

Heat Transfer Training Systems

Educational Training Equipment for the 21st Century

Bulletin 685-7

H-6857 Water Flow Heat Transfer Demonstrator

Purpose

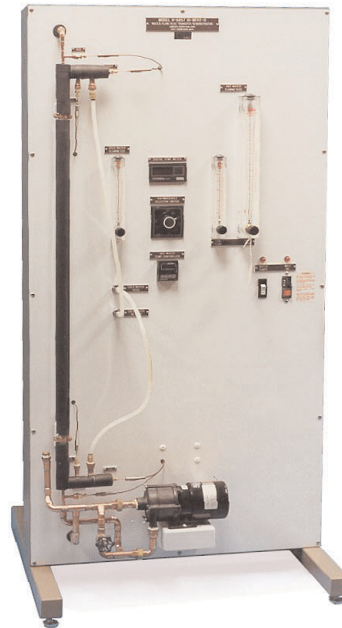
The Hampden **Model H-6857** Water Flow Heat Transfer Demonstrator has been developed to investigate the fundamental principles of heat transfer as applied to a tube-in-tube heat exchanger.

Description

The **Model H-6857** apparatus permits the student to move from classroom theory to a hands on application with all of the nuances that it entails. The student measures the variables that affect the overall heat transfer coefficient. The "cold" and "hot" fluid flow rates are measured. The unit can be configured to operate as either a parallel flow or counterflow heat exchanger. By varying the fluid flow rates, laminar, transitional or turbulent flow conditions can be created.

The student manual that accompanies the unit details the relevant theory; analytical and graphical analysis techniques; and experimental procedures. The analytical techniques include log mean temperature difference effects.

Thermocouples are located in the fluid streams for accurate measurement of the fluid temperatures. Furthermore, the surface temperature of the metal tube is provided for in both passes. The unit is equipped with a mixing vessel which allows either the temperature of the "hot" or "cold" fluid to be accurately controlled. This, in effect, allows the temperature gradient between the two fluids to be varied over a wide range. The Reynolds number can be varied from laminar region, through the transition region (2,300 to 10,000), and into the turbulent region (40,000/50,000).



Model H-6857
Water Flow Heat Transfer Demonstrator
Dimensions; 60"H x 30"W x 30"D
Shipping Weight: 400 lbs.

Services Required

This unit operates on single-phase AC and is available for operation at any voltage or frequency.

Specifications

Base and Panel:

Steel, finished in Epoxy enamel

Water/Water Heat Exchanger:

Tube-in-Tube

Flowmeters:

Rotameter type with Needle Valve
Flow Control (2)

Pump:

Circulator with On-Off Control

Water Heater:

Variable Temperature with On-Off
Control and Pilot Light

Hot Water Tank:

Vented

Digital Temperature Indicator:

Type T with 8 point Transfer Switch

Thermocouples:

Type T (8)

Cold Water Control:

Valve with Flowmeter

Protection:

Main Circuit Breaker with Indicator Light

Control Panel:

Water Pump with Pilot Light Switch

Courseware:

Correlated Operations Manual

All Hampden units are available for operation at any voltage or frequency

Hampden
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