



Features

- Refrigeration circuit with water circuit as load1
- Defined cooling load via controlled water temperature1
- Display of all relevant values at the location of measurement
- Benchtop Unit

Tesca Refrigeration Circuit with Variable Load 32437 examines a refrigeration circuit under an adjustable load. The refrigeration circuit consists of a compressor, a condenser with fan, a thermostatic expansion valve and a coaxial coil heat exchanger as evaporator. A water circuit serves as load, consisting of a tank with a heater and a pump. The temperature in the tank is adjusted at a controller.

The purpose of this refrigeration circuit is the production of cold water. The water flows through the jacket of the coaxial coil heat exchanger, transfers heat to the refrigerant and thereby cools down.

All relevant measured values are recorded by sensors. Displays at the respective locations of measurement indicate the measured values. This makes it easy to assign the measured values to the process. The simultaneous transmission of the measured values to a data recording software enables easy analysis and the representation of the process in the log p-h diagram. The software also displays the key characteristic variables of the process, such as the compressor pressure ratio and the coefficient of performance.

The clearly arranged components aid understanding.

The well-structured instructional material sets out the fundamentals and provides a step-by-step guide through the experiments.

Specifications

- Investigation of a refrigeration circuit with water circuit as load
- Refrigeration circuit with compressor, condenser with fan, thermostatic expansion valve and coaxial
- Coil heat exchanger as evaporator
- Water circuit with pump, tank with heater as cooling load at the evaporator
- Heater with controller to adjust the tank temperature
- Record of all relevant measured values and display directly at the location of measurement
- Software for data acquisition via USB under Windows Vista or Windows 7

Note: Specifications are subject to change.

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- Refrigerant R134a, CFC-free

Technical Specifications

- Compressor
 - Refrigeration capacity: approx. 380W at 5/40°C
- Evaporator
 - Refrigerant volume: 0,4L
 - Water volume: 0,8L
- Condenser
 - Transfer area: approx. 1,25m²
 - Fan power consumption: 4x 12W
- Pump
 - Max. flow rate: 1,9m³/h
 - Max. head: 1,4m
- Tank
 - Volume: approx. 4,5L
 - Heater: approx. 450W
- Measuring ranges
 - Pressure: 2x -1...15bar
 - Compressor power: 1x 0...750W
 - Temperature: 6x 0...100°C
 - Flow rate (water): 1x 0,05...1,8L/min

Experiments

- Design and components of a refrigeration system
 - ♦ Compressor
 - ♦ Condenser
 - ♦ Thermostatic expansion valve
 - ♦ Evaporator
 - ♦ Pressure switch
- Representation of the thermodynamic cycle in the log p-h diagram
- Determination of important characteristic variables
 - ♦ Coefficient of performance
 - ♦ Refrigeration capacity
 - ♦ Compressor work
- Operating behavior under load

Requirements

- 220 – 240V, 50Hz, 1 phase Power Supply

Note: Specifications are subject to change.

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