REFRIGERATION BENCH WITH COMPRESSED-AIR
Mod. BRAC/EV

INTRODUCTION

This bench has been specifically designed for educational aims and it concerns the study of the refrigeration with compressed air that is an unusual method for producing cold by the expansion of compressed air. When expanding with whirling motion through a distributor of proper shape that imparts it a rotating movement, compressed air is divided into a cold stream and a hot stream. Cold stream is used, whereas hot stream is exhausted into the environment. This system is used in a lot of small applications in dangerous environments where systems using electric energy cannot be used, or in environments not powered by electric energy.

TRAINING PROGRAM

- Thermodynamics of compressed air
- Demonstration of the possibility of producing hot and cold air through an instrument without moving parts
- Detecting the operating curve of a vortex tube by varying the inlet pressure and the weight ratio between hot and cold air
- Plotting the transformation due to air expansion on Temperature-Entropy diagram, starting from the detected values
- Determining the outlet temperatures versus the feeding pressure
- Determining the useful refrigeration power
- C.O.P. determination

TECHNICAL SPECIFICATIONS

This bench is provided with:

- Steel structure painted with epoxy paint and baked
- Gloss aluminium fore plate with colour silk-screen-printed schematic diagram
- Vortex tube: 300 l/min, 7 bar
- Double-vortex compressed air expansion chamber
- Feeding pressure regulator
- Electronic thermometers
- Pressure gauge
- Flowmeters
- Control of air flow entering the vortex tube by the pressure regulator available on the plate
- Quick connection for compressed air feed

Power supply: 230 Vac 50 Hz single-phase - 50 VA
(Other voltage and frequency on request)
Dimensions: 54 x 30 x 79 cm
Net weight: 30 kg

REQUIRED

UTILITIES (PROVIDED BY THE CUSTOMER)

- Compressed air

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL HANDBOOK

OPTIONAL (REF. ACCESS. AND INSTRUMENTS)

PORTABLE THERMOHYGROMETER WITH REMOVABLE PROBE MOD. THHY