

# STUDY BENCH OF TWO HEAT EXCHANGERS



*Non contractual photo*

**SERVICE : 400 V - 3 PHASES, 50 HZ WATER**  
**SUPPLY: COLD WATER 2 BAR, 3 M<sup>3</sup> / H**  
**SEWER**  
**DIMENSIONS : ABOUT 1700 X 850 X 2000**  
**MM**  
**WEIGHT : 150KG**

## REFERENCE : MP102

This pilot allows the study and the comparison of 2 types of exchangers :

- To plate (0.1 or 0.2 m<sup>2</sup>)
- Multitubular (0.1 or 0.2m<sup>2</sup>)
- This pilot allows the study of co-current or countercurrent heat exchangers.

### Experimental possibilities :

#### Determination :

- Thermal balances
- Global exchange coefficients
- Flow regimes
- Study of transfer modes (co or countercurrent).
- Influence of the hot fluid supply and cold fluid.
- Comparison of the efficiency of 2 types of exchangers.
- Establishment of different temperature profiles, calculation of average temperature differences.

### Technical specifications :

- 1 brazed plate heat exchanger
- 1 multitubular exchanger: consisting of a tube bundle whose one end is welded to a plate. The tubes are mounted inside a stainless steel grille.
- The exchangers are made of stainless steel.
- Manual valves in stainless steel for the selection of circuits.
- Pressure gauges
- 1 float flowmeter (cold circuit) PVC
- 1 float flowmeter (hot circuit) PVC
- Stainless steel gate valve for controlling the flow rates of cold and hot water circuits.
- 8 Pt100 temperature probes
- Electrical cabinet with 2-position switch for selecting the circulation mode (co or countercurrent), with transmitters and emergency stop.
- Temperature displays,
- The hydraulic circuit is made of stainless steel, mounted on a welded stainless steel frame.

### OPTIONS :

Option 1 (data acquisition): Two electromagnetic densimeters replace the float flowmeters. The acquisition and visualization of temperatures and flows on a touch screen of 7", moreover these data can be transferred to a computer (not provided). The developed software allows to display the temperatures according to the exchanger and the selected circulation mode. This software allows the acquisition and the

recording of the measured values, the calculations and the plots of the heat exchange curves as a function of the time for each exchanger. The following curves can be plotted: Variation in the amount of heat exchanged as a function of flow Variation in thermal efficiency  $E$  as a function of flow Variation of heat exchange coefficient  $U$  as a function of flow A synoptic of the installation is displayed on the screen, as well as the details of each exchanger. An ergonomic menu allows to select the display of the different temperature and flow parameters according to the exchanger to be studied Option 2 (supervision): This option allows the flow control of hot and cold circuits from a computer. Two flow rates are controlled by a stainless steel pneumatic valve, supplied with 2 P / I converters, the two converters are mounted in the control cabinet, and are configurable according to the computer. VR1 and VR2 are replaced by pneumatic valves a PC type computer with RS232 port Option 3 (water heating group) 6 KW electric heating, with pump and tank, max temperature 95 ° C.