

PRESENTATION - USE

This bench is designed for the study of two heat exchangers:

- Concentric tube exchanger
- Plate heat exchanger

The installation is built in anodized aluminum profiles on directional castors with brake.

A connection to electric and water networks are required. is needed.

All experiments can be performed without any other instrument.

The student works alone or in pairs:

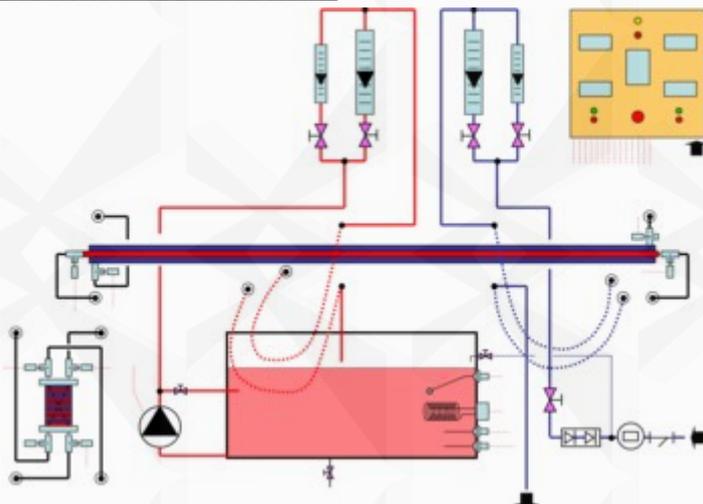
- Set-up the experiment (heat exchanger selection, choice of direction for fluid flow in co-current or counter-current, temperature setpoint adjustment)
- Set a hot water flowrate (or cold water)
- Take temperature measurements for each incremented flowrates
- Plot characteristic curves of each exchanger
- Compare experimental measurements to theoretical results carried out prior



EDUCATIONAL CAPABILITIES

- Identification of heat transfer: temperatures and thermal exchange in an exchanger
- Calculation of the exchanged thermal powers
- Study of conduction transfer mode
- Study of convection transfer mode, convection correlations
- Calculation of the theoretical global exchange coefficient of a concentric tube exchanger
- NTU Method
- Internal construction of a heat exchanger
- Thermal efficiency of a heat exchanger
- Determination of the experimental global exchange coefficient of global exchange of a heat exchanger
- Influence of the flow regime - laminar or turbulent - on the efficiency of the heat exchanger
- Comparison between co-current and counter current flows
- Study and comparison of two exchangers: concentric tubes, plates

DRAWING - DESIGNATION



- Concentric tube exchanger built in 304L stainless steel
outer tube 26,9mm 1,6mm thickness
inner tube 17,2mm 1,6mm thickness
exchange length 1500mm
- Hot water tank 60L built in welded polypropylene
- Heating element: 4 KW
- Single-stage centrifugal pump in stainless steel 0.37kW
- Gaskets and plates heat exchanger
- Safety temperature switch
- Water network: filter, flowtotalizer, stop valve...
- 2 flowmeters of hot water and cold water 0 - 80 l/h and 60 - 630 l/h
- 4 Pt100Ω probes on concentric tube exchanger, quick coupling connection for hoses at each end
- 4 Pt100Ω probes on plate heat exchanger, quick coupling connection for hoses at each end

Dimensions : 1600 x 650 x H1700 - Weight: 150kg



230V-1~50/
60Hz-32A



1000 L/H



Evac.