

TH 150 MINI GAS TURBINE POWER PLANT



Photograph includes optional equipment

GENERAL DESCRIPTION:

The turbine is an educational mini gas turbine power plant with a radial flow compressor and axial flow turbines, gear box, generator, and electrical loads as in modern gas turbine power plant.

The first stage is a hot gas generator. Inlet air through an orifice flow measuring device is compressed by a single stage radial flow compressor. The turbine is motor started and runs on Jet A fuel. Fuel is injected by a fuel pump and ignited in the combustion chamber providing hot gas for a single stage axial flow turbine which in turn drives the compressor. The hot gas is discharged axially to a larger power turbine on the second shaft and exhausts to atmosphere. The gas generator runs on ceramic bearings. A fan is provided for cooling the engine.

The power turbine output shaft is connected to the gear box. An AC generator is connected to the gear box. Electrical power output is from lamp loads.

An Electronic Control Unit (ECU) controls the basic turbine operation. Additional instruments are provided for monitoring and controlling the plant operation and performance.

A touch screen computer with an interface unit, and software are provided for speed and load control, data display and analysis, and to assist the ECU.

Safety features include shut down for gas generator or power turbine over speed, and power turbine entry over temperature shut down. The unit is floor standing with removable supports.

TYPICAL TESTS:

- Understanding the thermodynamic process.
- Torque vs speed.
- Input power, output power and plant efficiency.

TECHNICAL DATA:

- Gas generator engine construction.
 - Diffuser : High strength aluminium.
 - Combustion chamber : Stainless steel.
 - Turbine wheel : Vacuum cast inconel.
 - Compressor : High grade aluminium alloy.
- Running fuel : Jet A or kerosene with jet oil.
- Power turbine construction.
 - Turbine wheel : Vacuum cast inconel.
 - Interstage guide vane : Stainless steel.
- Gear box.
 - Type : Planetary.
 - Lubrication : Jet A.
- Generator. : 220V, 1 ph, 50 Hz.
- Gear box and generator connection : Synchronous belt.
- Lamp loads : 600 W.
- Accessory :
 - Engine exhaust duct : 2 ea.
 - Engine cooling fan : 1 ea.
 - Ear muffs : 2 ea.
 - Jet oil : 1 l.
 - Barometer : 1 ea.
- Sensors
 - Temperatures : ambient air, diffuser exit, gas generator turbine entry, power turbine entry and exit.
 - Pressures : Diffuser exit, power turbine entry and exit and power turbine entry and exit.
 - Speeds : Gas generator, gear box output shaft and generator.
 - Voltage and current.
 - Fuel flow rate.
 - Air flow rate : Differential pressure at inlet orifice.
- Power supply : 220V 1Ph 50Hz. Other power supply is available on request.

OPTIONAL EQUIPMENT

- Air cooled eddy current dynamometer.

Net (unpacked) shipping dimensions WxLxH : 100 x 125 x 110 cm
Net weight : Approx. 165 kg.

