

**Guide bearing measurement**

**Generator statorform Measurement**

**Generator rotorform Measurement**

**Shaft inclination**

**Shaft movement**

**Flatness of generator brake**

**Impeller housing form**

**Shaft straightness**

# HYDROBOX

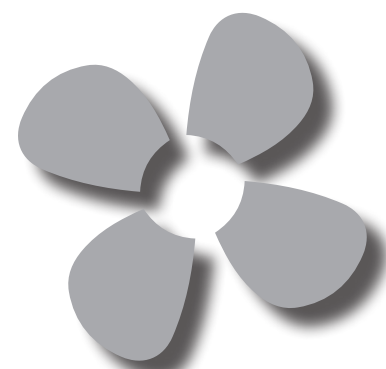
Alignment of hydropower turbines.  
Quick, accurate and easy with  
automatically generated reports.  
The Hydrobox system ensures  
availability of your machines





# HYDROBOX

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**Hydrobox is a portable, powerful and comprehensive service instruments.**

A tool for the maintenance organization at the machine owner or to service companies who want to ensure trouble-free operation of hydropower turbines.

The measurement gives results on the alignment and geometry of the shaft in a 3D wire model. Other measurement data collected in the same sweep are the shape of the air gap between the stator and rotor, shaft movement, generator brake flatness and turbine impeller position in housing.

The system is equally suitable for troubleshooting and audit work as for recurring preventive checks.

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## DIMENSION

It user friendly interface in the main unit guides the user through the set-up process.

Two air gap sensors measure the gap between the stator and rotor mounted in an adjustable fixture for easy adjustment of the width of the air gap.

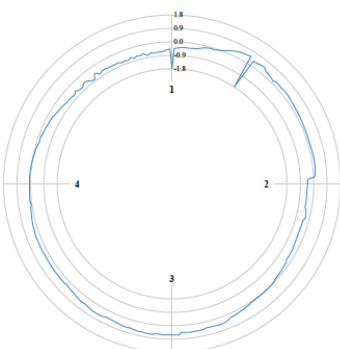
Touch-free sensors for the axles, the generator brake and the turbine impeller are temporarily attached with a magnetic stand. Machine dimensions are easily added on the large touch display before measurement.

## MEASURE

Possibility to measure up to 3 guide bearings at the same time.

Data is collected with high sampling frequency from all system sensors as the turbine is rotated.

The wireless sensors are mounted on the rotor and in the turbine chamber collects that sample data in parallel with the others. With high accuracy and precision, the system saves data and creates a unique measurement file per measurement.



Ovre sylinder formvarden			
Form	Ampl (mm)	Ampl rel (%)	Fas (°)
Excentricitet	0.36	1.44	176.61
Ovalitet	0.35	1.41	39.6
3-kantighet	0.22	0.89	46.02
4-kantighet	0.01	0.03	55.29
5-kantighet	0.01	0.03	37.55
6-kantighet	0.04	0.16	23.1

Ovre sylinder min max peak

## RESULT

All performed measurements can by in a few seconds directly after the measurement, create a clear report in PDF directly in the main unit.

The report that is generated summarizes all carried out measurements and results. The provides a clear and complete picture of the machine condition and health.

Is there a reason for actions and corrections? Or can the machine been put back into operation?

Measurement data	Info	Unit
Stock Games Measurement	Measurement of games in the control bearings	um
statorform Measurement	The shape of the stator relative to the rotor in the air gap	Eccentricity, oval, triangle and square
Rotor Shape Measurement	The shape of the rotor is relatively stator in the air gap	Eccentricity, oval, triangle and square
Shaft tilt	The inclination of the shaft string relative to solder	mm/m
Shaft Movement	Shaft movement in the steering bearings	um
Flatness brake path	The flatness of the brake circuit	um per angle
The shape of the impeller chamber	The position of the impeller i chamber	um

Technical data	
Number of channels	20st
Maximum number of axes	4st.
<b>Nodes</b>	
-Fixed connection nodes	3st
-Wireless connection nodes	2st
<b>Sensores</b>	
-Shaft and bearing bearing sensors	13st, 21/5000 inductive, measuring range[0..6]mm.
-Sensor brake path	1st, inductive, measuring range [0..20]mm.
-Air gap sensor stator / rotor	2st,inductive, measuring range [0..4]mm.

