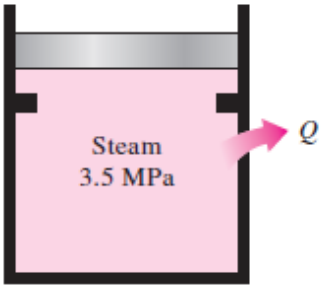
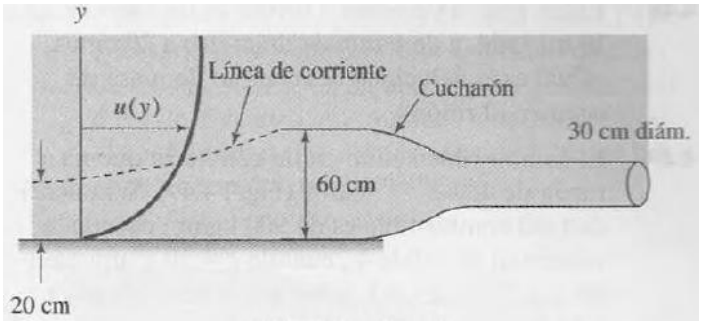
Termofluidos I

Trabajo en clase, Enero de 2012

1.) A piston–cylinder device initially contains steam at 3.5 MPa, superheated by 5°C. Now, steam loses heat to the surroundings and the piston moves down hitting a set of stops at which point the cylinder contains saturated liquid water. The cooling continues until the cylinder contains water at 200°C. Determine (*a*) the initial temperature, (*b*) the enthalpy change per unit mass of the steam by the time the piston first hits the stops, and (*c*) the final pressure and the quality (if mixture).





2.) Un cucharon rectangular de 80 cm de profundidad capta aire y lo entrega a través de un tubo de 30 cm de diámetro como se muestra en la figura. Calcule la velocidad promedio del aire en el tubo si $u(y) = 20\, y^{1/5}$ m/s, donde y está en metros.

3.) For the figure, calculate the change flow velocity of $h(t)$, if the work fluid is water.$_1$

a) V_1=10 m/s; $\dot{m}_2$ = 10 kg/s; Q_3=600 L/min
b) V_1=0 m/s; $\dot{m}_2$ = 20 kg/s; Q_3=10 L/s
c) V_1=5 m/s; $\dot{m}_2$ = 10 kg/s; Q_3=1000 L/min
d) Explain answers