

Product Name :
Steam Turbine Power Plant Setup

Product Code :
Steam Power0003



Description :

Steam Turbine Power Plant Setup

Technical Specification :

The experimental has been designed specifically for engineering education in the field of power plant technology, and driving and driven machines. It offers a wide range of experiments to learn about the operational processes in a steam power plant.

An oil-fired once-through steam boiler produces wet steam that is turned into superheated steam by means of a super heater. The boiler's short heat-up time means rapid steam generation is possible. Load is applied to the turbine with a generator. The turbine output is determined by speed and torque. Downstream of the turbine, the steam is condensed and returned to the boiler. The feed water circuit is fitted with a complete water treatment system, which consists of a re generable ion exchanger and chemical dosing. Sensors record the temperature, pressure, speed, and flow rate at all relevant points. The measured values can be read on digital displays. At the same time, the measured values can also be transmitted directly to a PC via USB. The data acquisition software is included. The control panel includes a clear process schematic of the plant. The system is monitored and controlled by a programmable logic controller (PLC).

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The experimental plant is built in accordance with statutory safety regulations and includes the mandatory safety facilities. The steam generator is type tested and does not require specific permissions.

The plant can optionally be operated with the cooling tower.

FEATURES

Steam power plant and its components

start-up, operation and shut down of a steam power plant

closed steam-water circuit with feed water treatment

among others, determining:

boiler efficiency

mechanical/thermal efficiency of the turbine

condenser efficiency

SPECIFICATION

Steam generator

steam output: 200kg/h at 11bar

fuel consumption: 12L/h

heat-up time: 8min

pressure: 13bar

Super heater

power: 7kW

Single-stage axial turbine with Curtis wheel and hydraulic speed regulator

power: max. 1,5kW at 3000min⁻¹

Water-cooled condenser

cooling capacity: 98kW

transfer surface: 2,5m²

Measuring ranges

temperature: 9x 0...400°C, 2x 0...100°C

flow rate: 0...167L/min (cooling water)

pressure: 3x 0...16bar, 1x ±1bar

torque: 0...20Nm

speed: 0...4000min⁻¹

400V, 50Hz, 3 phases

400V, 60Hz, 3 phases, 230V, 60Hz, 3 phases

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