STEAM TURBINE SIMULATOR
Mod. STVT/EV

INTRODUCTION

Most of the world's electricity production is met by steam turbine systems, in which it is important to optimize both power production with multistage turbine and thermal efficiency to consume the least possible amount of fuel.

The STVT/EV simulator studies the operation of a subcritical base system with overheating of the steam that enters the turbine, where it generates electric power, and returns to the thermal generator after being condensed and pumped.

To increase the thermal efficiency, numerous technological devices have been added over time, especially with regard to steam generator, which will be analyzed in the simulation.

TRAINING PROGRAM

The simulator is proposed to facilitate the understanding of the operation of the different cycles based on the use of steam turbines. It will be possible to study:

- Thermodynamics conditions:
  - 4 possible types of steam turbine-based cycles
  - Construction of plant scheme
  - Efficiency calculations
  - Real-time visualization of the cycle parameters (Temperature - Entropy diagram)
  - Different operating conditions of the steam generator
- Electrical parameters:
  - Evaluate the active power and reactive power required by users in OFF design conditions
  - Power absorbed by the compressor
 - Power supplied by the turbine

TECHNICAL SPECIFICATIONS

The simulator consists of:

- Desktop vertical panel that works together with a PC (not included)
- Color screen-printed plate reproducing the different sections of the thermodynamic cycle together with the plant scheme

Hardware-set parameters:
- Potentiometry to vary:
  - Water mass flow rate
  - Fuel mass flow rate
  - Services (active power and reactive power)
- Selector to select cycle type:
  - Overheating (with or without re-heater, software configurable)
  - Supercritical
  - Steam bleeding
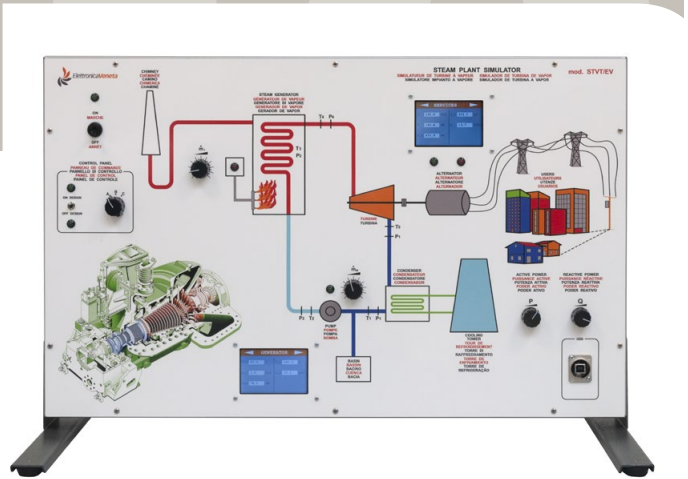
- Switch to set ON/OFF design conditions
- Touchscreen Display for visualization of process parameters
- Signalling LEDs

Software-set parameters:
- Age of plant
- Fuel type
- Operating pressures
- Activate/Deactivate the re-heating conditions
- Percentage of steam bleeding flow rate
- Monitoring of:
  - Numerical quantities
  - Thermodynamic cycle in the T-s diagram
  - Phasor representation of required power
  - Warnings (turbine overload, alternator overload, too high temperature, no steam bleeding, failure saturation)

Power supply:	230 Vac 50 Hz single-phase - 50 VA (Other voltage and frequency on request)
Dimensions:	650 x 400 x 120 (h) mm (panel)
Net weight:	6 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

THEORETICAL - EXPERIMENTAL HANDBOOK