ROTALIGN® Ultra Hydropower
Alignment of hydro turbines with a flip

- Shaft static plumbness
- Shaft runout
- Thrust bearing levelness
- Thrust bearing corrections
Plumbness and level dedicated to hydro turbines

Traditional methods to measure the alignment condition of a hydro turbine, although workable and reasonably accurate, are very time-consuming; it may take as long as a week to determine turbine misalignment before overhaul.

ROTAALIGN® Ultra Hydropower, the latest application on the Ultra platform, in combination with INCLINEO® the high precision electronic inclinometer, delivers all important alignment parameters:

- Shaft static plumbness
- Shaft runout
- Thrust bearing levelness
- Thrust bearing corrections

These allow quick and precise identification of turbine alignment condition.

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<th>Highlights</th>
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<td>Quick identification of turbine alignment condition</td>
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<td>Precise, repeatable and documented measurements</td>
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<td>Shortened overhaul time</td>
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<td>Minimized human error impact</td>
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<td>Wireless communication</td>
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<td>Integrated PDF reporting capability</td>
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<td>High measurement quality through readings interpolation</td>
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This allows a quick measurement of shaft inclination, by flipping INCLINEO® through 180° on the shaft. Shaft static plumbness can be measured by positioning INCLINEO® at opposite spots on any shaft reference surface. The center of run-out is determined by rotating the shaft with INCLINEO® on a fix position. The mean levelness of the thrust bearing is obtained by averaging absolute readings. ROTAALIGN® Ultra Hydropower integrates all these functions in a dedicated measurement system; hydro turbine alignment with a flip.

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**INCLINEO® technical data**

- Measurement range: ±1°
- Resolution: 0.003° [1”]
- Limits of error at calibration [Ta = +22°C]: ±0.05% full scale, ±0.03% read out
- Limits of error at measurement [Ta = +22°C]: ±0.05% full scale, ±0.06% read out
- 8-hour zero-point drift: ±0.04% full scale
- Digital Filter/Average: 3rd order with 0.3 / 1 / 3 Hz options
- Temperature range: Storage: -40°C to 85°C, Operation: -10°C to 60°C
- Display: LCD display, 132 x 32 pixel with LED backlight
- User interface: Three key operation
- Wireless communication: Embedded RF module with LED indicator
- External interface: RS-232 (serial) for computer and sensor, Connector for dial gauge
- Power supply: 2 AA batteries
- Battery status indicator: 3 LEDs
- Data storage: up to 999 measurements

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**With a flip**

ROTAALIGN® Ultra Hydropower allows a quick measurement of shaft inclination, by flipping INCLINEO® through 180° on the shaft. Shaft static plumbness can be measured by positioning INCLINEO® at opposite spots on any shaft reference surface. The center of run-out is determined by rotating the shaft with INCLINEO® on a fix position. The mean levelness of the thrust bearing is obtained by averaging absolute readings. ROTAALIGN® Ultra Hydropower integrates all these functions in a dedicated measurement system; hydro turbine alignment with a flip.