

Adiabatic saturation of air :

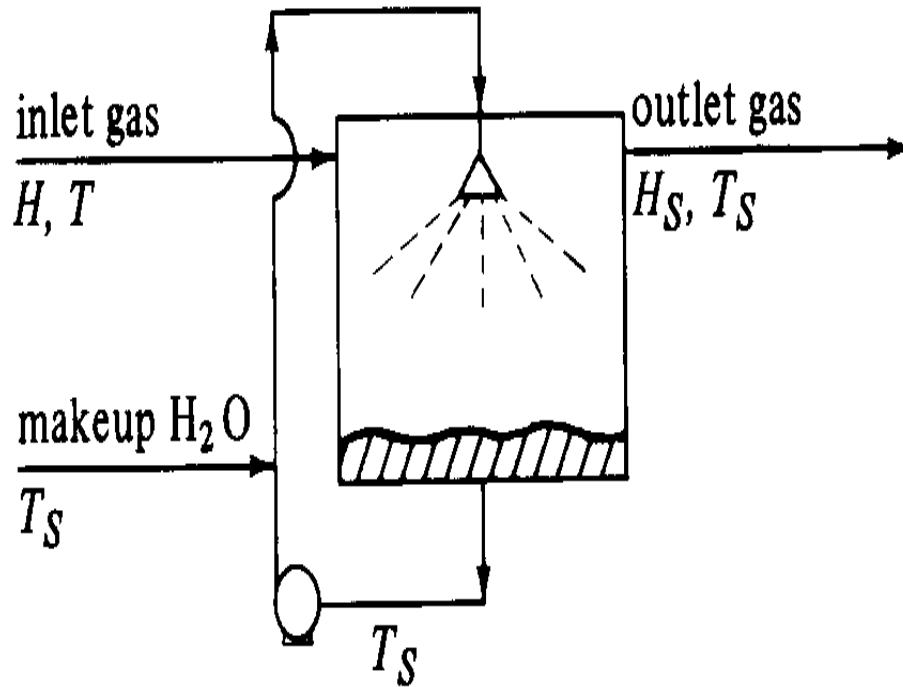


FIGURE 9.3-3. *Adiabatic air-water vapor saturator.*

from Transport Processes and Unit Operations by C. J. Geankoplis

The temperature of the water being recirculated reaches a steady-state temperature called the **adiabatic saturation temperature, T_s**

$T_{\text{air in}}$ ----- $T_{\text{saturated}}$

$H_{\text{air in}}$ ----- $H_{\text{saturated}}$

air picks up water vapor, humidity increases, temperature decreases

$$\frac{H - H_s}{T - T_s} = -\frac{c_s}{\Delta H_{\text{vap}}} = \frac{1.005 + 1.88H}{\Delta H_{\text{vap}}}$$