ERT105

REVERSIBLE HEAT PUMP AIR-WATER

Experimental capabilities

- **Identification of the components and the circuit of an air/water heat pump**
- **Commissioning and configuration of the heat pump**
- **Configuration of the heating curve and all the parameters**
- **Study of the thermodynamic cycle and enthalpic diagram**
- **Calculation of the thermal power**
- **Maintenance of the heat pump**

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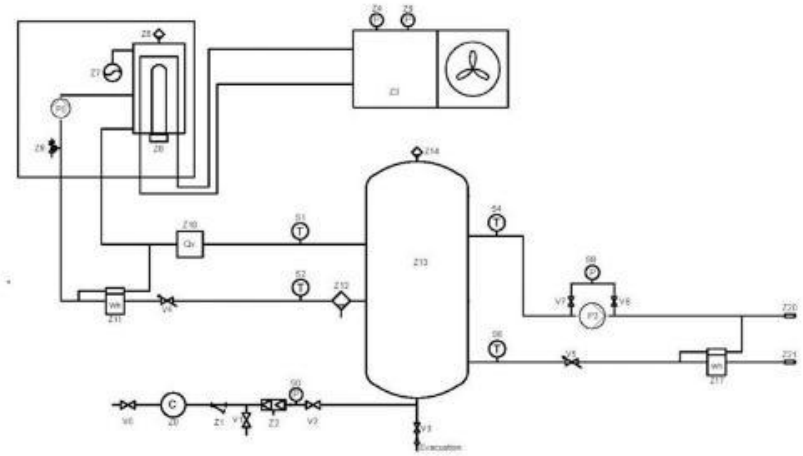
version : FT-ERT105-STD-C

ERT105

Operating principle

The ERT105 unit allows the study of a reversible domestic heat pump of the ATLANTIC brand. It is equipped with a dissipation circuit and a buffer tank. This avoids short cycles and gives students time to make adjustments and reading. The outdoor unit is positioned on the main frame of the bench. The hydraulic circuit consists of the primary circuit of the indoor unit, a buffer tank and a dissipation circuit. The dissipation circuit includes an electronic circulator with variable speed (HMt or flow regulation), a balancing valve on the return and two quick couplings for the connection of the dissipation units (unit heater, fan coil, etc.). The bench is fully instrumented to allow maximum educational use. A supervision system can be added as an option.
The rugged design of this equipment makes it perfectly suited for use in a school setting.
Its anodized aluminum structure on wheels gives it a very high robustness as well as great flexibility of integration into your premises. The manufacture of this equipment complies with the European Machine Directive.
This equipment can be used alone or in combination with other compatible equipment in our range (see last part of this document).

Illustrations



Illustrations

Technical details

1. The trainer is installed on a structure made of anodized aluminum profiles equipped with 4 directional castors with brakes
2. Heat pump AIR/WATER including an indoor unit and an outdoor unit.
   Nominal power : 8KW
   Brand : Atlantic
   Model : ALFEA EXTENSA
3. Main hydraulic circuit including :
   -a thermal energy meter
   -a balancing valve on the return
   -a dirt separator
   -two thermometers with a dial 0/120°C
4. A buffer tank 50L with a draining valve at the bottom point and an air vent on the top.
5. A filling line with a stop valve, a water meter, a strainer, a backflow preventer and a gauge.
6. A dissipation circuit including:
   - a variable speed circulator (total head or flow regulation) with pressure gauge in parallel
   -two 0/120°C dial thermometers
   - a balancing valve on the return
   - an energy meter
   -two quick couplings for connecting dissipation units
7. The bench includes an electrical box with standard protections (disconnector, differential circuit breaker, punch stop), instrumentation and regulation:
   - an ATLANTIC control box to program the operation of the heat pump
   - a potentiometer for simulating the outside temperature
   - a 7-inch color touch screen for displaying measurements

Electronical instrumentation

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The bench has a touch screen with the display of the following measuring points:

On the primary water circuit:
- -heat pump inlet temperature
- -heat pump outlet temperature
- - water flow of the primary circuit
- - Metering of hot and cold energy of the primary circuit

On the secondary water circuit:
- -Flow temperature
- -temperature return
- - water flow of the secondary circuit
- - Metering of hot and cold energy of the secondary circuit

On the air system:
- - temperature inlet exchanger
- -Temperature exchanger outlet

On the refrigeration circuit:
- -Temperature suction compressor
- -Temperature discharge compressor
- - Temperature inlet regulator
- - Temperature outlet expansion valve
- -temperature inlet external exchanger
- -Temperature outlet external exchanger
- - Temperature inlet internal exchanger
- -Temperature outlet internal exchanger
- -LP pressure
- -HP pressure

On the electrical circuit:
- -Instantaneous electrical power indoor unit
- -Metering of energy used by the indoor unit
- -Instantaneous electric power outdoor unit
- -Energy metering used by the outdoor unit

Services required

- Power supply: 400 Vac – 50 Hz – 25 A
- Power Supply Type: 3 phase(s) + Neutral + Earth.
- Water supply : 15 L/min – 3 bars
- Water drain : on the floor
- Dimensions: (LxWxH mm): 2100 x 800 x 1950
- weight (Kg): 200

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

Documentation

- User's manual
- Pedagogical manual
- Lab exercises
- Technical documentation of the components
- Wiring diagram
- Fluidic diagram (PID)
- Certificate of conformity CE

Equipements complémentaires compatibles

• Aerothermal dissipation bench	• Ref : AER033
• Radiator bench	• Ref : TCF120
• Underfloor heating	• Ref : TCF121
• Hydraulic balancing bench (radiators)	• Ref : TCF122
• TA Balancing Case	• Ref : TCF123
• Fan coil bench	• Ref : TCF124

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