

Aufgabe 4

isobar, $p_1 = p_2 = 15 \text{ bar}$, $T_1 = 283,15 \text{ K}$, $\dot{m} = 1,9 \frac{\text{kg}}{\text{s}}$

$$\dot{Q}_{12} = \dot{m} c_p (T_2 - T_1) \quad \text{He Edelgas, also } \alpha = \frac{\gamma}{\gamma} \Rightarrow c_p = \frac{\alpha}{\alpha - 1} \frac{R}{M_{\text{He}}} =$$

$$T_2 = T_1 + \frac{\dot{Q}_{12}}{\dot{m} c_p} = 384,6 \text{ K} \quad = 5 \cdot 150 \frac{\text{kJ}}{\text{kg K}}$$

$$\dot{S}_2 - \dot{S}_1 = \dot{m} c_p \ln \frac{T_2}{T_1} = 3,019 \frac{\text{kJ}}{\text{K} \cdot \text{s}} = \frac{\text{kW}}{\text{K}}$$