



Electronic console

### GENERAL DESCRIPTION

Geothermal (low enthalpy) Energy Unit (EG5B) developed by EDIBON has the aim of introducing the student in a renewable energy increasingly a leader in the energy market like is the geothermal energy; particularly in the use of this energy to climate control of buildings.

Moreover it allows the students to begin in the knowledge of installations with heat pump and in the study and calculation of the operating parameters of the unit in relation to the environmental demands (heat, temperature, refrigeration, etc.).

This unit allows the study of the geothermal energy using a geothermal heat pump system for heating and/or cooling.

The unit is supplied with the suitable sensors and instrumentation for the most representative parameters measurements and controls (electronic console).



**ISO 9000: Quality Management**  
(for Design, Manufacturing,  
Commercialization and After-sales service)



**European Union Certificate**  
(total safety)



**Certificates ISO 14000 and  
ECO-Management and Audit Scheme**  
(environmental management)



**Worlddidac Quality Charter  
Certificate**  
(Worlddidac Member)

## SPECIFICATIONS

Unit mounted in anodized aluminium structure and panels in painted steel.

Main metallic elements in stainless steel.

Diagram in the front panel with similar distribution to the elements in real unit.

Heat pump:

Hermetic compressor:

Power: 0.5CV, 4A. Coolant efficiency: 1111W at 0°C.

2 Water condensers/evaporators (depending on heating or cooling configuration (winter or summer conditions), by using the cycle inversion valve):

Capacity: 1580W. Consumption: 170l./h.

Air condenser/evaporator (depending on heating or cooling configuration (winter or summer conditions), by the cycle inversion valve):

Maximum air flow: 980m<sup>3</sup>/h. Coolant capacity: 1591W at 5°C.

High pressure safety switch.

Coolant accumulation tank. Cooling filter. Tank of division of the cooling liquid. Expansion valve.

4 way - valve (cycle inversion valve) - solenoid valve.

4 Temperature sensors for the refrigerant circuit. 2 Temperature sensors for the air temperature.

4 Manometers for the refrigerant circuit.

1 Refrigerant flow meter.

Sanitary water circuit:

Water tank.

Water pump.

1 Water flow meter.

3 Temperature sensors for the water temperature.

Geothermal exchanger simulator:

Water heat exchanger:

A pipe system into a water bath (at constant temperature).

3 Temperature sensors for the water temperature.

Water pump, to send the water of the pipe system to the water evaporator/condenser.

Chilling unit to maintain constant temperature into the water bath:

Power: 2HP, 1464W. Optimum water flow: 3000-6000l./h.

Water pump, to send the water from the chilling unit to the water bath.

2 Temperature sensors for the water temperature.

1 Water flow meter.

Enthalpy diagram of the refrigerant R134a.

This unit incorporates wheels for its mobility.

Electronic console:

Metallic box.

Temperature sensors connections. Selector for temperature sensors. Digital display for temperature sensors.

Compressor and pumps switches.

Fan regulator.

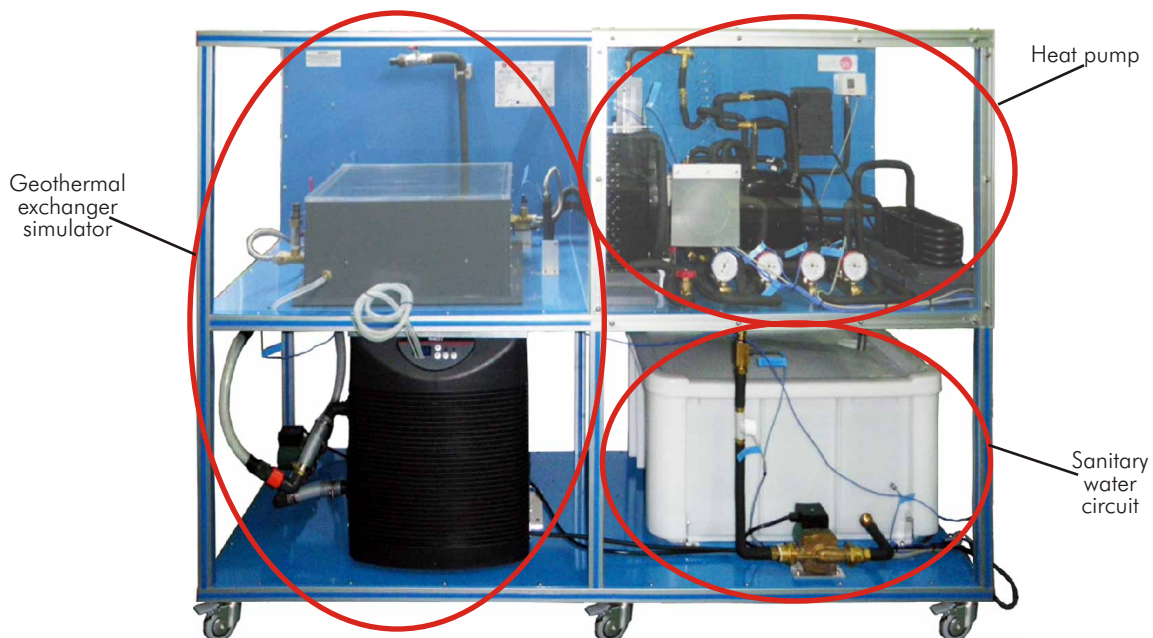
Wattmeter display.

High pressure control connection.

Solenoid valve switch.

Cables and Accessories, for normal operation.

Manuals: This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.



## EXERCISES AND PRACTICAL POSSIBILITIES

### Some Practical Possibilities of the Unit:

- 1.- Study of geothermal energy using a geothermal heat pump system for heating and/or cooling.
- 2.- Study of the system with different ground temperatures.
- 3.- Determination of the inlet power, produced heat and coefficient of performance, working in heating mode. Water-water heat pump.
- 4.- Determination of the inlet power, produced heat and coefficient of performance, working in cooling mode. Water-water heat pump.
- 5.- Determination of the inlet power and valuation of the air temperatures, working in heating mode. Water-air heat pump.
- 6.- Determination of the inlet power and valuation of the air temperature, working in cooling mode. Water-air heat pump.
- 7.- Preparation of performance curves of the heat pump, working in heating mode, with different inlet and outlet temperatures. Water-water heat pump.
- 8.- Preparation of performance curves of the heat pump, working in cooling mode, with different inlet and outlet temperatures. Water-water heat pump.
- 9.- Lay out of the steam compression cycle in a diagram P-H and comparison with the ideal cycle. Water-water heat pump. Heating mode.
- 10.- Lay out of the steam compression cycle in a diagram P-H and comparison with the ideal cycle. Water-air heat pump. Heating mode.
- 11.- Preparation of the performance curves of the heat pump based on the properties of the refrigerant and at different condensation and evaporation temperatures. Water-water heat pump. Heating mode.
- 12.- Preparation of the performance curves of the heat pump based on the properties of the refrigerant and at different condensation and evaporation temperatures. Water-water heat pump. Cooling mode.

### REQUIRED SERVICES

- Electrical supply: three-phase, 380V./50-60Hz, power consumption: 2.2 kW.
- Water supply.

### DIMENSIONS & WEIGHTS

#### EG5B:

- |                     |  |
|---------------------|--|
| Unit:               | -Dimensions: 2000 x 800 x 1550 mm. approx.<br>(78.74 x 31.49 x 61.02 inches approx.) |
|                     | -Weight: 200 Kg. approx.<br>(440.92 pounds approx.)                                  |
| Electronic console: | -Dimensions: 490 x 330 x 310 mm. approx.<br>(19.29 x 13 x 12.2 inches approx.)       |
|                     | -Weight: 15 Kg. approx.<br>(33 pounds approx.)                                       |

### AVAILABLE VERSIONS

#### Offered in this catalogue:

- EG5B . Geothermal (low enthalpy) Energy Unit.

#### Offered in other catalogue:

- EG5C . Computer Controlled Geothermal (low enthalpy) Energy Unit.

\*Specifications subject to change without previous notice, due to the convenience of improvements of the product.



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REPRESENTATIVE:

