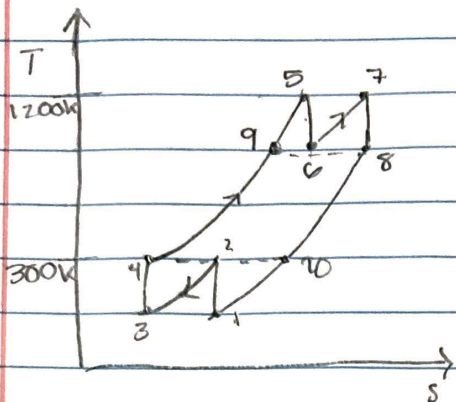


9-119



$$W_{\text{turb.out}} = 2(1277.79 - 946.357) \\ = 662.866 \text{ kJ/kg}$$

$$W_{\text{comp.in}} = 2(411.287 - 300.19) \\ = 222.134 \text{ kJ/kg}$$

$$W_{\text{net}} = 662.866 - 222.134 = 440.732 \text{ kJ/kg}$$

$$110000 = m(440.732)$$

$$\boxed{249.585 \text{ kg/s}} = m$$

$$T_1 = 300\text{K}$$

$$h_1 = 300.19 \text{ kJ/kg}$$

$$Pr_1 = 1.386$$

$$T_5 = 1200\text{K}$$

$$h_5 = 1277.97 \text{ kJ/kg}$$

$$Pr_5 = 238$$

$$\frac{Pr_2}{Pr_1} = \frac{Pr_2}{1.386} \Rightarrow (3)(1.386) = 4.158$$

$$Pr = 4.153$$

$$h = 411.12 \text{ kJ/kg}$$

$$Pr = 4.522$$

$$h = 421.26 \text{ kJ/kg}$$

$$\frac{h_2 - 411.12}{421.26 - 411.12} = \frac{4.158 - 4.153}{4.522 - 4.153}$$

$$h_2 - 411.12 = (421.26 - 411.12) \frac{4.158 - 4.153}{4.522 - 4.153}$$

$$h_2 - 411.12 = 0.137$$

$$h_2 = 411.257 \text{ kJ/kg}$$

$$Pr_v = (1/3)(238) = 79.33$$

$$Pr = 75.29$$

$$h = 932.93 \text{ kJ/kg}$$

$$Pr = 82.05$$

$$h = 955.38 \text{ kJ/kg}$$

$$\frac{h_v - 932.93}{955.38 - 932.93} = \frac{79.33 - 75.29}{82.05 - 75.29}$$

$$955.38 - 932.93 \quad 82.05 - 75.29$$

$$h_v - 932.93 = (955.38 - 932.93) \frac{79.33 - 75.29}{82.05 - 75.29}$$

$$h_v - 932.93 = 13.427$$

$$82.05 - 75.29$$

$$h_v = 946.357 \text{ kJ/kg}$$

Rest at

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