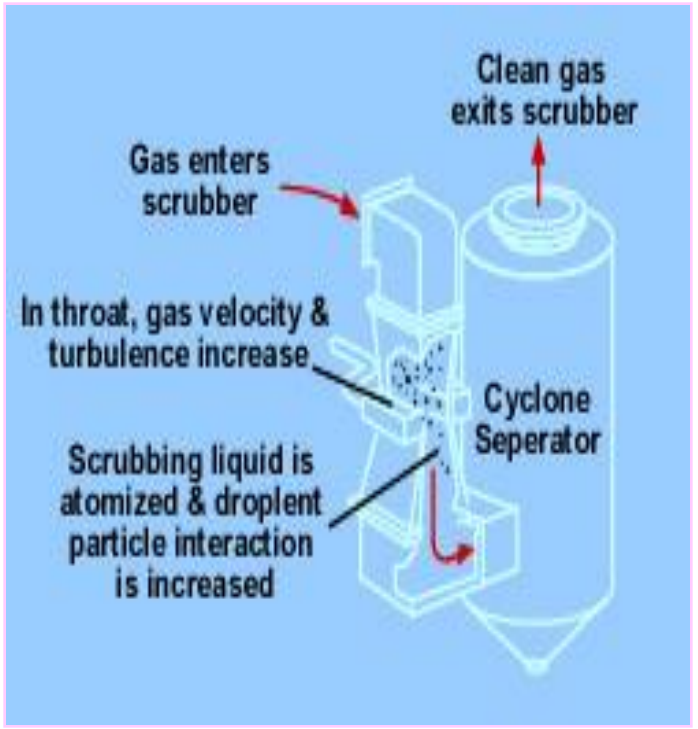
Air Pollution Control

VENTURI SCRUBBERS

- The polluted gas is led in to the chamber at high inlet velocities.
- At the inlet throat, liquid at low pressure is added to the gas stream
- This increases the relative velocity between the gas and the droplets, thus increasing the efficiency of removal.
- Efficiencies of the range of 95% for particles larger than 0.2 mm have been obtained.



VENTURI SCRUBBERS

Absolute Pressure Drop

$$\Delta p = 1.03 * 10^{-3} u_g \left(\frac{Q_t}{Q_g}\right)$$

Δp = pressure drop (cm of water)

U_g = gas velocity (cm/s)

Q_t = liquid volume flow rate

Q_g = gas volume flow rate

Problem

- Water is introduced into the throat of a venturi scrubber. The air velocity through the scrubber is 550 fps and the liquid to gas ratio is 8.5 gal/1000 actual ft^3. Determine the pressure drop?

Absolute pressure drop is given by

$$\Delta p = 1.03 * 10^{-3} u_g \left(\frac{Q_t}{Q_g}\right)$$

Δp = 4.8