

# ABSORPTION REFRIGERATION TRAINER

## Mod. TAR/EV

## INTRODUCTION

This trainer has been designed to study the absorption refrigeration cycle. The heat coming from a gas burner or from electric resistors vaporizes the ammonia contained in the solution of the generator. Ammonia vapour condenses in the exchanger and passes into the evaporator where it evaporates at low temperature. The ammonia vapour coming from the evaporator and the water coming from the generator are combined again in the absorber and close the cycle passing into the generator. The circulation of fluids occurs by natural convection. Students can experience in using log P-1/T and concentration/enthalpy charts of the solution, besides trying to assess the system output thanks to a set of instruments supplied with the equipment.

## TRAINING PROGRAM:

- Plotting the absorption refrigeration cycle on log P-1/T chart, with temperature measurements detected along the circuit
- Transferring these values onto the concentration/enthalpy chart and assessing the heat quantity exchanged in the boiler, in the condenser, in the absorber and in the evaporator
- Calculating the average flow rate of the circulating solution
- Data acquisition and calculation of the system output versus the temperature attained in the boiler

## 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
- Welded airtight circuit of carbon steel including 1 boiler, 1 finned condenser for heat exchange with the environment, 1 evaporator and 1 absorber
- Refrigerant: water/ammonia solution
- 12 V electric resistors
- 230 V to 12 V transformer and rectifier
- LPG burner with pressure reducer and electronic ignition
- Cold room in transparent material with 2 compartments
- Full set of instruments for acquiring operating data, including:
  - electronic thermometers with Pt100 probes to be inserted in various test points arranged along the hydraulic circuit
  - voltmeter
  - ammeter

**Power supply:** 230 Vac 50 Hz single-phase - 150 VA  
(Other voltage and frequency on request)

**Dimensions:** 130 x 80 x 180 cm

**Net weight:** 114 kg



## OPTIONAL:

- Photovoltaic generator mod. PT/EV designed to power the Trainer by renewable energy. Wheeled structure with variable inclination.

## SUPPLIED WITH

THEORETICAL-EXPERIMENTAL HANDBOOK

