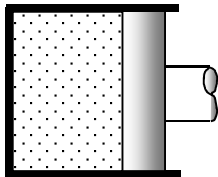

EXAMPLE: Piston-cylinder with water

A closed system contains 0.15 kg of water. Initially the water is a saturated vapor at 205°C. The water is cooled at constant volume until the temperature is 150°C and is then compressed at constant temperature until the volume is half the original value.

- Sketch the P - v diagram for this two-step process.
- Find the work in or out of the steam *for each step*.
- Find the heat transfer in or out of the steam *for each step*.



EXAMPLE: Mixing chamber

A steady-state mixing chamber operates at a constant pressure of 800 kPa. 4.52 kg/s of compressed liquid water enters at a temperature of 35°C, while 1 kg/s of superheated steam enters at an unknown temperature. Water leaves the device as a saturated liquid. Assuming that the process is adiabatic, determine the temperature of the superheated steam.

