CMF100

CASCADE REFRIGERATION SYSTEM

Experimental capabilities

- **Identification of components of a cascade refrigerating system**
- **Commissioning and verification of operation**
- **Study of the basic concept of a refrigeration plant to R404A and to R134s in cascade.**
- **Study of the thermodynamic cycle on enthalpic diagram.**
- **Study of the regulation**
- **Calculation of cooling capacity to exchangers.**
- **Overall efficiency of the unit.**

DIDATEC– Zone d'activité du parc – 42490 FRAISSES- FRANCE
Tél. +33(0)4.77.10.10.10 – Fax+33(0)4.77.61.56.49 – www.didatec-technologie.com
email : service_commercial@didatec-technologie.com

version : FT-CMF100-STD-A

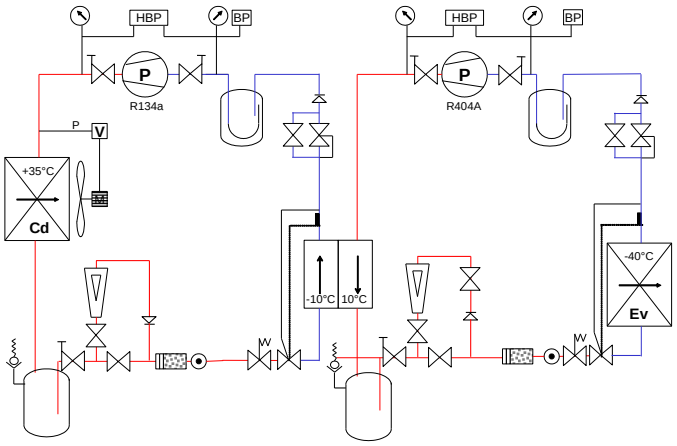
CMF100

Operating principle

The CMF100 bench allows the study of a cascading compression plant. It is composed of two semi-industrial hermetic compressors connected cascading by means of a plate exchanger and of a cold room in which is located a forced convection evaporator. The primary stage works to R134a and the secondary to R404a. The system includes all the standard components powering the industrial plants (suction line accumulator. dehydrator, pressure reducer ...). In addition to this, the bench is instrumented in order to expand its pedagogical use.
Students will initially understand the system and identify the components of the installation. They can then do the commissioning and the necessary settings (pressure switches, regulators, pressure reducer ...).
When the system will be in operation then they may check the parameters (pressure, temperature, flow rate ...). They will calculate the efficiency and will trace the enthalpy diagram corresponding to each stage of the system.
In a later time, they can perform the maintenance operations such as the procedure of change of a compressor on a plant, the change of an evaporator, laying of 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



Technical specifications

FIRST STAGE

1. Compressor semi hermetic to R134a Power approx 4.5KW for a regime 10°C / 40°C (evaporation / condensation)
2. HLP combined pressure switch
3. LP control pressure switch
4. High pressure manometer R134a scale -1 to 30bars, dual scale pressure temperature
5. Low pressure manometer R134a scale -1 to 10bars, dual scale pressure temperature
6. Condenser with forced convection pressostatic variator
7. Liquid tank with service valve
8. A fluid flow meter R134a scale 0-120kg/h
9. Dehydrator filter
10. Liquid sight glass
11. Magnetic valve for regulating
12. Thermostatic expansion valve with external equalizer
13. Plate evaporator (the other side of the exchanger is connected to the HP of the second stage)
14. Constant pressure valve type KVP (control of the evaporation pressure) with bypass valve and the outlet valve
15. Suction line accumulator.

SECOND STAGE

1. Compressor semi hermetic to R404a approx power 2.1KW for a regime -35°C/30 °C (evaporation / condensation)
2. HBP combined pressure switch
3. LP control pressure switch
4. High pressure manometer R404a scale -1 to 30bars, dual scale pressure temperature
5. Low pressure manometer R404a scale -1 to 10bars, dual scale pressure temperature
6. Plates condenser (the other side of the exchanger is connected on the first stage of LP)
7. Liquid tank with service valve
8. A fluid flow meter R404a scale 0-120kg/h
9. Dehydrator filter
10. Liquid sight glass
11. Magnetic valve for regulating
12. Thermostatic expansion valve with external equalizer
13. Evaporator with forced convection
14. Constant pressure valve type KVP (control of the evaporation pressure) with bypass valve and the outlet valve
15. Suction line accumulator.

DIDATEC– Zone d'activité du parc – 42490 FRAISSES- FRANCE
Tél. +33(0)4.77.10.10.10 – Fax+33(0)4.77.61.56.49 – www.didatec-technologie.com
email : service_commercial@didatec-technologie.com

CMF100

The bench also includes:
-a cold room with interior dimensions of 160x160x200cm with door, pressure relief valve and load simulation by electrical heating . The thickness of the walls of the rooms is 140mm
-an electric box including elements of protection (circuit breaker ...), of control (switch-on button, main switch, emergency stop of type mushroom button), of visualization (LEDs of operation and default) to control (1 general controller) and measuring (a multiline indicator with temperature probes to the characteristic points).

Services required

- Power supply: 400 Vac – 50 Hz – 20 A
- Power supply Type: 3 phase(s) + Neutral + Earth.
- Dimensions: (LxWxH mm): 2000 x 3500 x 2300
- weight (Kg): 550

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
- Certificate of conformity CE

DIDATEC– Zone d'activité du parc – 42490 FRAISSES- FRANCE
Tél. +33(0)4.77.10.10.10 – Fax+33(0)4.77.61.56.49 – www.didatec-technologie.com
email : service_commercial@didatec-technologie.com