



Checking and correcting shaft alignment on turbomachinery with professional measuring equipment

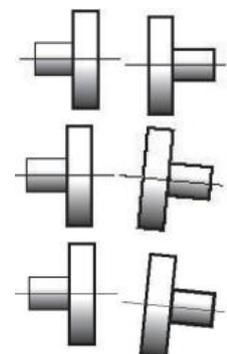


When setting up and connecting machines and when misalignments are detected or suspected in the course of inspections, professional test equipment helps to correctly align the rotary axes of the coupled components. The alignment of the shafts to each other can change due to different influences during the operation of the system, even if the installation is correct. Therefore, the alignment of the axes should be checked in detail if there are any conspicuous occurrences on the machines, such as increased noise development and stronger vibrations. Even small deviations of the axes lead to increased friction, poorer efficiency and wear on shafts, bearings and gear parts. When inspecting, the distance and the angle for two directions must be measured for the shaft axes of the connected

components at the connection point. Ideally, no distance or angle is measured horizontally or vertically and both shaft axes are in line.

Convenient measuring systems with laser sensors make it easy for the user to carry out measurements and alignment with intuitive menu navigation and easy-to-understand graphical representations on the device display. The sensors are mounted on the shafts and not only enable very precise measurements but also an immediate verification of success while the machines are still aligned to each other. The position of the machine to be adjusted can either be corrected separately horizontally and vertically or, in the case of stable shaft positions, also in one step for both directions.

Here you can see the possible deviations that apply both to the vertical direction (visible in the side view) and to the horizontal direction (visible in the top view). The upper picture shows a parallel offset, the middle one an angular offset and the lower picture shows a situation with parallel offset and angular offset at the coupling point of the two shafts.



Some shaft alignment tools offer the possibility of previously defining the permissible tolerances for the parallel offset and the angular offset in the tool. This is done either by entering pre-defined numerical values or by selecting the shaft speed which is then assigned a standard tolerance for parallel offset and angular offset in the device.

In a professionally equipped laser measuring device, it can be simulated by calculation, among other things, by which distance disc thicknesses the height position of one machine can be adjusted to that of the other. The user enters the disc thickness for the rear and front machine feet separately and immediately sees on the display below these values how the discs affect the height and angle offset of the shaft axes.

Special machine functions can also include tilt foot measurement, alignment of machine hoists (with automatic calculation of values for the machine to be aligned), measurement of plumb lines, flatness and squareness and alignment of cardan or drive shafts. A hole-centre-axis programme can also be used to check the straightness of holes and bores. Applications include measurements on the inner rings of ball bearings with fixed or variable diameters or on the stators of machines. With the multi-point function, it is possible to measure at up to 36 points at any angle for each hole.

Powerful shaft alignment tools with special additional functions make it much easier for the user to check and align turbomachinery. Both during initial installations and during operation, axis deviations can be precisely detected and corrected. In condition monitoring, critical areas can be checked non-destructively with these test instruments and a timely reaction can be taken when critical values are reached.

More information on this and similar instruments can be found here: https://www.pce-instruments.com/english/measuring-instruments/test-meters/vibration-meter-kat_40108.htm

Company contact:

PCE Instruments UK Ltd
Unit 11 Southpoint Business Park
Ensign Way, Southampton
Hampshire
United Kingdom, SO31 4RF
Email: info@pce-instruments.co.uk
Homepage: <http://www.pce-instruments.com>

Press contact:

PCE Deutschland GmbH
Ludger Droste
Im Langel 4
59872 Meschede
Germany
ldr@pce-instruments.com

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