Heat Exchanger Configurations

The heat exchanger in the Unit Operations Lab is a shell and tube device. It contains 104 pipes of diameter 0.25”. The heat exchanger can be configured to run in either the 1-2-pass or 1-4-pass configurations. Flow is controlled by the geometry of the end-caps which are divided into sections to route the tube-side fluid in the proper directions. The 1-2 and 1-4 configurations require liquid feed into different positions.

1-2 Pass Configuration

Water is delivered and removed on the left side of the heat exchanger. The input and output connections on the right side are connected to one another.

1-4 Pass Configuration

Water is delivered and removed from the right side of the heat exchanger. The inlet and outlet on the left side are closed.
Piping

- To operate in the 1-2 pass mode: open valves V1, V3, and V5 and close valves V2 and V4
- To operate in the 1-4-pass mode: close valves V1, V3, and V5 and open valves V2 and V4.