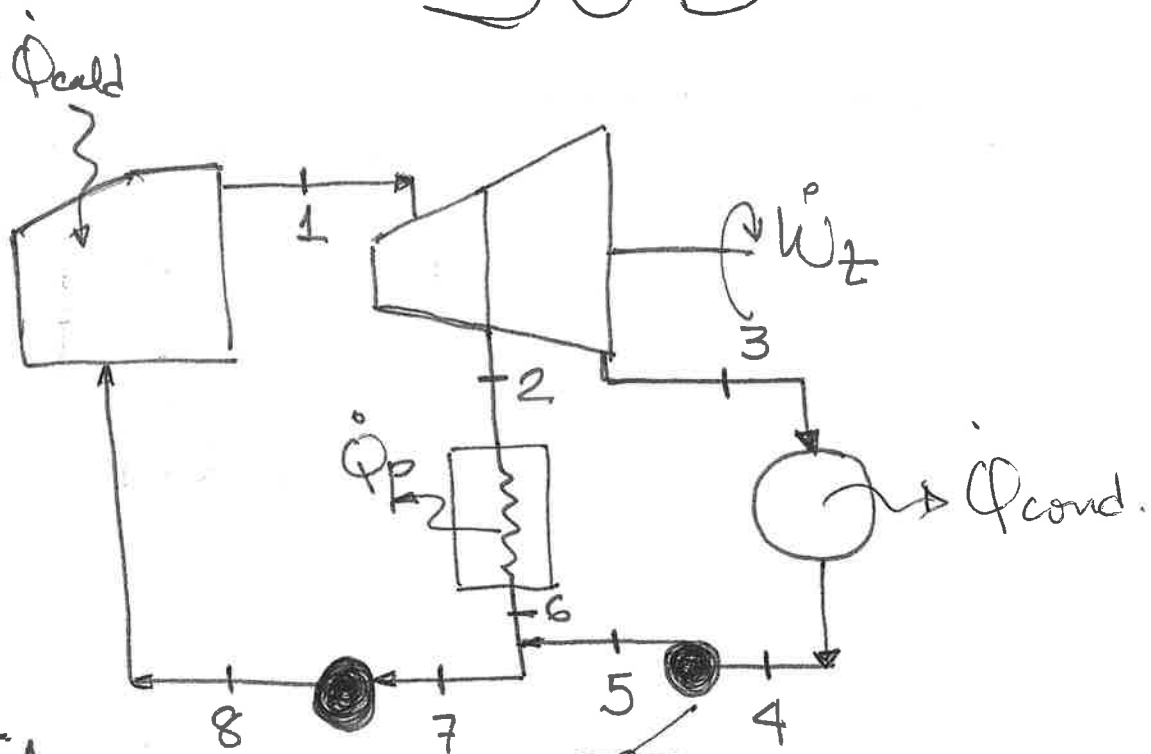
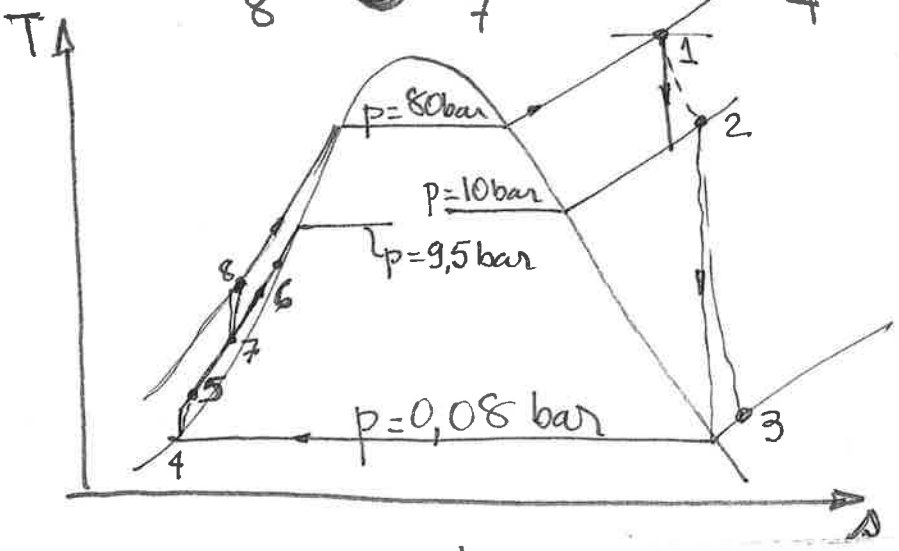
# SUB




$\dot{m}_1 = 10^6 \text{ kg.h}^{-1}$

$\dot{m}_2 = 4.10^5 \text{ kg.h}^{-1}$

Estados:

(1) $p_1 = 80$ bar ; $T_1 = 480°C \rightarrow h_1 = 3348,4 \frac{kJ}{kg}$

$s_1 = 6,6586 \frac{kJ}{kg}$

(2) $p_2 = 10$ bar ; $p_{2s} = p_1 \rightarrow h_{2s} = 2814,5 \frac{kJ}{kg}$

$h_2 = h_1 - \eta_t (h_1 - h_{2s}) = 2886,7 \text{ kJ/kg}$

$s_2 = 6,8133 \text{ kJ/kgK}$

(3) $p_3 = 0,08 \text{ bar} \rightarrow s_{3s} = s_2 \rightarrow h_{3s} = 2131,5 \text{ kJ/}$

$h_3 = h_2 - \eta_t (h_2 - h_{3s}) = 2237,2 \text{ kJ/kg}$

(4) $p_4 = 0,08 \text{ bar}$, $h = h_l = 173,88 \text{ kJ/kg}$

(5) $h_{5s} \simeq h_4 + v_4 (p_5 - p_4)$

$h_{5s} = 173,88 \frac{\text{kJ}}{\text{kg}} + (1,0084 \cdot 10^{-3} \frac{\text{m}^3}{\text{kg}}) + (9,5 - 0,8) \text{ bar } \frac{10^5 \text{N/}}{1 \text{ bar}}$

$h_{5s} = 173,88 + 0,95 = 174,83 \text{ kJ/kg}$

$h_5 = h_4 + (h_{5s} - h_4)/\eta_b = 175,07 \text{ kJ/kg}$

(6) $h_6 \simeq h_l(T_6) + v_l(T_6)[p_6 - p_{sat}(T_6)]$

$h_6 = 503,71 + 0,797 = 504,51 \text{ kJ/kg}$

(7) $\dot{m}_5 = \dot{m}_7 - \dot{m}_6 = 6 \cdot 10^5 \text{ kg/h}$

$h_7 = \frac{\dot{m}_5 h_5 + \dot{m}_6 h_6}{\dot{m}_7} = 306,84 \text{ kJ/kg}$

(8) $h_{8s} \simeq h_7 + v_7 (p_8 - p_7) = 314,1 \text{ kJ/kg}$

$h_8 = h_7 + (h_{8s} - h_7)/\eta_b = 315,88 \text{ kJ/kg}$

a) $\dot{Q}_p = \dot{m}_2 (h_2 - h_6) = 9{,}529.10^8 \text{ kJ/h}$

$\dot{Q}_p = 264{,}7 \text{ MW}$

b) $\dot{W}_T = \dot{m}_1 h_1 - \dot{m}_2 h_2 - \dot{m}_3 h_3 = 236{,}5 \text{ MW}$

c) $\dot{Q}_{cald} = \dot{m}_1 (h_1 - h_8) = 842{,}22 \text{ MW}$