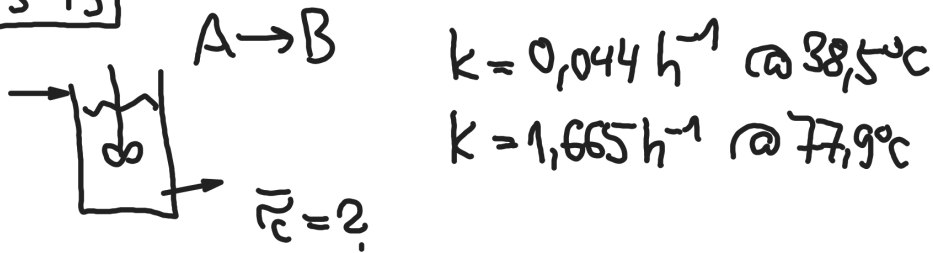


15-13



$T = 50^\circ\text{C}$ $\eta_A = 80\% / 90\%$

balance

$$0 = C_{A0}\dot{V} - C_A\dot{V} - k \cdot C_A \cdot V$$

$$\eta_A = \frac{C_{A0} - C_A}{C_{A0}}$$

$$0 = C_{A0}\dot{V} - C_{A0}(1 - \eta_A)\dot{V} - k \cdot C_{A0}(1 - \eta_A)V$$

$$C_A = C_{A0} \cdot (1 - \eta_A)$$

$$0 = [1 - (1 - \eta_A)]\dot{V} - k \cdot (1 - \eta_A)V$$

$$\bar{t} = \frac{V}{\dot{V}}$$

$$0 = \eta_A - k(1 - \eta_A) \cdot \bar{t}$$

$$\ln k_1 = \ln k_0 + (-E_A/RT_1)$$

$$\ln k_2 = \ln k_0 + (-E_A/RT_2)$$

$$\ln k_1/k_2 = -\frac{E_A}{R} \cdot \left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\bar{t} = \frac{\eta_A}{k \cdot (1 - \eta_A)}$$

Závislost „k“ na teplotě

$$k = k_0 \exp(-E_A/RT)$$

$$\ln k = \ln k_0 + (-E_A/RT)$$

$$\ln \frac{0,044}{1,665} = -\frac{E_A}{R} \cdot \underbrace{\left(\frac{1}{273,15+30,5} - \frac{1}{273,15+77,9} \right)}_{0,00036013}$$

$$-\frac{E_A}{R} = -10089 \text{ K}$$

$$\begin{aligned} \ln k_0 &= \ln k_1 + \frac{E_A}{R} \cdot \frac{1}{T_1} \\ &= \ln 0,044 + 10089 / (273,15 + 30,5) \\ &= 29,249 \end{aligned}$$

$$\ln k_3 = \ln k_0 - \frac{E_A}{R} \cdot \frac{1}{T_3}$$

$$\begin{aligned} \ln k_3 &= 29,249 - 10089 / (273,15 + 50) \\ &= -1,972 \end{aligned}$$

$$\underline{k_3 = 0,1392 \text{ h}^{-1}}$$

Dokončení

$$\tau = \frac{\eta_A}{k \cdot (1 - \eta_A)} \quad k = 0,1392 \text{ h}^{-1} \quad \eta_A = 0,8 / 0,9$$

$$\tau = \frac{0,8}{0,1392 \cdot 0,2} = \underline{\underline{28,7 \text{ h}}}$$

$$\tau = \frac{0,9}{0,1392 \cdot 0,1} = \underline{\underline{64,6 \text{ h}}}$$