

# 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.

ROTALIGN® 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.



Thrust bearing correction screen



Shaft plumbness is calculated by taking the INCLINEO® measurements at opposite positions

## Highlights

Quick identification of turbine alignment condition

Precise, repeatable and documented measurements

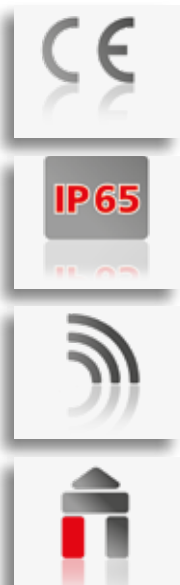
Shortened overhaul time

Minimized human error impact

Wireless communication

Integrated PDF reporting capability

High measurement quality through readings interpolation



## INCLINEO® technical data

Measurement range	±10°
Resolution	0.0003° [1"]
Limits of error at calibration [Ta = 22°C]	0.005% full scale 0.03% read out
Limits of error at measurement [Ta = 22°C]	0.005% 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

## With a flip

ROTALIGN® 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. ROTALIGN® Ultra Hydropower integrates all these functions in a dedicated measurement system; hydro turbine alignment with a flip.



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