TH 120 MINI STEAM POWER PLANT

Photograph includes optional equipment

GENERAL DESCRIPTION

This is a small low cost miniature power plant designed for educational purpose.

A hand feed pump supplies water from a feed tank to a small gas fired boiler. Steam is throttled to a single cylinder, double acting reciprocating engine. A small DC generator is connected to the engine by a belt and electrical load is applied. Exhaust from the steam engine is condensed in a water cooled condenser. Condensate is collected and measured for steam rate.

Instruments are provided for monitoring and controlling the plant operation and performance as well as for safety.

Instruction manual is also included.

EXPERIMENT CAPABILITIES:

- Fuel consumption
- Efficiencies for boiler, engine and overall plant.
- Condenser heat transfer coefficient.
- Heat balance and energy utilization.
- Ranking cycle efficiency.

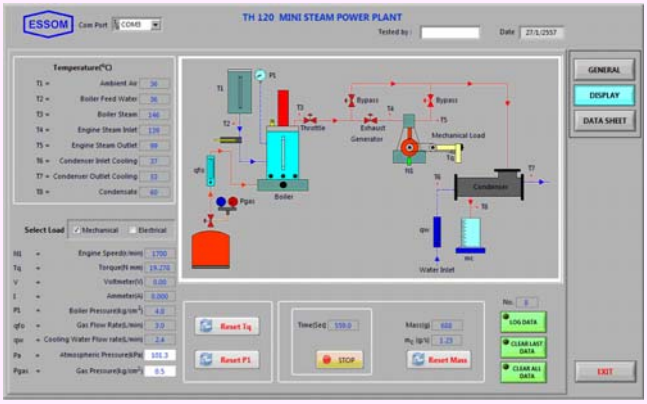
TECHNICAL DATA

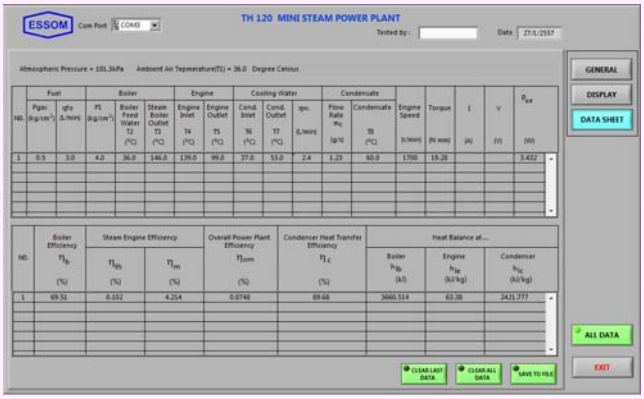
- Boiler
  - Type : Fire tube vertical boiler
  - Equivalent evaporation : Approx. 7 kg/h steam
  - Maximum working pressure : 5 kg/cm^2 (0.49 MPa)
- Boiler accessories : Steam separator, manual feed pump, safety valve, level gauge and low level alarm
- Fuel : Liquefied Petroleum Gas (LPG)
- Feed water tank : Stainless steel with level gauge
- Feed pump : Hand operated
- Steam engine
  - Type : Single cylinder, double acting
  - Plant output at maximum working pressure
    : Mechanical, approximately 7 W
    : Electrical, approximately 2 W
- Power output measurement : Mechanical brake dynamometer
- Electrical power system : DC generator with resistive load
- Condenser : Shell and tube type
- Measuring instruments:
  - Pressure gauge : Boiler steam outlet
  - Flow meters : 2 ea.
  - Spring balance and weights for dynamometer torque
  - Graduated cylinder and stop watch for condensate measurement
  - Voltage and current digital display.
- Accessory : Boiler cleaning kits
- Software for data display and analysis by computer (separately supplied).
- Power supply : 220 V, 1 Ph, 50Hz. Other power supply is available on request.

ESSOM CO., LTD. *508 Soi Taksin 22/1 Taksin Rd. Bukkalo Thonburi Bangkok 10600 Thailand*
Tel. +66 2476 0034 Fax. +66 2476 1500 E-mail : essom@essom.com,http://www.essom.com

OPTIONAL EQUIPMENT

- TH 100-021 Digital flue gas analyzer for O_2 and CO contents
- TH 101-031 Pressure digital display
- TH 120-003A Torque digital display instead of spring balance and weight
- TH 120-005EBA Mini Electric Boiler instead of LPG boiler and LPG system. By using electric boiler.
- TH 120-010A Electric feed pump
- TH 120-014 Condenser cooling unit
  The unit is to cool condenser cooling water and make this equipment to be self-contained instead of using outside water supply. It is completed with transfer pump.
- TH 120-032 Fuel weight totalizer for fuel flow rate measurement
- TH 120-035 Cooling water flow sensor
- TH 120-037 Condensate weight totalizer for steam rate measurement
- TH 120-050 Computer Interface
  Sensors with computer interface unit for key data acquisition instead of analog data measuring instruments.
- Other optional equipment, please contact manufacturer (essom@essom.com)





Net (unpacked) shipping dimensions WxLxH : 76 x 90 x 155 cm
Net weight : Approx. 90 kg