

TOPIC: 193002
KNOWLEDGE: K1.05 [2.7/2.7] (From K/A catalogs, rev. 3 draft)
QID: P7769 (B7769)

For which of the following ideal processes, if any, is the steam inlet enthalpy equal to the steam outlet enthalpy? (Assume horizontal fluid flow in each process.)

- (A) Dry saturated steam flowing through a pressure reducing valve.
- (B) Dry saturated steam flowing through a fixed convergent nozzle.

- A. (A) only
- B. (B) only
- C. Both (A) and (B)
- D. Neither (A) nor (B)

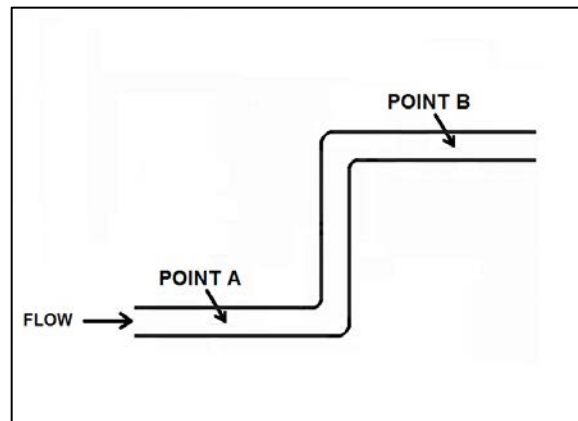


TOPIC: 193002
KNOWLEDGE: K1.05 [2.7/2.7] (From K/A catalogs, rev. 3 draft)
QID: P7779 (B7779)

Refer to the drawing of a section of 6-inch diameter pipe containing subcooled water flowing from left to right at 100 gpm (see figure below). The pipe is frictionless and no heat transfer is occurring. Point B is 10 feet higher in elevation than point A.

How does the enthalpy of the water at point A compare to point B?

- A. The enthalpy of the water at point A is smaller, because some of the water's kinetic energy is converted to enthalpy as it flows to point B.
- B. The enthalpy of the water at point A is greater, because some of the water's enthalpy is converted to potential energy as it flows to point B.
- C. The enthalpy of the water at points A and B is the same, because the pipe is frictionless and no heat transfer is occurring.
- D. The enthalpy of the water at points A and B is the same, because the total energy of the water does not change from point A to point B.



TOPIC: 193002
KNOWLEDGE: K1.05 [2.7/2.7] (From K/A catalogs, rev. 3 draft)
QID: P7799 (B7799)

For which of the following ideal processes, if any, is the fluid outlet enthalpy greater than the fluid inlet enthalpy? (Assume horizontal fluid flow in each process.)

- (A) Cooling water flowing through a fixed convergent nozzle.
- (B) Cooling water flowing through an operating lube oil heat exchanger.

- A. (A) only
- B. (B) only
- C. Both (A) and (B)
- D. Neither (A) nor (B)



TOPIC: 193002
KNOWLEDGE: K1.06 [2.6/2.6] (From K/A catalogs, rev. 3 draft)
QID: P7789 (B7789)

Refer to the drawing of a simple Rankine cycle shown on a Temperature-Entropy (T-S) diagram (see figure below). The starting point for the numbers on the diagram was chosen at random.

Note: A simple Rankine cycle does not include condensate/feedwater heating, turbine exhaust moisture removal, or steam reheat.

The sequence of numbers that represents the total heat added in the steam generators is _____; and the sequence of numbers that represents the total heat rejected in the main condenser is _____.

- A. 2 → 3 → 4; 1 → 2
- B. 3 → 4 → 5; 1 → 2
- C. 2 → 3 → 4; 5 → 1
- D. 3 → 4 → 5; 5 → 1

