Shell & Tube Heat Exchanger (SMT-HT-41)

Shell & Tube Type Heat Exchanger consists of a group of tubes inside the heat exchanger. The hot water flows through the internal tubes and cooling water circulates through the space between the internal tubes and the shell.

It is a large tube (shell) which surrounds several smaller tubes (a bundle). One fluid passes through the shell, and the other fluid passes through the tube bundle, therefore transferring heat. Baffles around the bundle help to create a turbulent mixed flow. The Service unit provides hot and cold water to the heat exchanger and all the instruments needed to measure its performance. All fluid connections to the heat exchanger are self-sealing quick connectors - for safety and simplicity. The hot and cold fluid streams have different connectors to reduce errors.

A temperature controller controls the hot water temperature. The flow rate in the hot water and cold-water circuit is adjusted using valves.

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The unit has Touch LCD display for visualization of process and the measurements. The Unit is also connected to Software for computer connectivity and data analysis. The Touch screen and computer software is included in the package.

TECHNICAL SPECIFICATIONS

Specifications:

- Touch LCD with GUI Interface for better monitoring and accurate measurement of Plant variables.
- Hot water circuit with tank, heater, temperature controller, pump and protection against lack of water.
- Temperature controller controls the temperature of hot water
- Flow adjustable using valves.
- Transparent shell, visible tube bundle
- Tube bundle consisting of 7 tubes and 4 baffle plates
- Parallel flow and counter flow operation possible
- Sensors record all relevant data visualised on displays in the process schematic.
- ESOLS DAQ Software for monitoring and control.

Technical Data:

- Tube bundle, stainless steel
  - outer diameter: 6mm
  - wall thickness: 1mm
  - tubes, 7
- Shell, transparent (PMMA)
  - outer diameter: 50mm
  - wall thickness: 3mm
- Pump
  - Power consumption: 120W
  - Max. flow rate: 600L/h
  - Max. head: 30m
- Heater
  - power output: 3kW
  - thermostat: 0 to 70°C
- Hot water tank: approx. 10L

- Measuring ranges
  - Temperature: 4x 0 to 100°C
  - Flow rate: 2x 20 to 250L/h

- Touch LCD with GUI Interface for better monitoring and accurate measurement of Plant variables.

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- ESOLS DAQ Software for monitoring and control.
    - Graphical visualization.
    - Security mechanism for login.
    - USB Connected
    - Compatible with Windows 7,8.1,10.
- Digital Instrumentation
- Capability to modify according to end user.
- Can be used in Research Purposes.

Experimental Data:

- Function and behaviour during operation of shell and tube heat exchanger
- Plotting temperature curves:
    - in cross parallel flow operation
    - in cross counter flow operation
- Calculation of mean heat transfer coefficient
- Comparison with other heat exchanger types

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