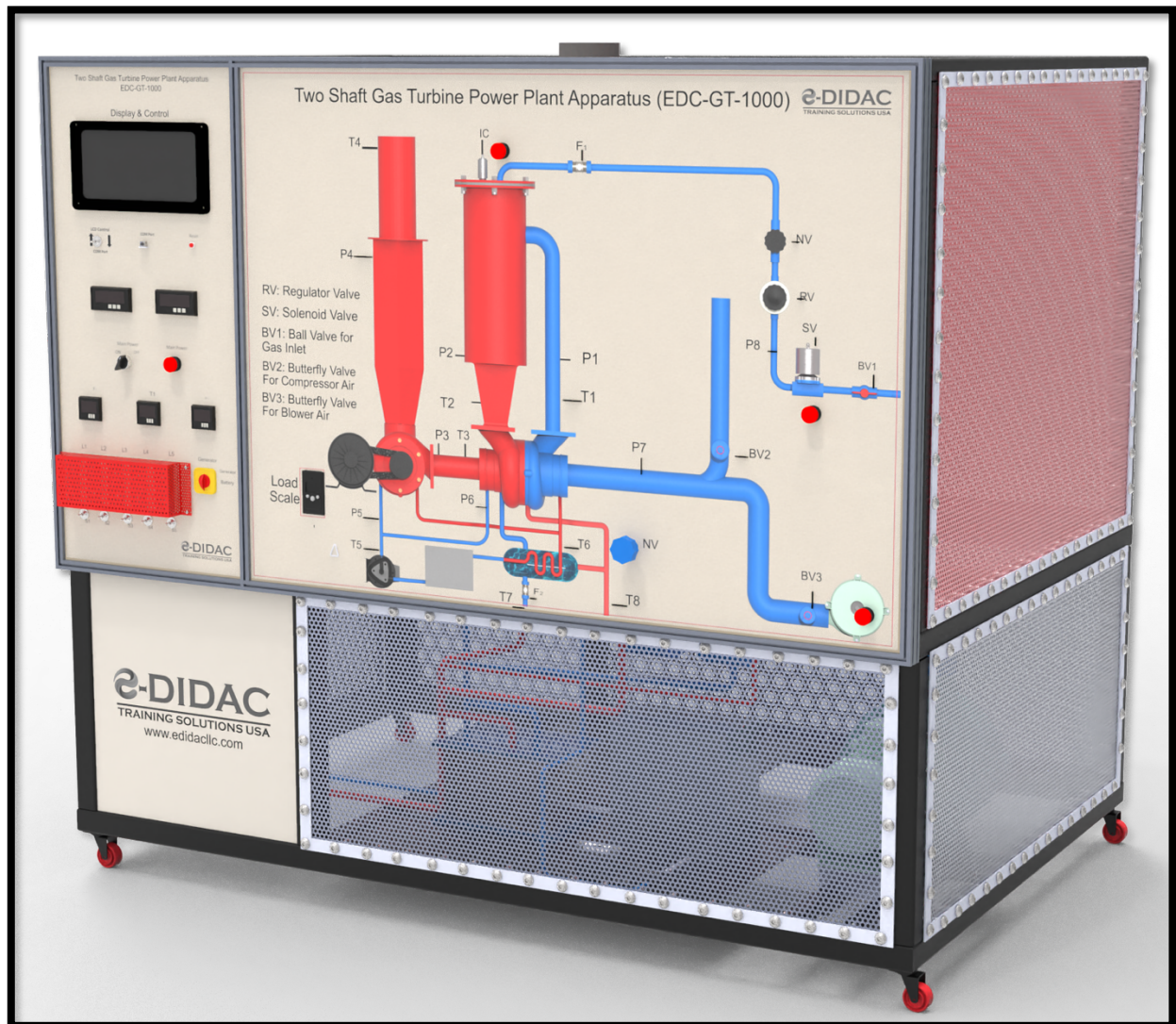


## Two Shaft Gas Turbine Power Plant Apparatus (EDC-GT-1000)

### EXPERIMENTAL DATA:

- Study of construction and working of Gas turbine.
- Determining of the shaft power.
- Determining of the gas turbine efficiency.
- Determining of the specific fuel efficiency.
- Determining of power output with respect to different input parameters.
- Determining of the system efficiency.
- Safety systems in operation of a gas turbine.



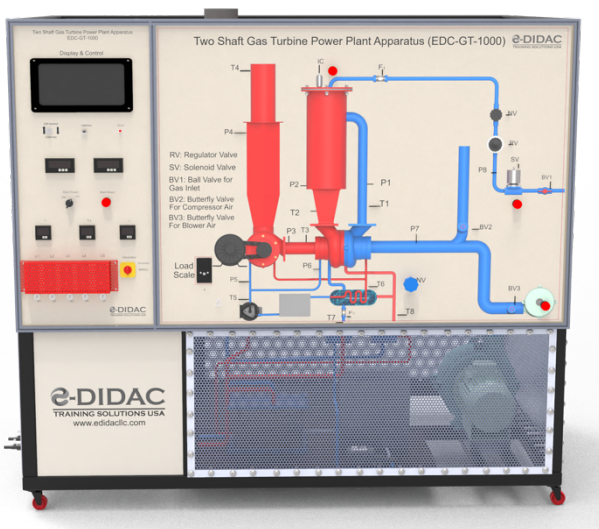
## DESCRIPTION:

This Two Shaft Gas Turbine Unit investigates the behaviour during operation of a system with two independent turbines in a two-shaft arrangement and production of electrical power from mechanical power. One turbine (the high-pressure turbine) drives the compressor and the other turbine (the power turbine) supplies the effective power. Changes in power output in the power turbine have no influence on the compressor, which is able to keep running at optimum speed at the best efficiency point. The trainer includes the compressor, tubular combustion chamber and high-pressure turbine, fuel system, starter and ignition system, lubrication system, power turbine, generator, and measuring and control equipment with Touch LCD Display.

The gas turbine is started with the aid of a start-up fan. When the air enters the combustion chamber, only part of it is used for combustion. This air is decelerated with the aid of a turbulence generator such that the added fuel is able to burn with a stable flame. The greater portion of the air is used to cool the combustion chamber components, and is mixed into the combustion gases at the end of the combustion chamber. This reduces the gas temperature to the permissible inlet temperature of the high-pressure turbine. The gas flows out of the combustion chamber into the single-stage radial high-pressure turbine and discharges a portion of its energy to the turbine. This energy drives the compressor. In the power turbine, the gas discharges the remaining portion of its energy, which is converted into mechanical energy and drives a generator. The electrical energy generated is dissipated using electrical bulbs as load.

The unit has Touch LCD display for visualization of process and the measurements. The speed, temperatures, and pressures and the mass flow rates of the air and fuel are recorded and displayed using sensors. Typical characteristic variables are determined.

A PC data acquisition (EDSM-1000S) is also available (Optional).



## TECHNICAL DATA:

- **Gas generator turbine**
- Compressor turbine
- High pressure turbine
- Speed range: 60000 to 110000 rpm
- Max. mass flow rate of air: 0.1kg/sec
- Max. Fuel consumption: 10kg/hr
- Max. Compression ratio: 2:1
- **Power Turbine:**
- Low pressure turbine
- Speed range: 15000 to 35000 rpm
- Mechanical Power: 1500W
- Electrical Power: 1000W
- **Start fan:**
- Driven by an electrical motor, for starting the turbine and gas sweep. This fan is automatically computer controlled and it is used to refrigerate.
- **Instrumentation:**
- Temperature at different stages, Speed of gas turbines, electric power, inlet air velocity, fuel flow rate and pressure at different stages.

## Load Unit

- Resistive Load Unit
  - Digital display of voltage, current and power
  - Current and Voltage sensor
  - Switches for Load control
  - Self-contained HMI software with Touch LCD. This LCD controls the functions of the equipment. It also displays the data of the sensors installed in the equipment. This eliminates the need of expensive PC to interface with the equipment.
- A PC data acquisition (EDSM-1000S) is also available (Optional).

## DIMENSIONS AND WEIGHT:

L x W x H (mm):1600 x 1200 x 1800

Weight: 280 kg

## SCOPE OF DELIVERY:

- 1 x EDC-GT-1000
- 1 x Instructional Manual

