P7669 MINIATURE STEAM POWER PLANT

P7669R Reciprocating Steam Engine & P7669T Steam Turbine

FEATURES

- Demonstration model steam system representative of Industrial Power System
- Self-contained complete teaching facility
- Low cost introduction to steam studies
- Simply installed
- Comprehensive instrumentation
- Can be purchased with either analogue monitoring or digital data acquisition

EXPERIMENTAL CAPABILITY

- Demonstration of steam power generation cycle
- Thermal and plant efficiency
- Heat balance and energy utilisation
- Power generation
- Fuel consumption

DESCRIPTION

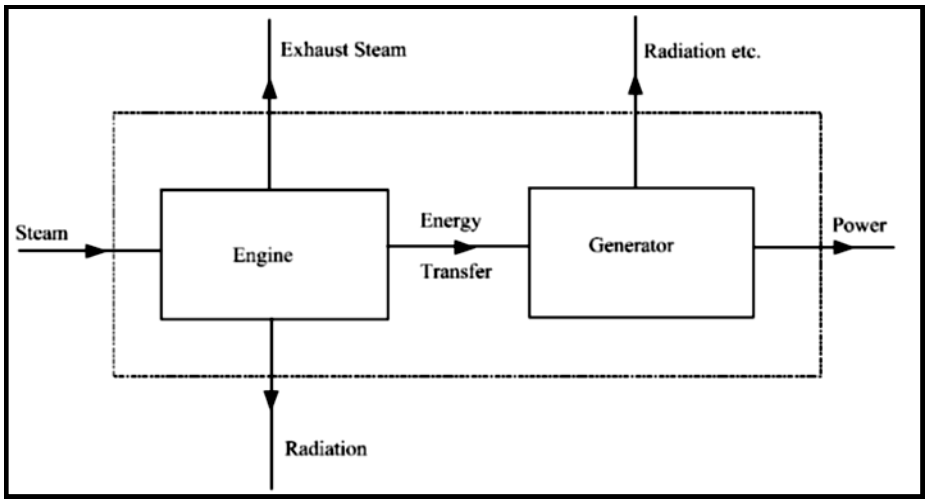
Cussons P7669 Miniature Steam Power Plant is the smallest in our comprehensive range of Steam Power Products and has been designed to allow teaching establishments to give students an appreciation of steam and its properties, without the larger capital investment normally required.

A small gas fired boiler supplies steam to a single cylinder double-acting reciprocating engine which drives, by means of a small DC generator with adjustable resistive loading.

The exhaust steam from the engine is condensed in a water cooled condenser, then collected by the beaker provided.

Instrumentation to measure various temperatures throughout the plant, steam pressure, fuel and cooling water flow, together with voltage and current loading on the DC generator, is provided.

It is thus possible to perform a series of tests on the plant, to ascertain boiler and engine characteristics as well as overall plant performance. All components are mounted on a self-supporting framework.



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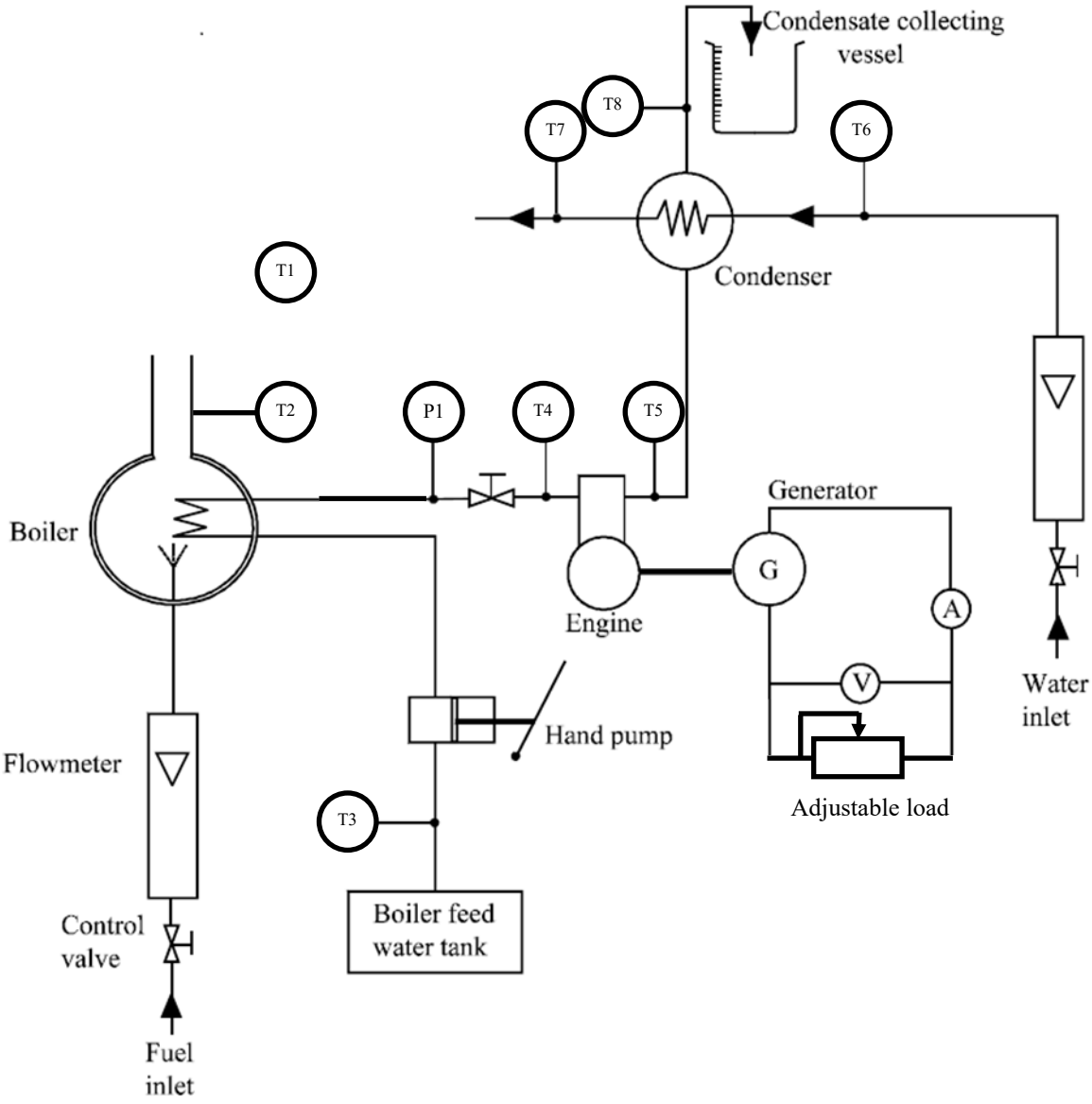

TENDER SPECIFICATION

- GAS FIRED MODEL STEAM BOILER – with a design pressure of 4 bar g and an equivalent evaporation of 24.5 kg steam per m³ gas consumed from and at 100°C.
- BOILER FEED PUMP (hand operated) and FEEDWATER TANK.
- **P7669R STEAM ENGINE** – single cylinder double acting reciprocating model steam engine. Bore 19.05 mm, Stroke 19.05 mm. Nominal power output 3.3 watts at 1200 rpm.
- **P7669T STEAM TURBINE** – single rotor stage model steam turbine. Diameter 75 mm
- CONDENSER UNIT – shell and tube atmospheric type condenser. Condensate collection by metal beaker. Minimum cooling water flow rate 0.5 litres/min
- **Available with either analogue monitoring or digital data acquisition (DAQ).**

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INSTRUMENTATION

Analogue instrumentation comprises of:

Pressure:	Boiler steam via 0-6 bar pressure gauge.
Temperatures:	Ambient air, Boiler feed water, Boiler steam, Engine steam inlet, Engine steam exhaust, Condenser water inlet, Condenser water outlet, Condensate.
Flowmeters:	Fuel-float in tube, Cooling water-float in tube
Voltmeter:	0-10V DC
Ammeter:	0-1A DC

Digital instrumentation (CUDAS) comprises of:

Pressure:	Boiler steam via 0-6 bar pressure transducer.
Temperatures:	Ambient air, Boiler feed water, Boiler steam, Engine steam inlet, Engine steam exhaust, Condenser water inlet, Condenser water outlet, Condensate.
Flowmeters:	Fuel-turbine Cooling water-turbine
Voltmeter:	Analog input
Ammeter:	Shunt resistor analog input

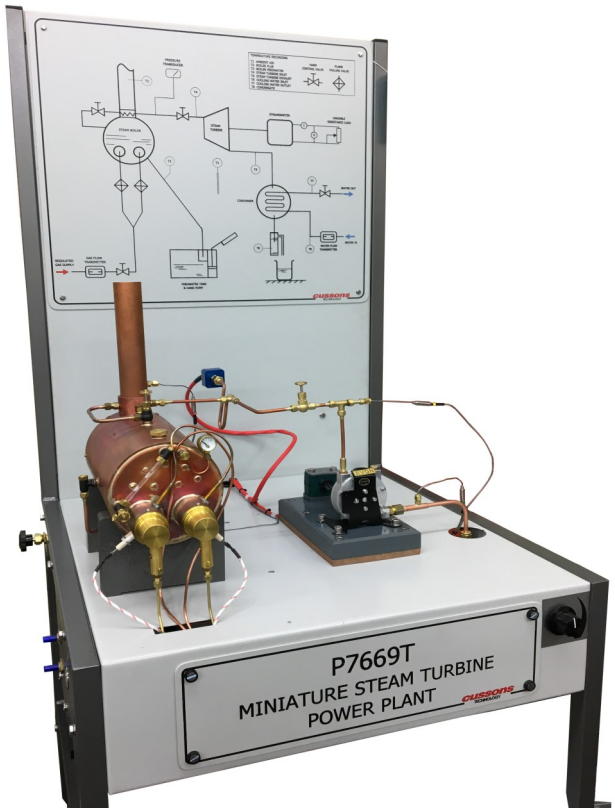
All necessary interconnecting pipework, valves and fittings, together with electrical cabling, are included. All equipment is supplied on a fabricated steel frame with components and instrumentation mounted at working height. Operating and instruction manual available in English but can be translated into other languages as an optional extra.

TECHNICAL SPECIFICATIONS

The results obtained on this 'miniature' steam power plant must not, of course, be taken as representative of those which exist on a 'large' scale steam plant used for the efficient generation of electric power. This model plant has been designed to give an insight into the factors involved in the calculations for plant operation but no attempt has been made to create a system having efficiencies representative of large scale systems.

DIMENSIONS AND WEIGHTS

Length: 79cm
Width: 79cm
Height: 196cm
Gross weight: 140kg
Nett weight: 50kg



INSTALLATION REQUIREMENTS

Fuel: Natural Gas as standard. Propane, butane or coal gas options available. Please note that fuel requirements must be specified in all enquiries.
Water: Mains water supply.
Electric: 220V, 50/60HZ required for DAQ version

Head Office
Cussons Technology Limited
102 Great Clowes Street,
Manchester.
M7 1RH England
Tel: + (44)161 833 0036
Fax: + (44)161 834 4688
E-mail: sales@cussons.co.uk

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