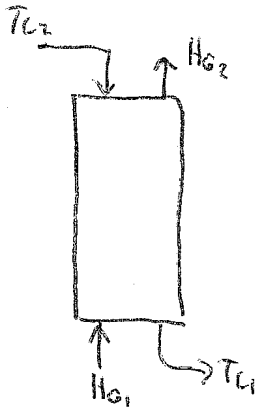


Problema 6



Normalización:

$$L = 7,5708 \frac{\text{m}^3}{\text{min}}$$

$$T_{L2} = 35^\circ\text{C}$$

$$T_{L1} = 27,78^\circ\text{C}$$

$$G'_{\text{SOP}} = 1,336 \frac{\text{kg}}{\text{min}}$$

$$H_{\text{TC}} = 2,1336 \text{ m}$$

$$T_{G1} = 35^\circ\text{C}$$

$$T_{G11} = 23,89^\circ\text{C}$$

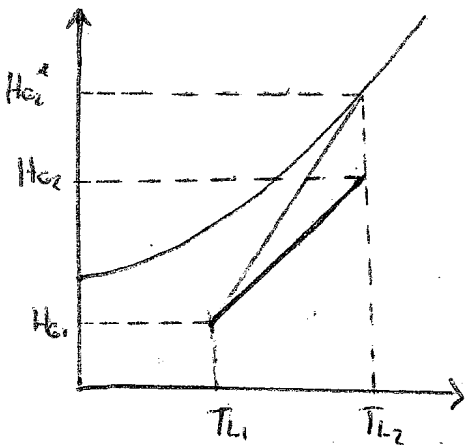
$$C_{PL} = 9,187 \frac{\text{kJ}}{\text{kg} \cdot ^\circ\text{C}}$$

$$\rho_{\text{H}_2\text{O}} @ 35^\circ\text{C} = 999 \frac{\text{kg}}{\text{m}^3}$$

① Se calcula la Entalpía del aire a las condiciones de Entrada:

$$\begin{aligned} T_{G1} &= 35^\circ\text{C} \\ T_{G11} &= 23,89^\circ\text{C} \end{aligned} \Rightarrow H_{G1} = 72 \frac{\text{kJ}}{\text{kg}}$$

② Se calculan las condiciones mínimas de operación



$$H_{G2}^* = H_G^* @ T_{L2} = 128 \frac{\text{kJ}}{\text{kg}}$$

$$L' = \rho \cdot L$$

$$L' = 999 \frac{\text{kg}}{\text{m}^3} \cdot 7,5708 \frac{\text{m}^3}{\text{min}}$$

$$L' = 7525,38 \frac{\text{kg}}{\text{min}}$$

$$G'_{\text{Smin}} = L' \cdot C_{PL} \frac{T_{L2} - T_{L1}}{H_{G2}^* - H_{G1}}$$

$$G'_{\text{Smin}} = 4062,38 \frac{\text{kg}}{\text{min}}$$

$$G'_{op} = 1,33 G_{s \text{ min}}$$

$$G'_{op} = 5402,97 \frac{\text{kg}}{\text{min}}$$

③ Se calcula la Entalpía del Gas a la salida (H_{G2})

$$H_{G2} = \frac{L' C_{pG}}{G'_{op}} (T_{L2} - T_{L1}) + H_{G1}$$

$$H_{G2} = 114,11 \frac{\text{kJ}}{\text{kg}}$$

④ Se calcula el número de unidades de transferencia

$$N_{TG} = \int_{H_1}^{H_2} \frac{dH}{H^* - H} \Rightarrow \text{Se resuelve numéricamente por trapecio}$$

H (kJ/kg)	H^* (kJ/kg)
72,0	94
80,4	100
88,8	106,5
97,2	113
105,6	120,5
114,0	128,0

$$h = \frac{114 - 72}{5} = 8,4$$

$$N_{TG} = \frac{h}{Z} \cdot 0,59273$$

$$N_{TG} = 2,4895$$

$$Z = H_{Te} \cdot N_{TG}$$

$$Z = 5,31 \text{ m}$$

Entalpía de Aire Húmedo Saturado

