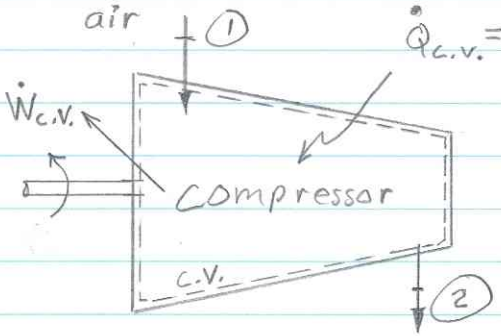
Example: Problem 6.52, Compressor

- purpose: to raise the pressure of a gas (compress)



Assumptions:

1. Steady state, steady flow
2. $\dot{Q}_{c.v.} = 0$
3. Ideal gas
4. Constant specific heats
5. $\Delta PE = 0$
6. Inlet velocity is negligible.

State 1	State 2
$P_1 = 95$ kPa	$P_2 = 1.52$ MPa
$T_1 = 20°C$	$T_2 = 430°C$
$\bar{V}_1 \simeq 0$ m/s	$\bar{V}_2 = 90$ m/s

Power input to the compressor is 5000 kW

Determine the mass flow rate.