FLUID MECHANICS

DE LORENZO

AUTONOMOUS PELTON TURBINE – COMPUTERIZED ELECTRICAL BRAKE

The trainer can simulate a small scale Pelton turbine, especially designed for educational purposes.

The turbine housing is partially transparent so that it can be viewed the turbine operation driven by the water inertia. The water jet propels the turbine through the recoil principle.

The system includes also a built-in regulating valve at the water inlet which grants the possibility to work with different flows.

The braking system through the electric brake allows the functioning at different revolutions.

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

DL DKH041

TRAINING OBJECTIVES

- Characteristic of the curves of the turbine:

  o   Torque - speed (M -n).
  o   Brake power – rotational speed (Pe-n).
  o   Performance – rotational speed (η- n).
  o   Torque - U (M- U).
  o   Brake power - U (Pe-U).
  o   Performance - U (η-U).

- Curves of Iso-yield.

TECHNICAL DESCRIPTION

This computerized system allows to display the inlet turbine pressure, the flow rate, the braking torque and all variables on the integrated workstation

Requirements:
Power supply: single phase 230V/50Hz.

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TECHNICAL DATA

Brake Type:
- Electric brake

Turbine
- Type: Pelton.
- Number of fins: 16
- Impeller diameter: 124 mm
- Bucket depth: 14 mm
- Jet diameter: 10 mm
- Shaft diameter: 16 mm
- Rated speed: 1.900 rpm

Framework
- The system is made of an aluminum structure with tank and 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