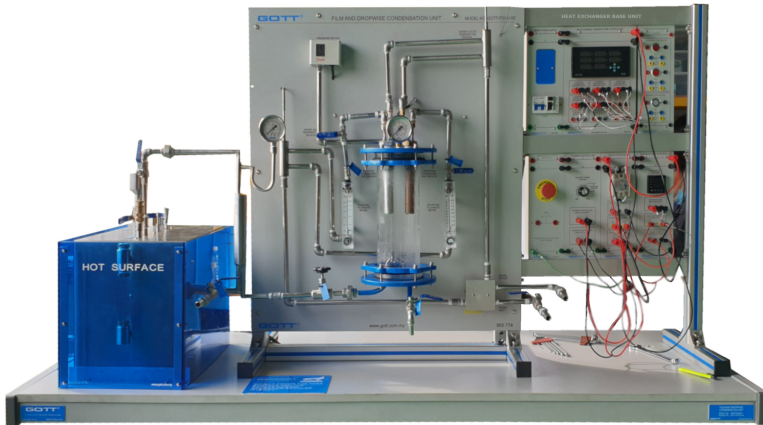


HEAT EXCHANGER TRAINING SYSTEM

Model Number : GOTT-HEXT-SERIES



*The picture shown are heat exchanger base unit with optional item film and dropwise condensation unit

HEAT EXCHANGER BASE UNIT

Model Number : GOTT-HEXT-BU



DESCRIPTION :

This GOTT-HEXT-BU is a base unit for the different optional item of Heat Exchanger and can work with one or several optional modules. The optional heat exchangers are connected to the base unit using non-drip, self-sealing couplings. This heat exchangers base unit work as temperature controlled hot water that provided from an electrically heated tank by a continuously rated fixed speed pump, mains cold water is pressure regulated, Hot and Cold flow is controlled and measured using variable area flowmeters. Electrical safety is provided by double pole overload and earth leakage circuit breakers. The hot water system is equipped with a safety temperature limiting device. The standard instrumentation consists of T type thermocouples, displayed on a digital panel meter, and two flow meters for hot and cold fluids.

FEATURES

- Bench Mounted Unit
- High quality industrially accepted component
- Bold color identification of circuits
- 10 types of optional item heat exchanger can be used on the GOTT-HEXT-BU Heat Exchanger Base Unit
- Detailed instruction & experiment manual

SPECIFICATIONS

- 10 Optional Item Heat Exchangers available
- 12 Temperature input
- Hot water flowrate: 4...50 gm/s
- Cold water flow rate: 4...50gm/s
- Digital Temperature Indicator: 0.1°C resolution
- Water heater : 3kW immersion heater
- Water heater protection :80°C maximum thermostat

EXPERIMENT TOPICS

- For detailed descriptions and experimental capabilities refer to individual catalogue for each optional heat exchanger.

*This base unit module is design that can only function with at least one of the optional item

*Proposed design only, subject to changes without any notice.

CONCENTRIC TUBE HEAT EXCHANGER (OPTIONAL ITEM)

Model Number : GOTT-HEXT-01



DESCRIPTION :

GOTT-HEXT-01 is an optional item that work with Heat Exchanger Base Unit. The heat exchanger is mounted on the base unit panel fascia and retained by locking pipe clips. The concentric tube heat exchanger consists of two separate concentric tubes are arranged in series in a U format to reduce the overall length and to provide a mid-position measuring point.

In normal operation, hot water from the heater and pump passes through the 'HOT OUT' braided hose and selfsealing coupling into the inner stainless steel tube. It then flows through the heat exchanger and leaves. Cold water flows from the 'COLD OUT' hose through the annulus between the clear plastic tube and the inner stainless steel tube. With the hot water in the inner tube, losses from the system to the outside are minimised while still allowing students to see the construction of the unit. As the cold stream warms above the ambient temperature however there will be some external losses. Compression fittings provide a liquid seal between the stainless steel tubes and the outer annulus. This also allows the stainless steel tubes to be removed for cleaning if necessary. Six thermocouples measure hot and cold inlet, mid-point and exit temperatures.

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Inner Tube Material: Stainless steel
- Inner Tube: 12mm Outside diameter
- Inner Tube Wall Thickness: 1mm
- Outer Tube Material: Clear Acrylic
- Outer Tube: 22mm Inside Diameter
- Outer Tube Wall Thickness: 3mm
- Total heat transfer area: approximately 2400

EXPERIMENT TOPICS

- 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 perform an energy balance across a concentric tube heat exchanger and calculate the overall efficiency at different fluid flow rates
- To demonstrate the differences between countercurrent flow (flows in opposing directions) and cocurrent flows (flows in the same direction) and the effect on heat transferred, temperature efficiencies and temperature profiles through a concentric tube heat exchanger to perform an energy balance across a concentric tube heat exchanger and calculate the overall efficiency at different fluid flow rates
- To determine the overall heat transfer coefficient for a concentric tube heat exchanger using the logarithmic mean temperature difference to perform the calculations (for counter-current and co-current flows). To perform an energy balance across a concentric tube heat exchanger and calculate the overall efficiency at different fluid flow rates
- To investigate the effect of changes in hot fluid and cold fluid flow rate on the temperature efficiencies and overall heat transfer coefficient
- To investigate the effect of driving force (difference between hot stream and cold stream temperature) with counter-current and co-current flow

***This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

*Proposed design only, subject to changes without any notice.

PLATE HEAT EXCHANGER (OPTIONAL ITEM)

Model Number : GOTT-HEXT-02



DESCRIPTION :

GOTT-HEXT-02 is an optional item that work with Heat Exchanger base unit . The plate heat exchanger is mounted on the base unit. The Plate Heat Exchanger consists of 4 plate brazed odel that demonstrates the basic principles of heat transfer. . The 'Hot side' self-sealing plugs are on the left and the 'Cold side' sockets on the right. Each plate is corrugated to promote turbulence and is perforated to allow the hot and cold streams to remain in sealed passages on opposite sides of the plates and allow the transfer of heat. It is the combination of turbulence, low volume, high surface area and high fluid velocities that give the high heat transfer capacity in a small volume. In normal operation, hot water from the heater/circulator flows via the 'HOT OUT' braided hose into the upper 'Hot side' coupling. Its temperature at entry to the heat exchanger is measured by a thermocouple. It then flows through the heat exchanger and leaves. Its temperature on exit is measured by a similar thermocouple. Cold water flows through the alternate passage between the alternate plates. The cold water is fed into the heat exchanger via the 'COLD OUT' reinforced hose and leaves via the 'COLD RETURN' hose. Thermocouples measure the cold water inlet and return temperatures. The flow direction of the cold stream relative to the hot stream can be reversed by changing the location of cold inlet and exit tubes

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Inner Tube Material: Stainless steel
- Inner Tube: 12mm Outside diameter
- Inner Tube Wall Thickness: 1mm
- Outer Tube Material: Clear Acrylic
- Outer Tube: 22mm Inside Diameter
- Outer Tube Wall Thickness: 3mm
- Total heat transfer area: approximately 2400

EXPERIMENT TOPICS

- 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 perform an energy balance across a plate heat exchanger and calculate the overall efficiency at different fluid flow rates
- To demonstrate the differences between countercurrent flow (flows in opposing directions) and cocurrent flows (flows in the same direction) and the effect on heat transferred, temperature efficiencies and temperature profiles through a concentric tube heat exchangero perform an energy balance across a concentric tube heat exchanger and calculate the overall efficiency at different fluid flow rates
- To determine the overall heat transfer coefficient for a concentric tube heat exchanger using the logarithmic mean temperature difference to perform the calculations (for counter-current and co-current flows).
- To investigate the effect of changes in hot fluid and cold fluid flow rate on the temperature efficiencies and overall heat transfer coefficient
- TTo investigate the effect of driving force (difference between hot stream and cold stream temperature) with counter-current and co-current flow

***This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

*Proposed design only, subject to changes without any notice.

SHELL AND TUBE HEAT EXCHANGER (OPTIONAL ITEM)

Model Number : GOTT-HEXT-03



DESCRIPTION :

GOTT-HEXT-03 is an optional item that work with Heat Exchanger base unit . The Shell and Tube heat exchanger is mounted on the base unit. The Shell and Tube exchanger consists of a clear glass shell with end plates through which pass a bundle of seven equally spaced stainless steel tubes. 'O' ring seals in the end plates allow the stainless steel tubes to be removed for cleaning if necessary. Coupled to the end plates are end caps that allow hot water from the heater/circulator to pass through all seven tubes and then re-combine to return to the heater/circulator in a closed loop. Cold water from the mains supply passes through the clear glass outer shell and heat is transferred to this from the hot stream. Two baffles are located in the shell to promote turbulence and increase the cold fluid velocity. In normal operation hot water from the heater/circulator passes into the end cap via a stainless steel braided hose and self-sealing coupling. Its temperature at entry to the heat exchanger is measured by a thermocouple. It then flows through the seven heat exchanger tubes to the opposite end cap and leaves. Its temperature on exit is measured by a similar thermocouple. The cold water is fed into and out of the heat exchanger via plastic reinforced hoses with self-sealing couplings. Thermocouples measure the cold water inlet and exit temperatures.

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Tube outside Diameter: $\varnothing 4.76\text{mm}$
- Tube Wall Thickness: 0.6mm
- Number of tubes in bundle: 7
- Effective length of tube bundle: 205mm
- Effective heat transfer area: 18700mm²
- Shell Material: Clear Borosilicate (Pyrex type glass)
- Shell Inside Diameter: $\varnothing 75\text{mm}$, Shell Wall Thickness: 10mm
- Number of baffles: 2

EXPERIMENT TOPICS

- 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 perform an energy balance across a shell and tube heat exchanger and calculate the overall efficiency at different fluid flow rates
- To demonstrate the differences between countercurrent flow (flows in opposing directions) and cocurrent flows (flows in the same direction) and the effect on heat transferred, temperature efficiencies and temperature profiles through a shell and tube heat exchanger
- To determine the overall heat transfer coefficient for a shell and tube heat exchanger using the logarithmic mean temperature difference to perform the calculations (for counter-current and co-current flows).
- To investigate the effect of changes in hot fluid and cold fluid flow rate on the temperature efficiencies and overall heat transfer coefficient.
- To investigate the effect of driving force (difference between hot stream and cold stream temperature) with counter-current and co-current flow.

***This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

*Proposed design only, subject to changes without any notice.

JACKETED VESSEL WITH COIL AND STIRRER (OPTIONAL ITEM)

Model Number : GOTT-HEXT-04



DESCRIPTION :

GOTT-HEXT-04 is an optional item that work with Heat Exchanger base unit . The Jacketed vessel with coil and stirrer is mounted on the base unit. The Jacketed vessel with coil and stirrer 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. Flexible hoses allow the hot and cold streams from the base unit to be coupled to the jacket, the coil and the vessel. The Cold connections are made during installation and need not be disturbed during experiments.

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Vessel wall inside diameter: $\varnothing 152.4\text{mm}$
- Vessel wall outside diameter: $\varnothing 154.2\text{m}$
- Coil tube outside diameter: $\varnothing 6.3\text{mm}$
- Coil tube bore diameter: $\varnothing 4.9\text{mm}$
- Effective length of coil tube: 1150mm

EXPERIMENT TOPICS

- 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 investigate the effect of stirring on the heat transfer characteristics of a stirred vessel

***This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

*Proposed design only, subject to changes without any notice.

EXTENDED CONCENTRIC TUBE HEAT EXCHANGER (OPTIONAL ITEM)

Model Number : GOTT-HEXT-05



DESCRIPTION :

GOTT-HEXT-05 is an optional item that work with Heat Exchanger base unit . The Extended Concentric Tube heat exchanger is mounted on the base unit. The Extended Concentric tube heat exchanger is very similar to the GOTT-HEXT-CT Concentric Tube Heat Exchanger except consists of Two pairs of concentric tubes are arranged in series in a double U format to reduce the overall length and to provide three mid position measuring points. In normal operation, hot water passes through the 'HOT OUT' braided hose and self-sealing coupling into the inner stainless tube. It then flows through the heat exchanger and leaves. Cold water flows from the 'COLD OUT' hose through the annulus between the clear plastic tube and the inner stainless tube. With the hot water in the inner tube, losses from the system to the outside are minimised while still allowing students to see the construction of the unit. As the cold stream warms above the ambient temperature however there will be some external losses. The midway points of both hot and cold streams are fitted with thermocouples to measure the stream temperatures. Miniature thermocouple plugs take these signals to the temperature indicator.

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Inner Tube Material: Stainless steel
- Inner Tube: \varnothing 12mm Outside diameter
- Inner Tube Wall Thickness: 1mm
- Outer Tube Material: Clear Acrylic
- Outer Tube: \varnothing 22mm Inside Diameter
- Outer Tube Wall Thickness: 3mm

EXPERIMENT TOPICS

- 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 perform an energy balance across a concentric tube heat exchanger and calculate the overall efficiency at different fluid flow rates.
- To demonstrate the differences between countercurrent flow (flows in opposing directions) and cocurrent flows (flows in the same direction) and the effect on heat transferred, temperature efficiencies and temperature profiles through a concentric tube heat exchanger.
- To determine the overall heat transfer coefficient for a concentric tube heat exchanger using the logarithmic mean temperature difference to perform the calculations (for counter-current and co-current flows).
- To investigate the effect of changes in hot fluid and cold fluid flow rate on the temperature efficiencies and overall heat transfer coefficient
- To investigate the effect of driving force (difference between hot stream and cold stream temperature) with counter-current and co-current flow.

***This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

*Proposed design only, subject to changes without any notice.

EXTENDED PLATE HEAT EXCHANGER (OPTIONAL ITEM)

Model Number : GOTT-HEXT-06



DESCRIPTION :

GOTT-HEXT-06 is an optional item that work with Heat Exchanger base unit . The Extended plate Heat Exchanger is mounted on the base unit.

The Extended Plate Heat exchanger is very similar to the GOTT-HEXT-PH Plate Heat Exchanger except consists of two 4-plate brazed plate heat exchangers are supplied to create the “extended version”. The second plate heat exchanger is mounted on clips attached to the base of the panel and connected using similar self sealing couplings to the standard heat exchanger. The ‘Hot side’ side self-sealing male plugs are on the left and the ‘Cold side’ sockets on the right.

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Plate Material: Stainless steel
- Plate Overall dimensions: 0.072m x 0.189m
- Number of plates: 4 per heat exchanger
- Total Heat Transfer Area: 48000mm²
- Industry standard Plate Heat Exchangers

EXPERIMENT TOPICS

- 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 perform an energy balance across a shell and tube heat exchanger and calculate the overall efficiency at different fluid flow rates
- To demonstrate the differences between countercurrent flow (flows in opposing directions) and cocurrent flows (flows in the same direction) and the effect on heat transferred, temperature efficiencies and temperature profiles through a shell and tube heat exchanger
- To determine the overall heat transfer coefficient for a shell and tube heat exchanger using the logarithmic mean temperature difference to perform the calculations (for counter-current and co-current flows).
- To investigate the effect of changes in hot fluid and cold fluid flow rate on the temperature efficiencies and overall heat transfer coefficient.
- To investigate the effect of driving force (difference between hot stream and cold stream temperature) with counter-current and co-current flow.

***This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

*Proposed design only, subject to changes without any notice.

WATER TURBULENT FLOW HEAT EXCHANGER (OPTIONAL ITEM)

Model Number : GOTT-HEXT-07



DESCRIPTION :

GOTT-HEXT-07 is an optional item that work with Heat Exchanger base unit . The Water Turbulent Flow heat exchanger is mounted on the base unit. This is a highly advanced concentric tube heat exchanger with hot water flowing through the central tube while cooling water flows through the annular space. The heat exchanger has been divided into three equal sections in order to allow examination of the intermediate stream temperature conditions and temperature distribution through the heat exchanger. Thermocouples sense the hot and cold stream temperatures at the four stations and the inner tube wall temperatures on entry and exit. The addition of the central tube surface temperatures at inlet and exit allow detailed investigation of the surface heat transfer coefficient inside and outside the centraltube. The unit incorporates an extended range flowmeter in order to allow investigation of low and high range Reynolds numbers.

The PID temperature control on the base unit allows investigation of turbulent flow conditions at a range of fixed Prandtl numbers. Investigations using these two methods of control allow students to experimentally determine the constants in one of the classic empirical equations for turbulent heat transfer in a tube.

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Core Material: Copper
- External Diameter: $\varnothing 9.5\text{mm}$
- Internal Diameter: $\varnothing 7.9\text{mm}$
- Length: 3 x 350mm
- Outer Tube Material: Copper
- External Diameter: $\varnothing 12.7\text{mm}$
- Internal Diameter: $\varnothing 11.1\text{mm}$

EXPERIMENT TOPICS

- Determination of heat transfer rate, logarithmic mean temperature difference, overall heat transfer coefficient and 4 point hot and cold stream temperature profiles
- Determination of surface heat transfer coefficient inside and outside the tube, and of the effect of fluid velocity.
- Comparison of performance in concurrent and in counter-current flow.
- Investigation of the relationship between Nusselt (Nu), Reynolds (Re) and Prandtl (Pr) Numbers for Reynolds Numbers up to 65000 and for Prandtl Numbers between 2.5 and 5.0.
- Determination of the constants in $Nu = k Re^a Pr^b$.

***This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

*Proposed design only, subject to changes without any notice.

COILED CONCENTRIC TUBE HEAT EXCHANGER (OPTIONAL ITEM)

Model Number : GOTT-HEXT-08



DESCRIPTION :

GOTT-HEXT-08 is an optional item that work with Heat Exchanger base unit . The Coiled Concentric tube heat exchanger is mounted on the base unit. In normal operation, hot water from the heating tank and pump passes through the 'HOT OUT' braided hose and self-sealing coupling into the inner tube. It then flows through the heat exchanger and leaves. Cold water flows from the 'COLD OUT' hose through the annulus between the larger outer tube and the smaller inner tube. With the hot water in the inner tube, losses from the system to the outside are minimised while still allowing students to see the construction of the unit. As the cold stream warms above the ambient temperature however there will be some external losses. The hot hose terminates with a socket and the cold hose a plug to prevent cross-connection. Flow direction may be arranged for co-current (parallel) or counter-current (opposite direction) of the Hot/Cold streams. Self-sealing couplings retain the water in both the hoses and the heat exchangers. Changeover may be performed without stopping the pump or cold flow, but operators should wear gloves for protection from hot surfaces. Reversing the cold flow direction is the only recommended option.

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Inner Tube Material: Copper
- Inner Tube Outside Diameter: $\varnothing 21.4\text{mm}$
- Inner Tube Wall Thickness: 1mm
- Outer Tube Material: Steel
- Outer Tube Inside Diameter: $\varnothing 19.4\text{mm}$
- Outer Tube Wall Thickness: 1mm
- Active Heat Transfer Section: 1610 (L) mm x 108000mm²

EXPERIMENT TOPICS

- 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 perform an energy balance across a concentric tube heat exchanger and calculate the overall efficiency at different fluid flow rates
- To demonstrate the differences between countercurrent flow (flows in opposing directions) and cocurrent flows (flows in the same direction) and the effect on heat transferred, temperature efficiencies and temperature profiles through a concentric tubes heat exchanger
- To determine the overall heat transfer coefficient for a concentric tubes heat exchanger using the logarithmic mean temperature difference to perform the calculations (for counter-current and co-current flows).
- To investigate the effect of changes in hot fluid and cold fluid flow rate on the temperature efficiencies and overall heat transfer coefficient.
- To investigate the effect of driving force (difference between hot stream and cold stream temperature) with counter-current and co-current flow.

***This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

*Proposed design only, subject to changes without any notice.

RECYCLE LOOPS (OPTIONAL ITEM)

Model Number : GOTT-HEXT-09



DESCRIPTION :

GOTT-HEXT-09 is an optional item that work with Heat Exchanger base unit . The Recycled loops is mounted on the base unit. The Recycled loopsconsists of a coiled tube section that connects directly to the HOT OUT and HOT RETURN couplings on the Base Unit front panel.

Additional components attach to the standard vent and filling points on the base unit and allow the hot water system to be pressurised and connected to both the cold water feed and drain.

The standard base unit hot water circuit then becomes a recycle circuit with low volume cold water feed and equal volume mixed/heated water drain. The standard hot and cold flowmeters on the base unit allow measurement of both the recycle flow and the bleed flow

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Coiled tube section that connects directly to the HOT OUT and HOT RETURN couplings
- Manual Valve
- Additional thermocouples

EXPERIMENT TOPICS

- Investigation and Fundamental Understanding of the Recycle Loop Process
- The effect of the cold/drain flow rate on the system
- The effect of the recirculated flow rate on the system
- Steady State Heat and Mass Balances
- Investigation of Responses to Changes in Bleed Flow Rate or Recycle Rate

***This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

*Proposed design only, subject to changes without any notice.

FILM AND DROPWISE CONDENSATION (OPTIONAL ITEM)

Model Number : GOTT-HEXT-10



DESCRIPTION :

GOTT-HEXT-10 is an optional item that work with Heat Exchanger base unit . The Film and Dropwise Condensation is mounted on the base unit. The Film and Dropwise Condensation consists of a vertical, thick walled glass cylinder steam chamber is fitted with plated brass cover plates. The lower plate carries an electric heating element which converts water to steam at a rate which is determined by the electrical power input. This steam flows upwards to the Dropwise and Filmwise condensers where it is condensed by transferring heat to the cooling water, and the condensate returns to the lower end of the vessel for reevaporation. Three steam baffles are fitted in the chamber to reduce the amount of splashing which results from the vigorous boiling. A thermocouple is located in the base of the chamber to record both the steam and saturated water temperature. The chamber pressure is limited by two methods for operator safety.

FEATURES

- Optional Item for Heat Exchanger Base Unit
- High quality industrially accepted component
- Bold color identification of circuits
- Detailed instruction & experiment manual

SPECIFICATIONS

- Condenser: 90(L) x \varnothing 12.7mm
- Surface Area: 3700mm²
- Internal Diameter of Chamber: \varnothing 76mm
- Normal Water Capacity: 0.5 litre
- Surface Area of Heating Element: 14400mm²
- 3 KW Heater
- Pressure switch setting: 5...10kN/m²
- Pressure Relief Valve setting: 10...15kN/m²

EXPERIMENT TOPICS

- Visual demonstration of Filmwise and dropwise condensation, and of nucleate boiling.
- Measurement of heat flux and surface heat transfer coefficient in both Filmwise and dropwise condensation at pressures up to atmospheric
- Demonstration of the effect of air in condensers
- Investigation of the effect of air in condensers
- Investigation of the saturation pressure/temperature relationship for H₂O between about 20°C and 100°C.
- Demonstration of Daltons Law of Partial Pressures

DATA ACQUISITION SOFTWARE AND HARDWARE (OPTIONAL ITEM)

Number : GOTT-HEXT-11

GOTT Data Acquisition Software and hardware consists of hardware and software data acquisition using a standard USB port that come to PC. The combine educational system software and hardware package allows immediate computer monitoring and display all parameter on the heat transfer unit.

The hardware consist of data logger that working with windows compatible educational software.

*** This optional item is design to be conducted together with our Heat Exchanger Base Unit GOTT-HEXT-BU**

HEAT EXCHANGER TRAINING SYSTEM

Model Number : GOTT-HEXT-SERIES

Manuals :

- (1) All manuals are written in English.
- (2) Model Answer
- (3) Teaching Manuals

General Terms :

- (1) Accessories will be provided where applicable.
- (2) Manual & Training will be provided where applicable.
- (3) Design & specifications are subject to change without notice.
- (4) We reserve the right to discontinue the manufacturing of any product.

Warranty :

2 Years

ORDERING INFORMATION :

ITEM	MODEL NUMBER	CODE
HEAT EXCHANGER BASE UNIT	GOTT-HEXT-BU	976-200
CONCENTRIC TUBE HEAT EXCHANGER	GOTT-HEXT-01	976-201
PLATE HEAT EXCHANGER	GOTT-HEXT-02	976-202
SHELL AND TUBE HEAT EXCHANGER	GOTT-HEXT-03	976-203
JACKETED VESSEL WITH COIL AND STIRRER	GOTT-HEXT-04	976-204
EXTENDED CONCENTRIC TUBE HEAT EXCHANGER	GOTT-HEXT-05	976-205
EXTENDED PLATE HEAT EXCHANGER	GOTT-HEXT-06	976-206
WATER TURBULENT FLOW HEAT EXCHANGER	GOTT-HEXT-07	976-207
COILED CONCENTRIC TUBE HEAT EXCHANGER	GOTT-HEXT-08	976-208
RECYCLE LOOPS	GOTT-HEXT-09	976-209
FILM AND DROPWISE CONDENSATION	GOTT-HEXT-10	976-210
DATA ACQUISITION SOFTWARE AND HARDWARE	GOTT-HEXT-11	976-211

* Proposed design only, subject to changes without any notice.