



FLUID MECHANICS

AUTONOMOUS KAPLAN TURBINE – COMPUTERIZED ELECTRICAL BRAKE



DL DKH044

The system can simulate a small scale Kaplan turbine. It is especially designed for the study and the demonstration of the behavior and the characteristics of this type of turbine.

The turbine housing is partially transparent so that the turbine operation driven by the water flow and the inlet guide fin for flow regulation can be observed. The impeller fins of the turbine are adjustable so the pitch angle can be manually modified.

The turbine works autonomously thanks to the system complete of water tank, pump and all necessary instruments based on a movable trolley.

TRAINING OBJECTIVES

- Characteristic curves of the turbine:
 - Torque - speed ($M - n$)
 - Brake power – rotational speed ($P_e - n$)
 - Performance – rotational speed ($\eta - n$)
 - Torque - U ($M - U$)
 - Brake power - U ($P_e - U$)
 - Performance - U ($\eta - U$)
- Curves of Iso-yield.

TECHNICAL DESCRIPTION



This computerized system allows to display all variables on the integrated workstation.

Requirements:

Power supply: 230V/50Hz.



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TECHNICAL DATA

Brake Type:

- Electric brake

Turbine

- Type: Kaplan
- Number fins: 4
- fins angle: manually adjustable
- Guide fins

Framework

- The system is made of an anodized aluminum structure, with a 130 litres' tank and a pump where the necessary turbine flow is generated

Electronic components:

- Pressure transducer
- Differential pressure gauge
- Tachometer
- Load cell for torque
- Data-acquisition board

Accessory:

Computer with software