JACKETED VESSEL with COIL AND STIRRER
H102D

Year 1
study

Features

- A vessel with a clear top & glass outer jacket
- Vessel contents of up to 2 litres
- Variable speed stirrer
- Six thermocouples measure hot inlet and exit temperatures
- Quick release connections enable rapid connection to the H102 and conversion from heating jacket to heating coil.

Description

The H102D Jacketed Vessel with Coil and Stirrer allows batch and flow processes to be examined with and without the use of a stirrer. In addition both jacket and coil heating methods may be investigated. The H102D is to be used with the Heat Exchanger Service Module H102 and locate on studs on the H102 fascia. The vessel consists of a glass cylinder with annular jacket. Threaded hose connectors allow the jacket to be filled with hot fluid for indirect heating of the vessel contents. Alternatively, a glass coil submerged beneath the contents of the vessel may be used to indirectly heat the contents by passing hot fluid through the coil. An adjustable overflow tube allows the level of the contents of the vessel to be controlled. The vessel contents may be operated in ‘Fixed Batch’ mode or ‘Flow Process’ mode. A height-adjustable thermocouple allows the temperature to be measured at any depth in the fluid batch and is connected to the panel indicator and the optional HC102 Data Acquisition upgrade (if available). Flexible hoses allow the hot and cold streams from the H102 base unit to be coupled to the jacket, the coil and the vessel. The Cold connections are made during installation of the H102D and need not be disturbed during experiments.

Related Laws/Applications

- Mechanical Engineering
- Nuclear Engineering
- Chemical Engineering
- Control and Instrumentation
- Plant and Process Engineering
- Building Services
- Engineering Physics
- Refrigeration
- Marine Engineering

Learning capabilities

- To demonstrate indirect heating or cooling by transfer of heat from one fluid stream to another when separated by a solid wall (fluid to fluid heat transfer).
- To investigate the heating characteristics of a stirred vessel containing a fixed batch of liquid when heated using hot fluid circulating through a submerged coil.
- To investigate the heating characteristics of a stirred vessel containing a fixed batch of liquid when heated using hot fluid circulating through an outer jacket.
- To investigate the change in overall heat transfer coefficient and logarithmic mean temperature difference as a batch of fluid in the vessel changes temperature.
- To perform an energy balance, calculate the overall efficiency and determine the overall heat transfer coefficient for a continuous flow in a stirred vessel when heated using a submerged coil.
- To perform an energy balance, calculate the overall efficiency and determine the overall heat transfer coefficient for a continuous flow in a stirred vessel when heated using an outer jacket.
- To investigate the effect of stirring on the heat transfer characteristics of a stirred vessel.

Technical Specification

- Vessel wall inside diameter: Ø152.4mm
- Vessel wall outside diameter: Ø154.2m
- Coil tube outside diameter: Ø6.3mm
- Coil tube bore diameter: Ø4.9mm
- Effective length of coil tube: 1150mm

Essential Ancillaries

- H102

What's in the Box?

- 1 x H102D
- 1 x Vessell Probe
- 1 x Stirrer power supply
- 1 x Water inlet tube assembly
- 1 x Water overflow tube assembly
- 1 x Measuring jug
- Hoses and fittings
- Instruction manual
- Packing List
- Test sheet

Essential Services

- H102

Ordering information

To order this product, please call PA Hilton quoting the following code: H102D