh, the

additional energy consumption adds up to 1,577 Euros for a relatively small 75 kW pump. If a pump is correctly aligned, e.g. with a misalignment of 0.2 mm, the energy loss is only 148 Euros per year.

"Savings per pump and year: more than 1,400 Euros. With three pumps in operation, the laser system pays for itself already after one year," says Boëtius.

"However, the energy savings are a positive side effect only. The main problem is seal and bearing damage. The significantly lower wear and less downtime are decisive."

The costs for replacing a seal can amount to up to 60 % of the procurement costs of a pump. The replacement of seals, bearings, couplings, and shaft, the additional power consumption and expensive production losses accompanying poor shaft alignment, can quickly leave a big hole in the operating company's pockets.

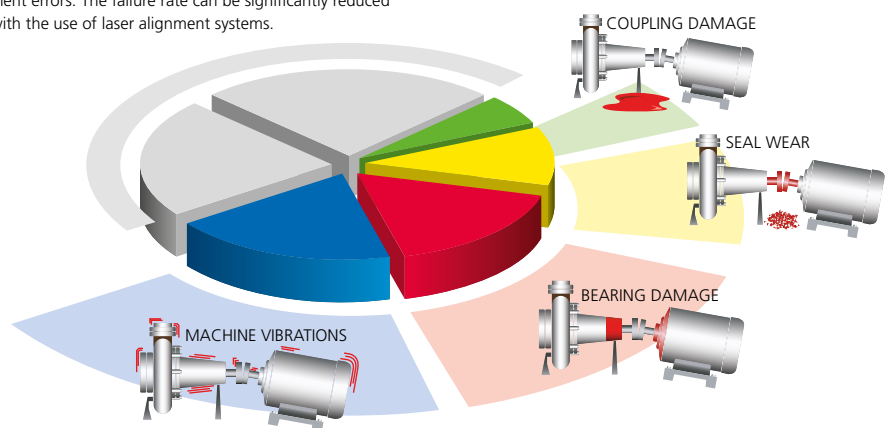
Real success stories

"The former Hoechst Group was able to reduce the number of pump repairs by 30 % by using our laser alignment systems. And the seals last significantly longer", explains the expert for laser measurement systems. As laser-optical shaft alignment can also lower the vibration level during machine operation, an oil refinery in Great Britain was able to reduce the number of vibration alarms from 700 to 400. As result, the mineral oil and natural gas company could also reduce the number of other failures and increase the service life of seals and bearings.

A sealing manufacturer achieved an amazing result: The average operating time between two consecutive machine failures was drastically extended with the help of accurate shaft alignment. When a machine runs with a relatively large offset, failure will definitely occur within a few months.

Hard to believe: If the offset is reduced from 0.5 mm to 0.05 mm, the average interval between failures improves from 4 to unbelievable 200 months. Hence, by a factor of 50.

More than 50 % of all pump damage is caused by alignment errors. The failure rate can be significantly reduced with the use of laser alignment systems.



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About PRUFTECHNIK

With groundbreaking technological developments in the field of laser and vibration measurement technology for condition monitoring and availability optimization of machines and plants, the PRUFTECHNIK Group, with its companies and partners in more than 70 countries, continues to set new standards.

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