CHNCO2

CO2 REFRIGERATION SYSTEM (NEGATIVE)

Experimental capabilities

- **Identification of the components of a negative refrigerating system**
- **Commissioning and verification of operation**
- **Study of the basic concept of a refrigeration system using CO2**
- **Study of the thermodynamic cycle on enthalpic diagram**
- **Study of the control system**
- **Practice with CO2 (tools are not provided)**
- **The system is with industrial rendering**
- **The system is delivered assembled, loaded with CO2 and functional**

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Operating principle

The bench CHP CO2 is made to study a cold room using this new fluid. The system includes a condensing unit using CO2 and a cold room with air evaporator.
The transparent sides of the condensing unit are made to view the inside of the unit. To be able to study the system, the refrigerated circuit is equipped with pressure and temperature sensors.
Student can work on identifying the components, commissioning adjustment and the verification of good working order
The robust design of this device makes it suitable for use in schools.
The equipment is set up on an Anodized aluminium frame on casters wheels. This gives it great strength and a flexibility of integration into your premises.The manufacture of this equipment complies with the European standard for machinery manufacturing.

Illustrations

1. Trans-critical CO2 condensing unit
- hermetic rotary variable speed compressor
-Rated power of 2.04KW (mini 1.31KW max 2.92KW)
-Operating at average temperature
-Complete group with power supply and CAREL control system
-walls with transparent areas and lighting
-Air-cooled gas cooler
  - exchanger with copper tubes/aluminum fins.
  - 1x 500mm diameter helical fan.
  - Fan
  - Horizontal blowing.
-Liquid tank:
  - Complies with the 2014/68/EU DESP Directive.
  - 2 vessels volume 2.2 Liters

Accessories:
- Dehydrator filter, liquid sight glass with humidity indicator, liquid line service valve, expansion valves, check valves on suction line

2.Control system
-Management of compressors, speed variation, HP and MP valves
-Extended compressor envelope
-Built-in semi-graphic display
-Pre-set system

3. Industrial cold room
-Interior dimensions: 1200x1200x1615mm
-Wall thickness: 100mm
-Front door with anti-panic system
-Decompression valve
-electric thermal load

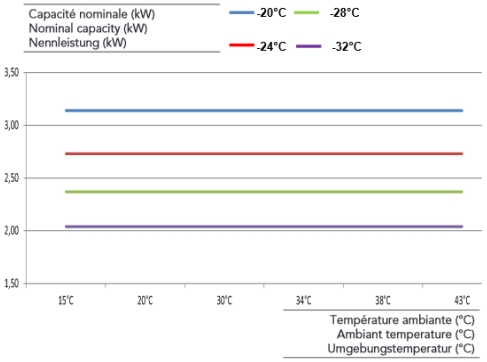
4. Special Evaporator CO2-80bar
-Evaporation temperature: -25°C
-Power: 2.9KW
-electronic expansion valve with step-by-step engine
-defrosting electrical heater

Technical details

5. Steel power box
-Including standard security: GFCI, emergency stop, circuit breakers, main switch ...
-power on button
-touch screen 7" showing the following measurements on a synoptic and on a scoreboard:
-13 temperatures on the refrigeration system and on the air
-3 pressures of the refrigeration circuit
-2 valve positions 0-100%
-2 compressor speed 0-100%
-2 fan speed 0-100%
-voltage and current consumed by the compressors
-Electrical power consumed by the refrigeration group
-a temperature controller for the cold room Carel MPX PRO with a front-display interface and electronic controller. The regulation of the chamber is connected to the one of the CO2 unit.

6. a fixed-station CO2 detection system with alarm including a detector in the room and a detector outside the room. The detection system will have a separate power supply from the other part of the equipment.

7. Mobile frame made of anodized aluminum profile equipped with directional wheels with brake.



Services required

Documentation

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- Electrical supply : 400 Vac – 50 Hz – 16 A
- Electrical network : 3 phase(s) + Neutral + Earth.
- Dimensions: (LxWxH mm): 2440 x 1460 x 2010
- weight (Kg): 500

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

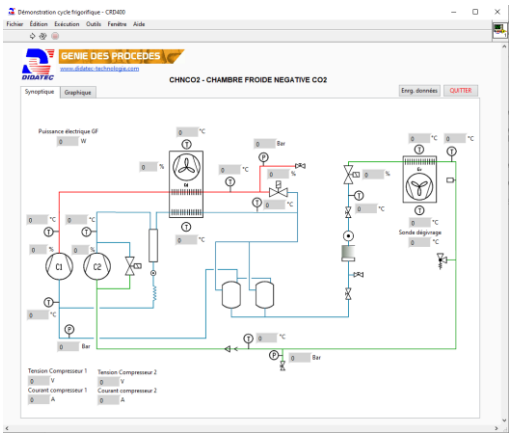
- User's manual
- Lab exercises
- Technical documentation of the components
- Wiring diagram
- Fluidic diagram
- Enthalpic diagram R744
- Certificate of conformity CE

Options

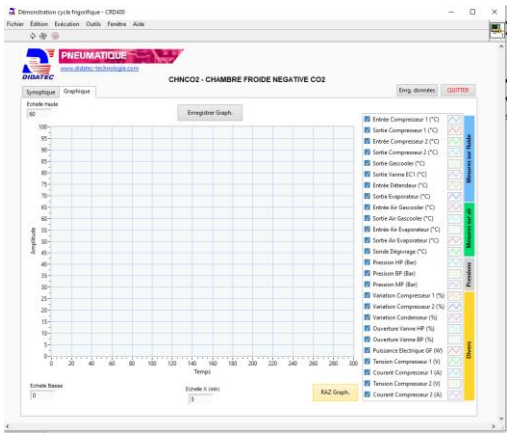
- Leak detector CO2 D-tek
- CO2 Manifold transcritical with hoses
- Ref : DETCO2
- Ref : MANCO2

Data acquisition software

The machine is supplied with data acquisition software to view and record the machine's measurements. The connection between the PC (not included) and the machine is WIFI.
The software is license-free. It includes two windows:



Schematic of the installation and real-time data



Real-time charts

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