

# Thermal-Fluid

## Unit 05:

# Heat Exchangers

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# Table of Contents

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## 1. Unit 05: Heat Exchangers

## 4. Chapter: Unit 05: Heat Exchangers

### 1. Unit 05: Heat Exchangers Questions

#### 4.1.1. A countercurrent heat exchanger operates with the following tempera...

Author: Steve Gibbs

A countercurrent heat exchanger operates with the following temperatures: cold fluid inlet 15°C, cold fluid outlet 25°C, hot fluid inlet 90°C, and hot fluid outlet 30°C. Calculate the logarithmic-mean temperature difference in °C.

Please choose only one answer:

- 45°C
- 30°C
- 27°C
- 25°C
- 50°C

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Question: [A countercurrent heat exchanger operates with Steve Gibbs @The Thermal](#)

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#### 4.1.2. A fluid with heat capacity 2.2 kJ/kg K enters a heat exchanger at 9...

Author: Steve Gibbs

A fluid with heat capacity 2.2 kJ/kg K enters a heat exchanger at 90°C and leaves at 30°C at a flow rate of 5 kg/s. Calculate the heat removal from this fluid.

Please choose only one answer:

- 660 W
- 6.60 kW
- 66.0 kW
- 660 kW
- 66.0 W

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#### 4.1.3. A fluid with heat capacity 2.2 kJ/kg K enters a heat exchanger at 9...

Author: Steve Gibbs

A fluid with heat capacity 2.2 kJ/kg K enters a heat exchanger at 90°C and leaves at 30°C at a flow rate of 5 kg/s. If the heat capacity of the cooling fluid for the heat exchanger is 1 kJ/kg K, what is its flow rate in kg/s?

Please choose only one answer:

- 66 g/s
- 6.6 kg/s
- 66 kg/min
- 660 kg/s
- 66 kg/s

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4.1.4. If  $T_{lm} = 27^{\circ}\text{C}$ ,  $Q = 660 \text{ kW}$ , and  $A = 10 \text{ m}^2$ ...

Author: Steve Gibbs

If  $T_{lm} = 27^{\circ}\text{C}$ ,  $Q = 660 \text{ kW}$ , and  $A = 10 \text{ m}^2$  for a countercurrent heat exchanger, what is the overall heat transfer coefficient in  $\text{W/m}^2 \text{ K}$ ?

Please choose only one answer:

- $24 \text{ W/m}^2 \text{ K}$
- $242 \text{ W/m}^2 \text{ K}$
- $2418 \text{ W/m}^2 \text{ K}$
- $24180 \text{ W/m}^2 \text{ K}$
- $2.4 \text{ W/m}^2 \text{ K}$

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#### 4.1.5. A countercurrent heat exchanger operates with the following tempera...

Author: Steve Gibbs

A countercurrent heat exchanger operates with the following temperatures: cold fluid inlet 20°C, hot fluid inlet 90°C. The heat capacity of the hot fluid is 2.2 kJ/kg K. The heat capacity of the cold fluid is 1 kJ/kg K. The flow rate of the hot fluid is 5 kg/s. The flow rate of the cold fluid is 66 kg/s. The area for heat transfer is 10 m<sup>2</sup>. The overall heat transfer coefficient is 2418 W/m<sup>2</sup> K. What are the outlet temperatures?

Please choose only one answer:

- $T_{\text{hoto}} = 29.6^\circ \text{C}$ ,  $T_{\text{coldo}} = 30.1^\circ \text{C}$
- $T_{\text{hoto}} = 29.6^\circ \text{C}$ ,  $T_{\text{coldo}} = 40.1^\circ \text{C}$
- $T_{\text{hoto}} = 29.6^\circ \text{C}$ ,  $T_{\text{coldo}} = 50.1^\circ \text{C}$
- $T_{\text{hoto}} = 19.6^\circ \text{C}$ ,  $T_{\text{coldo}} = 20.1^\circ \text{C}$
- $T_{\text{hoto}} = 39.6^\circ \text{C}$ ,  $T_{\text{coldo}} = 30.1^\circ \text{C}$

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