Tesca Mini Steam Turbine Power Plant 32466 is designed as a miniature modern day power plant for educational purpose. A pump supplies water from a feed tank to a small gas fired boiler. The saturated steam can be superheated by an electric super-heater (optional). The steam is throttled to single stage turbine. Exhaust from the turbine is condensed in a water cooled condenser. Condensate is collected in a graduated beaker and returned to feed water tank by a pump. A small DC generator is connected to the turbine by a belt, and electrical load is applied. A mechanical dynamometer is provided for measurement of turbine mechanical output. The unit requires outside water supply.
Instruments are provided for monitoring and controlling of plant operation and performance as well as for safety. The unit is on a steel frame with adjustable footings.
Instruction manual is also included.

Specifications

Boiler

Type: Fire tube vertical boiler
- Equivalent evaporation: Approx. 7 kg/h steam
- Maximum working pressure: 5 kg/cm2 (0.49 MPa).
- Boiler accessories: Steam separator, manual feed pump, safety valve, level gauge, and low level alarm

Fuel: Liquefied Petroleum Gas (LPG) .
Feed water tank: Stainless steel with level gauge

Steam turbine
- Type: Single stage impulse turbine
  : Single nozzle

Power output measurements: Mechanical brake dynamometer
Electrical power system: DC generator with resistive load

Condenser:

Shell and tube type Plant output at maximum working
- Without super heater: Mechanical approximately 10 W, Electrical approximately 4 W
- With super heater (optional): Mechanical approximately 15 W, Electrical approximately 6 W

Safety features

Note: Specifications are subject to change.

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- Turbine speed limit.
- Emergency switch.

Accessories:
Electric condensate transfer pump and boiler cleaning kits Measuring instruments

- Pressures gauge: 1 ea.
- Flow meters: 2 ea.
- Graduated beaker and stop watch for condensate measurement
- Voltage and current digital display
- Software for data display and analysis by computer (separately supplied).
- Specifications
- Power supply: 220 V, 1 Ph, 50Hz. Other power supply is available on request.

Experiments

- Thermodynamic process
- Fuel consumption
- Power generation
- Efficiencies for boiler, turbine, condenser heat transfer and overall plant.
- Effect of temperature on turbine efficiency (optional).
- Effect of super-heated steam on efficiency (optional).
- Heat balance and energy utilization.
- Rankine cycle efficiency.

Required Services

- Electrical supply: Single-phase/Three Phase, 220V/440V/50 Hz
- Optional Computer (PC)

Note: Specifications are subject to change.

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