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1.) $P_1 = 100$ KPa $T_1 = 20°C$ $\dot{V} = 7.5 \frac{m^3}{s}$ $Q = 0$

$P_2 = 10000$ KPa $\frac{\dot{m}}{s} = ?$

2.) $P_1 = 100$ KPa $T_1 = 20°C$ $\dot{V} = 7.5 \frac{m^3}{s}$ $Q = 0$

$P_2 = 10000$ KPa

$$\frac{T_2}{T_1} = \left(\frac{P_2}{P_1}\right)^{R/C_P}$$

3.) $V_1 = 0.2 \, m^3$ $m = 2.5$ kg $P_1 = 1$ MPa $T_2 = 300°C$

4.) $V_1 = 0.2 \, m^3$ $m = 2.5$ kg $P = 1$ MPa $T_2 = 300°C$

$$q = \frac{V - V^L}{V^V - V^L} \rightarrow 0.4 = \frac{0.2 - 0.01127}{0.2149 - 0.01127}$$

5.) $V_1 = 0.2 \, m^3$ $m = 2.5$ kg $P = 1$ $T_2 = 300°C$

$$W_{EC} = -\int_a^b P dV \rightarrow -P\Delta V = -1000 KPa \, (0.44)$$

6.) $V_1 = 0.2 \, m^3$ $m = 2.5$ kg $P = 1$ MPa $T_2 = 300°C$

$$\Delta u = Q + W_{EC} \rightarrow Q = \Delta u - W_{EC} =$$