

## VAPOR-WATER HEAT EXCHANGER STUDY UNIT



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### Experimental capabilities

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- Visualization of boiling and condensation processes
- Effect of temperature and pressure on the evaporation process
- Highlighting of the increased efficiency of the heat exchanger with the increased number of interchange circuits for a constant flow rate
- Measuring the effect of the increase of the flow velocity of the cooling fluid and the number of interchange circuits on the heat transfer coefficient
- Study of the relation pressure/saturation temperature for water at low pressure

## Operating principle

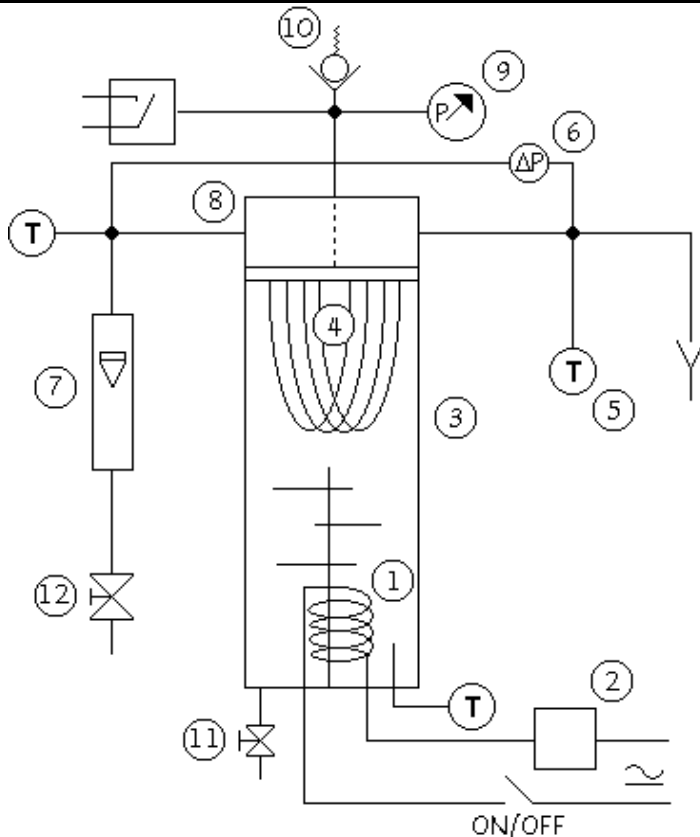
The BET 020 bench allows to study the vaporization of water vapor and thermal water exchanges on a tube exchanger. The bench is composed of a pressure vessel containing heated water which will turn into steam.

The steam will heat exchanger with the stainless steel pipes inside which cooling water circulates.

The unit BET 020 is very instrumented (measurement temperature, flow, pressure) to deduce the thermal exchanges using several cooling configurations. The robust design of this equipment makes it perfectly suited for school use.

Its anodized aluminum structure makes it very robust as well as a great flexibility of integration into your premises. The manufacturing of this equipment meets the European machine directive.

## Illustrations



## Technical details

- Three heating resistance**
- Power regulation**  
realize with a potentiometer
- Glass cylinder 1200 ml**  
realize the evaporating liquid and condensation liquid on the exchangers
- Four tubes coolers in stainless steel**  
with possibility of connection of several different ways (using the distributor)
- Temperature sensor probes (7)**  
7 x Thermocouple : type T, 0...100°C
- Differential manometer**  
Measuring the losses in selected exchangers
- Flowmeter and with control valve and sensor of flow**  
Range cooling water : 0,2-1,5 L/min
- Distributor**  
Selection 1 circuit...4 circuit exchange
- Steam manometer and pressure sensor**  
Measuring the pressure in the chamber, range 0-10 bars
- Overpressure valve 5 bars**
- Drain Valve**
- Water inlet valve**
- Low level sensor to protect the resistances**

## Services required

- Electrical supply : 230 VAC – 50 Hz – 20 A
- Electrical supply type: 1 phase + Neutral + Earth
- Water supply : 2 L/min – 3 bars
- Dimensions: (LxWxH mm): 1000 x 650 x 700
- weight (Kg): 56

## Documentation

- User's manual
- Pedagogical manual
- Technical documentation of the components
- Lab exercises
- Certificate of conformity CE

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

# BET020



## Multi-line Indicator

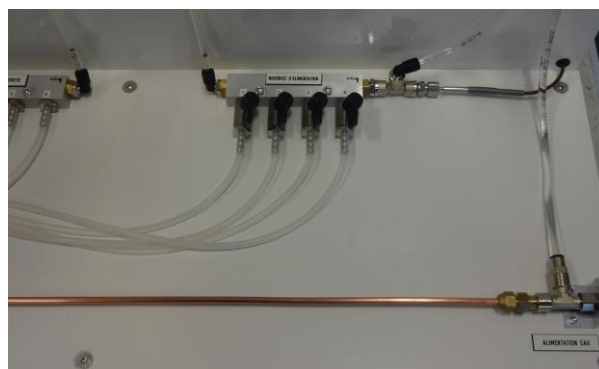


Temperature display, pressure display, power display and cooling water flow rate display

Point of temperatures following :

- **Input of water**
- **Output of water exchanger 1**
- **Output of water exchanger 2**
- **Output of water exchanger 3**
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- **Output of water exchanger 4**
- **Boiling water**
- **Steam water**

## Illustrations



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