

# INSTRUMENTED THERMODYNAMIC WATER HEATER



*Non contractual photo*

**SERVICE : POWER SUPPLY : 230 V - UNE  
PHASE, 50HZ, 10A  
DIMENSIONS : 1250 X 800 X 2110 MM**

**WEIGHT : 150KG**

**REFERENCE : MP2022**

**The bench allows to study the operation of a  
thermodynamic water heater with a heat pump.**

## Educational Objectives :

- View and identify the components of the system.
- Settings of a thermodynamic water heater
- Make an energy balance using the measurements of the parameters: energy consumed, temperatures and flow on water and air.
- Understand a refrigeration circuit by measuring pressure and temperature.

## Technical specifications :

- It is based on a De Dietrich brand water heater.
- The water heater has been modified for a better understanding of the system by the students.
- The heat pump is covered with a cover with transparent areas, to see the elements of the refrigeration circuit. The elements of the circuit are marked.
- The bench can be coupled with other elements of a water network system.
- The water heater and the accessories are mounted on a welded stainless steel tube frame, it is mounted on casters.
- A De Dietrich type TWH 220 E thermodynamic water heater
  - Balloon volume: 214 L
  - PAC power: 1700W
  - R134a fluid
  - COP at 15 ° C according to EN16147: 3.21
  - Electrical resistance: 2400W
  - With control panel and programming
  - A condensate evacuation device
- A safety and drain valve group on the cold water inlet.
- A valve on the cold water circuit.
- The water circuit ready to be connected to other equipment using quick couplings.
- Two 2 m hoses with quick couplings are provided.

## Instrumentation :

- A float flowmeter on the hot water circuit.
- Two needle thermometers on cold and hot water
- A portable hot wire anemometer to measure the speed (therefore the flow rate) and the temperature of the air entering and leaving
- On the heat pump: two manometers: HP -1 to 30bar and LP: -1 to 10 bars with double scale.
- Four PT100 temperature probes on the refrigerant circuit: compressor inlet and outlet, expansion valve inlet, condenser outlet.
- An IP55 electrical cabinet integrating: Fuses; One on / off button; An emergency stop; A temperature display A temperature sensor

selector; An energy meter