

Product Name :
Astra Scientific Vapour Jet Refrigeration Trainer

Product Code :
RefrigerationLab0014



Description :

Astra Scientific Vapour Jet Refrigeration Trainer

Technical Specification :

The Unlike standard compression refrigeration systems, vapour jet refrigerating machines do not have a mechanical but a vapour jet compressor. This makes it possible to use different heat sources for cold production. Such sources could e.g. be solar energy or process waste heat.

The system includes two refrigerant circuits: one circuit is used for cold production (refrigeration cycle), the other circuit is used for the generation of motive vapour (vapour cycle).

The vapour jet compressor compresses the refrigerant vapour and transports it to the condenser. A transparent tank with a water-cooled pipe coil serves as condenser.

In the refrigeration cycle some of the condensed refrigerant flows into the evaporator connected to the intake side of the vapour jet compressor. The evaporator is a so-called flooded evaporator where a float valve keeps the filling level constant. The refrigerant absorbs the ambient heat or the heat from the heater and evaporates. The refrigerant vapour is aspirated by the vapour jet compressor and

compressed again.

In the vapour cycle a pump transports the other part of the condensate into a vapour generator. An electrically heated tank with water jacket evaporates the refrigerant. The generated refrigerant vapour drives the vapour jet compressor.

All relevant measured values, such as temperature and pressures, are measured and displayed in the experimental unit. The heater power at the evaporator is adjustable. The cooling water flow rate at the condenser is adjusted using a valve.

FEATURES:

- Understanding compression refrigeration systems based on the vapour jet method
- Clockwise and anticlockwise Rankine cycle?- energy balances?- calculation of the coefficient of performance of the refrigeration circuit
- Thermodynamic cycle in the log p-h diagram - operating behavior under load

SPECIFICATION:

- Vapour jet compressor

dmin convergent-divergent nozzle: approx. 1,7mm

dmin mixing jet: approx. 7mm

- Condenser

Tank: approx. 3,5L

Pipe coil area: approx. 0,17m²

- Evaporator

Tank: approx. 3,5L

Heater power: 4x 125W

- Vapour generator

Refrigerant tank: approx. 0,75L

Water jacket: approx. 9L

Heater power: 2kW

- Pump

Max. Flow rate: approx. 1,7L/min

Max. Head: approx. 70mWS

- Measuring ranges

Current: 0...2,5A?, Voltage: 0...230VAC

Temperature: 10x -20...200°C?, Pressure: 2x 0...10bar / 2x -1...1,5bar

Flow rate (cooling water): 6...75g/s

- Required for operation

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase



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