

Physics II Heat and Energy

Objective: To learn the basic components of a heat exchanger, apply the heat/temperature equation $Q=mC\Delta T$, review concept of equilibrium and discover applications for heat exchangers in society.

Materials: Glass double tube heat exchanger used in chemistry, automotive heater core, overhead of this photo.



Demo: Describe operation of heat exchangers.

Notes: Develop heat temperature equation using data from specific heat lab.

Student Development: Ask students to

1. Calculate the heat loss of 1000 gallons of milk cooled from 30°C to 10°C (remember to use Kelvin)
2. Assume the milk is cooled in a heat exchanger filled with 5°C water.
Draw a graph of temperature versus time for the milk
3. Describe how your graph shows the concept of equilibrium.
4. Sketch three applications of heat exchangers in society.
5. Describe the two fluids in each sketch and the temperature of each before and after the heat exchanger.