



Shorten outages and increase efficiency



Optimize your power performance with precision alignment.

POWER GENERATION

Precision alignment is a fundamental requirement for efficient, reliable operation of turbo machinery used in power generating stations everywhere. Internal elements such as seals, bearings, diaphragms and rotors must be set on a common rotational centerline to assure trouble-free operation. From excessive vibrations to leaky seals and bent rotors, misalignment is responsible for 50% of the breakdowns experienced with rotating machinery, making proper alignment a critical issue for owners, operators, equipment manufacturers and service providers.

The precision of optics

Fossil fuel, hydro and nuclear stations around the world depend on Brunson optical alignment systems every day. And for good reason: optical alignment allows you to evaluate a machine's geometric relationships such as straightness, level, parallelism, squareness and flatness between various components – all in a manner that is easy to see and understand.

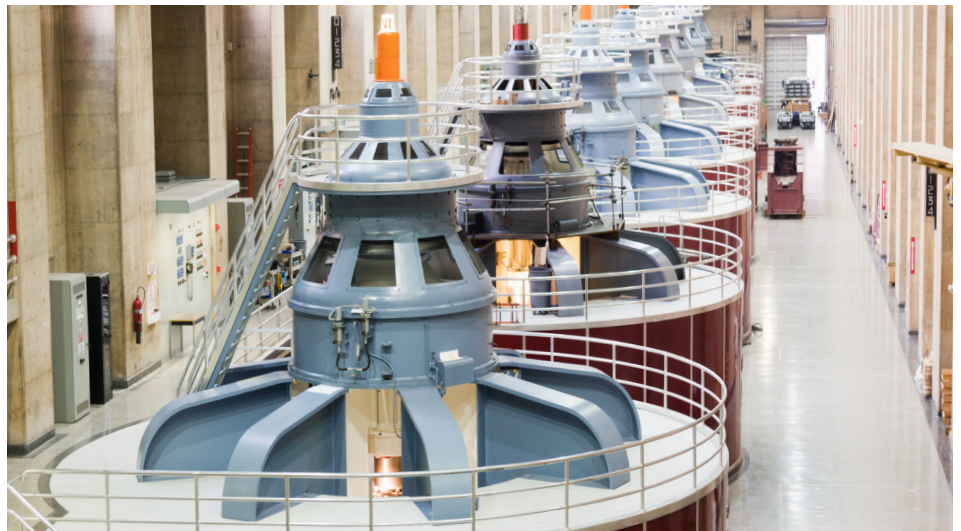
measuring scales mounted to the desired surfaces.

All measurements are made using proven optical techniques that you can see, understand and verify. It's simple and very accurate.

Aligning critical components

Establishing a rotational centerline to measure straightness of internal

“...misalignment is responsible for 50% of the breakdowns experienced with rotating machinery”



How it works

A precision optical instrument called an alignment telescope is mounted to a portable base. The “scope” is aligned with reference targets, defining an accurate and repeatable optical centerline. When horizontal and vertical planes are required, a jig transit is mounted on the same portable base. This instrument has a telescope mounted on two mutually perpendicular axes, allowing it to “sweep” the respective planes while

machine elements is commonly known as bore sighting. In this application, an alignment telescope is mounted to a portable base at one end of the machine. The centerline is defined by orienting the instrument to targets in near and far bearing housings. Subsequent measurements are taken at the remaining elements to define deviations from the optical centerline. For example, bore sighting a turbine may require inspection and adjustment of support bearings, nozzles, diaphragms and inner casings. Optical

alignment is also effective for vertical centerlines to measure the main bearings and wicket gates bores in hydro stations.

When planar measurements are necessary, a jig transit mounts on a portable base where it can “see” scales seated against the desired surfaces. The instrument will optically sweep a plane over the machine surface, measuring scales to qualify the surface for level, plumb, flatness or changes from off-line to running (OL2R) conditions. Planar applications include leveling sole plates, machine bases and thermal growth studies.

Proven technology

Power generation machine trains have multiple components requiring

precise mechanical alignment. Optics are a preferred method for evaluating machine bases, sole plates and setting rotational centerlines. Finding secondary problems affecting performance like thermal growth, pipe strain, foundation settling and soft foot are also ideally suited for optical alignment.

Accurate results

Turbomachinery installations often require big things to be measured within small tolerances. Alignments of ± 0.001 inch over 17 feet are possible – that’s 3 times thinner than a human hair!

Reliably tough

Optical instruments are specifically designed to provide high precision

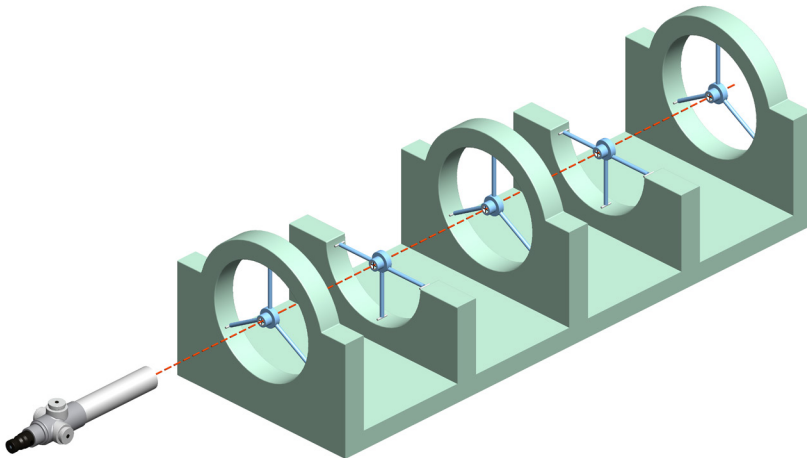
measurements in challenging environments like power generating stations. Free your workspace of traditional wires and mounts that create tripping hazards and require sag calculations. There’s no complex software to troubleshoot or issues with ambient light and temperature. Just instruments that perform for decades to their original manufactured tolerances.

Manageable operation

Optical alignment principles are easy to implement because your maintenance people already apply them mechanically. You’ll appreciate the easy set-up, precise operation and consistent performance of the optical alignment measurement process.

Return on investment

Precision alignment is a core requirement for rotating machinery, so it’s not a surprise when our customers tell us our systems pay for themselves within months, with cost benefits continuing to grow year after year. The system is simple and the results are precise. Alignments are easily managed by your own people on your schedule.



Using optical equipment to achieve precision alignment is a core requirement for rotary power generation systems. The alignment system is proven and the results are precise.

Benefits

- Increase turbine efficiency with accurate internal alignment
- Reduce outage downtime
- Reduce premature failures in bearings, seals, shafts and couplings
- Optimize the off-line to running (OL2R) condition
- Reduce damaging vibrations and piping strain
- Identify root causes such as foundation settling and soft foot
- Beneficial for fossil fuel, hydro and nuclear stations

Precision optical alignment solutions for power generation

We have the right solution for you

Brunson offers a full line of optical alignment tools that can be customized to your plant needs. Contact us today and let us help you realize shortened outages and increased efficiency.

Experience you can trust

Alignment services

Let our alignment services team help you. Our team of expert field service professionals has decades of experience servicing industrial machinery. We understand how to work to your schedule in all kinds of environments. Contact us to discuss a field service engagement and learn how precision alignment can help maximize your throughput and quality.

Comprehensive training

Experience the same success our field service teams enjoy through our expert training and application courses. We provide optical alignment training at our Kansas City facility, as well as customized on-site training to meet your specific needs.

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