

DEEP-FREEZING TRAINER

Mod. SUR/EV

INTRODUCTION

This trainer, specifically conceived for educational aims, allows to study deep freezing that is a technological improvement of freezing.

This trainer permits to determine the actual rate of cold penetration inside the products under examination via two different systems of heat exchange: natural convection (plate-type heat exchanger) and forced convection (finned battery).

TRAINING PROGRAM

- Plant starting and safety devices intervention checking
- Studying the operation of a thermostatic expansion valve and its calibration
- ON/OFF control: freezing room thermostat
- Analyzing the system behaviour versus the variation of:
 - Thermostatic valves superheat
 - condenser air flow
- Plotting the cycle in the refrigerant pressure-enthalpy diagram
- Data acquisition and calculation of:
 - heat balances corresponding to evaporator, condenser, compressor
 - refrigerant mass flow
 - ideal and actual EER
 - volumetric compression efficiency
- Determination of cold penetration rate in the meat, in seafood, in vegetables, etc...
- Identifying the most suitable substances to be deep-frozen
- Duration of deep-frozen products
- Hot gas defrost

TECHNICAL SPECIFICATIONS

- Steel structure mounted on wheels, painted and treated in the oven
- Colour silk-screen-printed schematic diagram of the hydraulic circuit with warning LEDs
- Hermetic compressor
- Forced-air condenser with variable flow settable by potentiometer
- 2 cold rooms with separate evaporators: plate evaporator and ventilation evaporator
- Thermostatic expansion valves
- Freezing room thermostats
- Liquid receiver
- Hot gas defrosting system
- Solenoid valves, on-off valves, sight glass, dehydrator filter
- Valve for plant vacuum, refrigerant charging and recovering
- Pipes connecting the various components painted with different colours
- Full set of instruments for data acquisition, including:
 - flowmeter
 - high and low pressure gauges
 - 2 electronic thermometers with Pt100 probes to be inserted into several test points along the hydraulic circuit



- instrument for recording the temperature inside the product core
- digital multimeter
- Double pressure switch
- Thermomagnetic - earth leakage control button
- Emergency button

Power supply: 230 Vac 50 Hz single-phase - 850 VA
(Other voltage and frequency on request)

Dimensions: 180 x 80 x 180 cm

Net weight: 260 kg

SPECIAL VERSION ON DEMAND

Besides offering the characteristics of standard version, this version also includes:

- Fault simulator using switches, or
- Fault simulator operating with keypad and microprocessor enabling the teacher to introduce anomalies and to assess the troubleshooting attempts carried out by students



SUPPLIED WITH

THEORETICAL-EXPERIMENTAL HANDBOOK

