CRE302

COMPRESSOR RACK - 3 COMPRESSORS

Experimental capabilities

- **Identification of the components of a three compressor refrigeration system with negative cold room, positive chilled display case and ambient evaporator**
- **Commissioning and verification of operation**
- **Study of the basic concept of a refrigeration installation, triple evaporation with electronic expansion valves.**
- **Study of the thermodynamic cycle on enthalpy diagram.**
- **Calculation of cooling capacities at the condenser and evaporators, overall efficiency of the unit.**
- **Preventive and curative maintenance**
- **Role and adjustment of constant pressure valves, study of the oil circuit**
- **Plant regulation with 1 variable speed compressor**
- **Centralized technical management of supervision with display of values and alarms**

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version : FT-CRE302-STD-C

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Operating principle

The CRE302 bench allows the study of a three-stage compression plant. It is composed of a plant equipped with three semi-hermetic industrial compressors and three evaporation systems (negative cold room, refrigerated display case and evaporation in the atmosphere). The system includes all the standard components fitted to industrial plants (oil separator, dehydrator, constant pressure valve regulator, etc.). in addition to this, the bench is instrumented in order to expand its educational use.

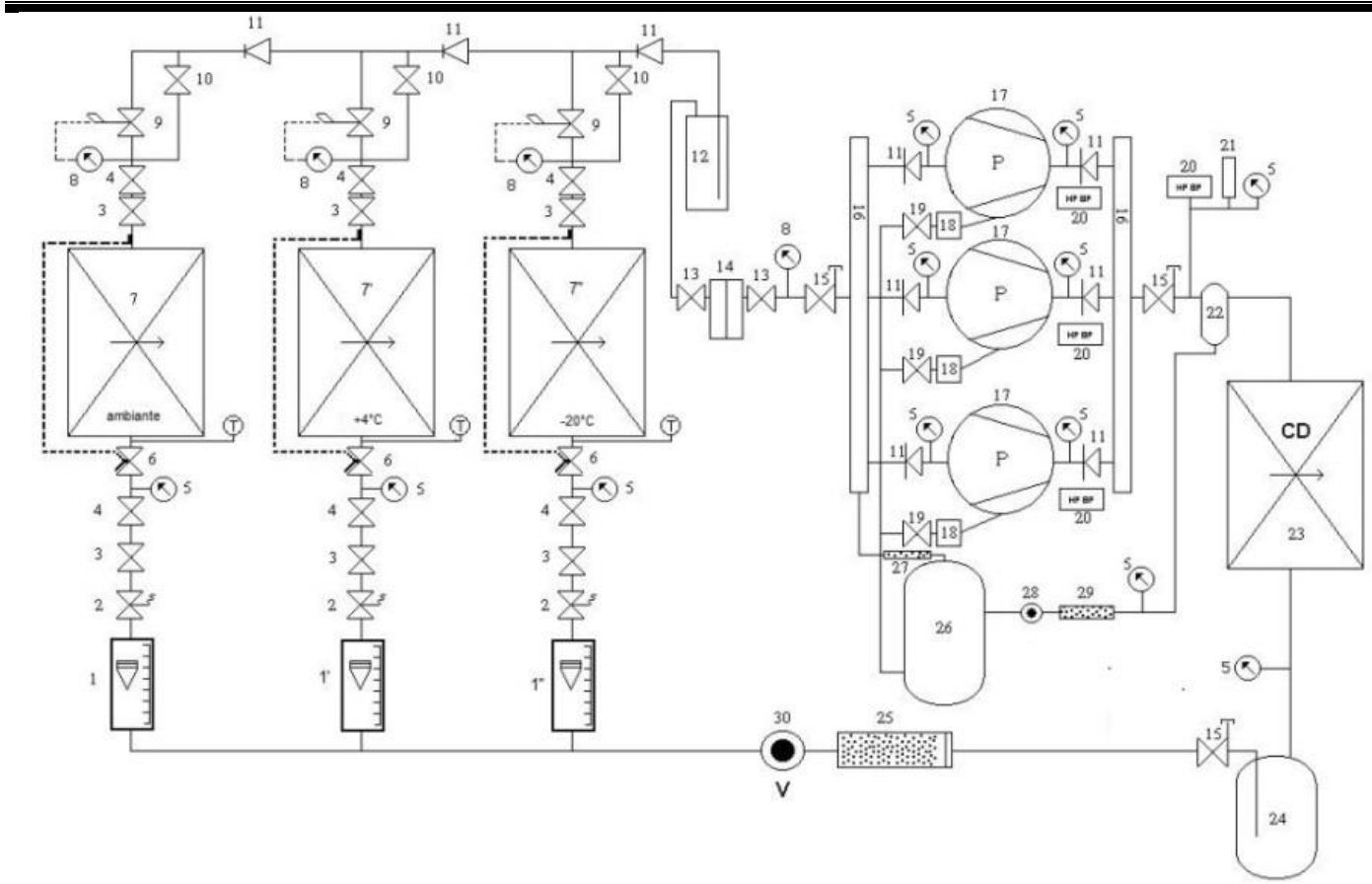
Students will first need to understand the system and identify the components of the installation. They will then be able to commission and make the necessary adjustments (pressure switches, regulators, constant pressure valve, pressure reducing valve, etc.).

When the system is in operation, they can then check the parameters (pressure, temperature, flow, etc.). they will calculate the yield and draw the enthalpy diagram corresponding to each evaporation system.

Finally, they will be able to perform maintenance operations such as changing a filter, the procedure for changing a compressor on a power plant, changing an evaporator, installing a manifold.

The robust design of this equipment makes it perfectly suited for use in schools.
Its anodized aluminum structure on feet gives it great robustness as well as great flexibility of integration into your premises. The manufacturing of this equipment meets the European machine directive

Illustrations



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Technical specifications

1. 3 compressor unit:
-3 semi-hermetic compressors power 1.14kw at -28 ° C / 40 ° C with service valve
- each compressor is equipped with a HLP safety pressure switch
-LP and HP pressure gauge on each compressor
-Compressor N ° 1 with speed variation

2. HP manifold with safety valve, isolation valve and pressure gauge

3. Oil separation and recovery circuit:
- in-line oil separator
-oil return line with dehydrator, sight glass and pressure gauge
- oil tank with two sight glasses, a regulator and service valve
- oil level regulator on each compressor

4. Forced convection condenser power approximately 7.5KW with pressostatic variator

5. High pressure liquid line:
-steel liquid receiver with service valve
- dehydrator, liquid sight glass and pressure gauge

6. Evaporation line N ° 1 comprising:
-a refrigerant flowmeter
-a manometer at the inlet at the outlet of the evaporator
-an electronic expansion valve
-a forced convection evaporator placed in a cold room with internal dimensions 83x83x200cm with door, decompression valve and load simulation by electric heating. The wall thickness of the chamber is 100mm
-a non-return valve at the evaporator outlet

7. Evaporation line N ° 2 comprising:
-a refrigerant flowmeter
-a solenoid valve
-a manometer at the inlet at the outlet of the evaporator
-a thermostatic expansion valve with external equalization
-a forced convection evaporator placed in a refrigerated display case with night curtain
- an evaporating pressure regulating valve and a non-return valve at the evaporator outlet

8. Evaporation line N ° 3 comprising:
-a refrigerant flowmeter
-a solenoid valve
-a manometer at the inlet at the outlet of the evaporator
-a thermostatic expansion valve with internal equalization
-a forced convection evaporator placed in the room
- an evaporating pressure regulating valve and a non-return valve at the evaporator outlet

9. suction accumulator

10. A filter with interchangeable cartridge, pressure tap for recovery and evacuation and 3 manual valves for maintenance.

11. A LP collector

12. An electrical box comprising:
- protection (circuit breaker, etc.), control (start button, general disconnect switch, punch type emergency stop), display (operation and fault indicator lights)
-the control elements
-1 general power plant controller
-3 temperature controllers
-a 13" touch screen with display of measurements, alarms and controller parameters

Services required

- Power supply: 400Vac – 50 Hz – 32 A
- Power supply type: 3 phase(s) + Neutral + Earth.
- Dimensions: (LxWxH mm): 5000 x 1000 x 2300
- weight (Kg): 600

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
- Technical documentation of the components
- Lab exercises
- Fluidic diagram
- Wiring diagram
- Certificate of conformity CE

Options

- Fault simulation cabinet
- Data acquisition software with WIFI connection
- Réf : CRE303
- Réf : CRE304

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