

Isochore Wärmezufuhr

$$\dot{Q}_{12} = \dot{m} \overline{c_p} \Big|_{T_1}^{T_2} (T_2 - T_1)$$

$$\overline{c_p} \Big|_{T_1}^{T_2} = \frac{(T_2 - T_0) \overline{c_p} \Big|_{T_0}^{T_2} - (T_1 - T_0) \overline{c_p} \Big|_{T_0}^{T_1}}{(T_2 - T_1)}$$

Tabelle:

$$\overline{c_p} \Big|_{T_0}^T = \frac{1}{M} \overline{C_{u,p}} \Big|_{T_0}^T$$

$$f(T) := \dot{Q}_{12} - \dot{m} \overline{c_p} \Big|_{T_1}^T (T - T_1) \stackrel{!}{=} 0$$

Nullstelle mit $f=0$

untere Grenze:

$$\varepsilon \text{ klein, } T_{\text{min}} = T_1 + \varepsilon$$

obere Grenze:

$$c_{p,\text{air}} = \text{min} \overline{c_p} \Big|_{T_1}^{T_2} > 0$$

Variationsplan: $\overline{c_p} \rightarrow c_{p,\text{min}}$

$$\dot{Q}_{12} - \dot{m} c_{p,\text{min}} (T - T_1) = 0$$

$$\Rightarrow T = T_1 + \frac{\dot{Q}_{12}}{\dot{m} c_{p,\text{min}}} = T_{\text{max}}$$