Press information

For further information, please contact:

Samantha Joubert, Marketing Communications, SKF South Africa

Tel: +27 (0) 11 821 3602 / Fax: +27 (0)86 681 4342

Samantha.joubert@skf.com

For Immediate Publication

8th July 2016

Laser guidance

Laser alignment solves the problem of shaft misalignment quickly and easily.

It's estimated that more than one-third of all bearing failures – and up to half the cost of downtime – is caused by misaligned shafts in rotating machines and it's all for the sake of a few microns. Such a tiny misalignment – either angular or offset – can introduce vibration, wear and failure in bearings and seals. It affects just about every type of machine, from motors and gearboxes to pumps and couplings.

Ensuring accurate shaft alignment will help to overcome this – and engineers are increasingly choosing to replace traditional methods such as straight edges and dial indicators with more accurate laser alignment systems.

Shaft misalignment comes in two forms: angular – in which the two shafts coupled together do not line up in parallel; and offset, in which the shafts are parallel but not in a straight line. In either case, the machine's efficiency is reduced. There is also a third form of misalignment – a combination of both angular and parallel.

For this reason, it's critical to align the shafts, and this can be done in a number of ways. The cheapest and simplest – though also the least accurate – is the straight edge method, in which the couplings are aligned by laying a straight edge on top of them. Feeler gauges are used to measure the gap at the top and bottom of the coupling.

Dial indicators - which measure any offset between the halves of a coupling - can be used as the basis of several alignment methods, including: rim and face, which is generally applied to systems where only one shaft can be rotated; cross dial, which mounts two dial indicators 180 degrees apart to take shaft-to-shaft readings; and the similar reverse dial, which differs only in that the indicators are in the same plane.

In each case, dial indicators give accurate readings but can be complicated to use. Unless indicator stems are precisely positioned, errors can occur. Errors can also be introduced through coupling backlash, looseness and indicator bracket sag.

The latest laser alignment systems can help to overcome these problems, as they are highly accurate and easy to use. In principle, they work the same way as dial indicators. The system is mounted on both shafts, or to both sides of the coupling, and the shaft assessed in three separate positions. The laser measures the distance to the reference bar in each position, as it would with dial indicators. Misalignment causes this distance to change, and can be quantified.

Laser systems boast several advantages over traditional shaft alignment methods, including higher accuracy and greater ease of use. In general, they are intuitive to use – especially when used in conjunction with an app – and produce results that require no calculation.

2/…Laser guidance

These systems can be imbued with wireless communication to improve instrument handling. And, while more expensive than their traditional counterparts, this will quickly be offset by the reduction in a host of common problems: increased friction (and energy consumption); premature failure of bearings, seals, shafts and couplings; excessive seal lubricant leakage; and high levels of vibration and noise.

An example is the SKF shaft alignment tool TKSA 11, which incorporates a special app that guides a technician through the stages needed to correct the imbalance. It indicates what shims are needed to correct vertical alignment, and which movements are needed to make horizontal alignment corrections. A live view helps to achieve accurate positioning quickly. Results can then be shared for reference keeping or operator-driven reliability programmes. Variants of the system – for harsh environments, or with enhanced measurement and reporting – are also available.

If upgrading to a laser alignment system, it is tempting to look at the top of the range and a model that has wide functionality. But while laser systems are more expensive than traditional systems, they are available from entry level to high end.

Before purchasing a system, buyers should identify the exact applications where it is to be used – and draw up a list of requirements. Buying an expensive system that can handle virtually every eventuality is likely to prove a costly mistake, because technicians must be skilled in using it. A typical alignment task involves a horizontally placed electric motor with a pump or fan, joined using a single coupling. This needs to be quick and easy to use, with minimal set-up time – which a well-chosen laser alignment system will satisfy.

SKF is a leading global supplier of bearings, seals, mechatronics, lubrication systems, and services which include technical support, maintenance and reliability services, engineering consulting and training. SKF is represented in more than 130 countries and has around 17,000 distributor locations worldwide. Annual sales in 2015 were SEK 75 997 million and the number of employees was 46 635. www.skf.com

® SKF is a registered trademark of the SKF Group.

™ BeyondZero is a trademark of the SKF Group.

By: *Sonia Laverick*
Laverick Media Communications cc
Tel: +27 (0) 11 0400 818/ Fax: +27 (0) 86 671 6836
lavmedia@iafrica.com / www.laverickmedia.co.za