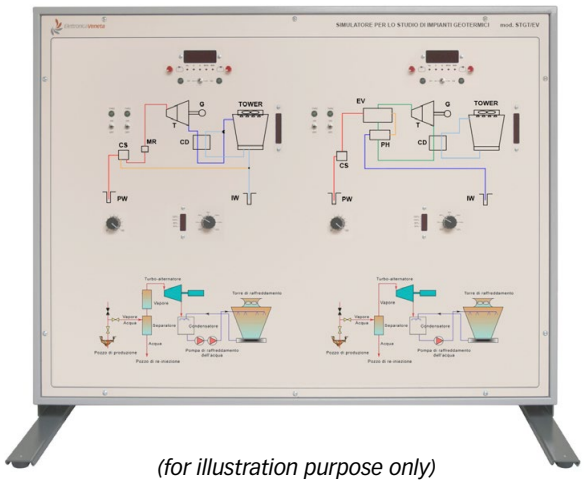
GEOTHERMAL PLANTS SIMULATOR
Mod. STGT/EV



(for illustration purpose only)

INTRODUCTION

The geothermal plants exploit sub-earth energy to produce thermal and/or electric energy.
The geothermal gradient depends on the location, the compliance of the land and the depth.
This characterizes the properties of the fluid extracted from the sub-earth and consequently the type of plant: high, medium or low enthalpy.
Low enthalpy plants are used as domestic heat pumps and some industrial processes, while medium enthalpy plants and high enthalpy plants produce electricity.
The STGT/EV simulator studies the operation of a high-enthalpy geothermal system with a steam turbine, which after being condensed is reintroduced into the thermal tank.
To increase the electric power, combined systems have been studied over time that connect different plant technologies with better thermal efficiency.

TRAINING PROGRAM

- System thermodynamic:
  - Plant scheme
  - Thermodynamic efficiency calculation
  - Heat transmission and fluids dynamic
  - Sizing of plant components
  - Examples of high enthalpy geothermics: one-flash systems, double-flash, ORC (Organic Rankine Cycle) and combined solution plants
- Power generation:
  - Total power generated
  - Axial turbine design model
  - Electric drives

TECHNICAL SPECIFICATIONS

The simulator consists of:
- Desktop vertical panel that works together with a PC (not included)
- Color screen-printed plate reproducing the cross section of a gas turbine, showing the layout of the propulsion elements;
- Electrical checks
- Display for basic parameters

Software
The supplied software allows the panel parameters view and the settings modification.

Selectable specifications:
- Geothermic fluid flow setting by potentiometer
- Secondary fluid flow by potentiometer
- Shaft power setting by potentiometer
- ON-OFF power generator

Programmable specifications:
- On-design operation:
  - INPUT: geothermic and secondary fluid flowrate
  - OUTPUT: power generation and thermal efficiency
- Off-design operation:
  - INPUT: power generation and geothermic fluid flowrate
  - OUTPUT: secondary fluid flowrate
- Turboexpansion: possibility to choose 2 different types of turbine
- Plant: possibility to choose 4 different topology

Power supply: 230 Vac 50 Hz single-phase - 400 VA
(Other voltage and frequency on request)
Dimensions: 650 x 400 x 120 (h) mm (panel)
Net weight: 15 kg

REQUIRED

PERSONAL COMPUTER
- NOT INCLUDED -

SUPPLIED WITH

THEORETICAL - EXPERIMENTAL HANDBOOK