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PRODUCT DATA SHEET
Catalogue reference for product evaluation

Phone: +91 7015865225 **Email:** info@scienticoindia.com **Web:** scienticoindia.com **Address:** #71, Industrial Area, Ambala Cantt, Haryana, India

Steam Power Plant with Steam Engine | ThermoFlux - 7087

Category: Thermodynamics Lab Equipment · **Country of Origin:** India

Product Overview

The Steam Power Plant with Steam Engine ThermoFlux - 7087 is a bench-scale laboratory trainer demonstrating the complete steam power cycle using a gas-fired boiler (NG/LPG, 6 kg/hr), a single-cylinder piston steam engine (max. 5 W, max. 1200 min^{-1}), a DC generator (max. 3.18 W at 6000 min^{-1}), and a water-cooled condenser. This steam power plant with steam engine measures temperature across eight channels (-100 to 400°C), pressure (0 to 6 bar), gas flow (up to 5 LPM), water flow (up to 7 LPM), voltage (0 to 10 VDC), and current (0 to 250 mA), with all values displayed on integrated unit displays. Safety is provided by a digital electronic pressure switch and a mechanical pressure safety valve rated at 4 bar. Optional LabVIEW-based DAQ software is available for Windows-based data acquisition.

View this product online: https://scienticoindia.com/product/steam-power-plant-with-steam-engine-thermoflux-7087/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Steam Power Plant with Steam Engine ThermoFlux - 7087, Technical Specifications

Parameter	Value
Boiler Fuel	NG/LPG
Boiler Steam Capacity	6 kg/hr
Boiler Safety Valve Rating	4 bar
Steam Engine Type	Single-cylinder piston
Steam Engine Maximum Power	5 W
Steam Engine Maximum Speed	1200 min^{-1}
Generator Type	DC motor
Generator Maximum Power	3.18 W at 6000 min^{-1}
Electrical Consumers	Light bulbs
Condenser Type	Water-cooled
Temperature Measuring Range	8x -100 to 400°C
Pressure Measuring Range	0 to 6 bar
Gas Flow Rate Range	Up to 5 LPM
Water Flow Rate Range	Up to 7 LPM

Parameter	Value
Voltage Measuring Range	0 to 10 VDC
Current Measuring Range	0 to 250 mA
Safety Device 1	Digital pressure switch (electronic)
Safety Device 2	Pressure safety valve (mechanical)

Technical Data

Steam Engine

Parameter	Value
Type	Single-cylinder piston
Maximum Power	5 W
Maximum Speed	1200 min^{-1}
Cylinders	1

Generator

Parameter	Value
Type	DC motor
Maximum Power	3.18 W at 6000 min^{-1}

Boiler

Parameter	Value
Fuel	NG/LPG
Steam Capacity	6 kg/hr
Safety Valve Rating	4 bar

Measuring Ranges

Parameter	Value
Temperature	8x -100 to 400°C
Pressure	0 to 6 bar
Gas Flow Rate	Up to 5 LPM
Water Flow Rate	Up to 7 LPM
Voltage	0 to 10 VDC
Current	0 to 250 mA

Safety Devices

Parameter	Value
Electronic Safety	Digital pressure switch
Mechanical Safety	Pressure safety valve

Key Features

Key Features

- **Steam Power Plant with Steam Engine Configuration:** Gas-fired boiler, single-cylinder piston steam engine, DC generator, water-cooled condenser, feed water tank, and feed water pump
- **Boiler Fuel:** NG/LPG
- **Boiler Steam Capacity:** 6 kg/hr
- **Boiler Safety Valve:** 4 bar
- **Steam Engine:** Single-cylinder piston, max. 5 W, max. 1200 min^{-1}
- **Generator:** DC motor, max. 3.18 W at 6000 min^{-1}
- **Electrical Consumers:** Light bulbs
- **Condenser:** Water-cooled
- **Temperature Measurement:** 8x channels, -100 to 400°C
- **Pressure Measurement:** 0 to 6 bar
- **Gas Flow Rate:** Up to 5 LPM
- **Water Flow Rate:** Up to 7 LPM
- **Voltage Measurement:** 0 to 10 VDC
- **Current Measurement:** 0 to 250 mA
- **Safety Devices:** Digital electronic pressure switch and mechanical pressure safety valve
- **Display:** All measured values readable on integrated unit displays
- **Software:** Optional LabVIEW-based DAQ software, Windows compatible

Experiments

- Demonstration of the function of a steam engine
- Familiarisation with the components of a steam power plant and how they interact
- Recording the vapour pressure curve
- Effect of re-evaporation and backfeed of cold water
- Determining consumption, the amount of steam generated, boiler efficiency, and the capacity of the condenser

Construction and Design

The Steam Power Plant with Steam Engine ThermoFlux - 7087 is a bench-scale trainer integrating all main components of a complete steam power cycle. The gas-fired boiler operates on NG or LPG, generates steam at 6 kg/hr, and is protected by a mechanical safety valve rated at 4 bar and a digital electronic pressure switch. Steam is supplied to a single-cylinder piston steam engine where a piston and crank mechanism convert vapour pressure into mechanical energy at up to 5 W and 1200 min^{-1}. A DC motor acting as a generator produces up to 3.18 W at 6000 min^{-1} from the mechanical output. Light bulbs serve as electrical consumers. Exhaust steam is condensed in a water-cooled condenser. A feed water tank and feed water pump return condensate to the boiler.

Eight temperature sensor channels cover -100 to 400°C across all relevant measurement points. Pressure is measured from 0 to 6 bar. Gas flow rate is measured up to 5 LPM and water flow rate up to 7 LPM. Generator voltage (0 to 10 VDC) and current (0 to 250 mA) are measured and displayed. This steam power plant with steam engine displays all measured values on integrated displays within the experimental unit, with optional PC-based DAQ software available for extended data acquisition and analysis.

Software

ThermoFlux - 7087 Software (Optional)

- Developed in the National Instruments LabVIEW environment
- Designed specifically for data acquisition with this apparatus
- Measures, processes, and stores experimental results on a PC
- A set of electronic sensors is included when the software option is selected
- Compatible with any Windows operating system

Scope of Delivery

- 1 experimental unit
- 1 instructional manual

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.

- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q1: What are the main components of the Steam Power Plant with Steam Engine ThermoFlux - 7087?
The unit includes a gas-fired steam boiler (NG/LPG, 6 kg/hr steam capacity), a single-cylinder piston steam engine (max. 5 W, max. 1200 min^{-1}), a DC generator (max. 3.18 W at 6000 min^{-1}), a water-cooled condenser, a feed water tank, and a feed water pump. Light bulbs serve as electrical consumers.

Q2: What safety devices are fitted to this steam power plant with steam engine unit?
Two safety devices are fitted: a digital electronic pressure switch and a mechanical pressure safety valve. Both monitor boiler operation to ensure safe running conditions. The boiler safety valve is rated at 4 bar.

Q3: How is electricity generated in this unit?
The single-cylinder piston steam engine converts steam energy into mechanical energy via a piston and crank mechanism. A DC motor acting as a generator then converts this mechanical power into electricity, rated at a maximum of 3.18 W at 6000 min^{-1}. Light bulbs are connected as electrical consumers.

Q4: What parameters are measured and displayed on the unit?
The unit measures and displays temperature across eight channels (-100 to 400°C), pressure (0 to 6 bar), gas flow rate (up to 5 LPM), water flow rate (up to 7 LPM), generator voltage (0 to 10 VDC), and generator current (0 to 250 mA).

Q5: Is DAQ software included as standard?
No. The ThermoFlux - 7087 DAQ software is optional. When selected, it includes the required electronic sensors, processes and stores experimental data on a PC, and runs in a LabVIEW environment on any Windows operating system.

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