

Product Name :
Computerized Kaplan Turbine Test Rig

Product Code :
NLAB-MECHANICALAB220016



Description :

Computerized Kaplan Turbine Test Rig

Technical Specification :

The developed experimental setup helps to investigate the characteristic behavior of a simple-regulated Kaplan turbine during operation. The trainer is provided with a closed water circuit with tank, submersible pump and throttle valve for adjusting the flow rate. The angle of attack of the rotor, and thus the power output of the turbine, is changed by adjusting the guide vanes. The turbine is loaded with a wear-free eddy current brake.

The speed is captured by means of an inductive, non-contact position sensor at the turbine shaft. For determining the turbine power, the eddy current brake is equipped with a force sensor for torque measurement. The pressures at the inlet and outlet of the turbine, the temperature and the flow rate are recorded with sensors. The recorded measured values are displayed digitally and processed further in a PC. The PC is used to calculate the power output data of the examined turbine and to represent them in characteristic curves.

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FEATURES

Determination of power output curves at different speeds

Hydraulic power output

Mechanical power output

Determination of the head

Determination of turbine efficiency

Investigation of the influence of the guide vane position on power output and efficiency

SPECIFICATION

Kaplan turbine

Max. Output: 1000W

Max. Speed: 3700min⁻¹

Distributor

8 guide vanes, adjustable: -15°...45°

external Ø: 120mm,

internal Ø: 60mm

Rotor, 4 blades, fixed

external Ø: 120mm,

internal Ø: 60mm,

pitch: 80mm

Submersible pump with motor

Max. Flow rate: 250m³/h

Max. Pump head: 11m

Nominal power: 3,1kW

Tank: approx. 350L

Measuring ranges

Temperature: 0...100°C

Pressure (at turbine inlet): 0...1bar rel.

Pressure (at turbine outlet): -1...0,6bar rel.

Flow rate: 13...200m³/h

Torque: 0...10Nm

Speed: 0...6500min⁻¹

400V, 50Hz, 3 phases

Naugralabequipments

Website: www.naugralabequipments.com, **Email:** sales@naugralabequipments.com

Address: 6148/6, Guru Nanak Marg, Ambala Cantt, Haryana, India. **Phone:** +91-9896600003