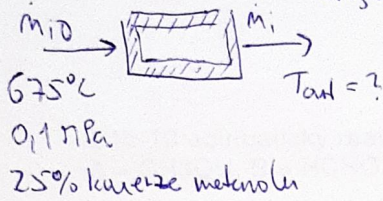
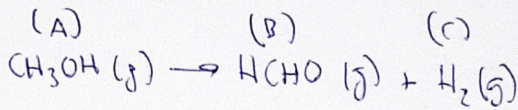


115-10



$$\begin{aligned} \langle C_{p, \text{CH}_3\text{OH}} \rangle &= 71 \text{ kJ/mol}\cdot\text{K} \\ \langle C_{p, \text{HCHO}} \rangle &= 50 \text{ kJ/mol}\cdot\text{K} \\ \langle C_{p, \text{H}_2} \rangle &= 29 \text{ kJ/mol}\cdot\text{K} \end{aligned}$$

$$\dot{m}_i = \dot{m}_{i0} + \nu_i \dot{\xi}$$

$$\left[\begin{aligned} \dot{m}_A &= \dot{m}_{A0} (1 - \xi_A) \\ \dot{m}_B &= \dot{m}_{B0} + \dot{m}_{A0} \xi_A \\ \dot{m}_C &= \dot{m}_{C0} + \dot{m}_{A0} \xi_A \end{aligned} \right]$$

$$\sum \dot{m}_{i0} \langle C_{p,i} \rangle (T_{in} - T_{ref}) = \sum \dot{m}_i \langle C_{p,i} \rangle (T_{out} - T_{ref}) + \Delta_R h (T_{ref}) \cdot \dot{\xi}$$

~~$$\sum \dot{m}_i \langle C_{p,i} \rangle (T_{out} - T_{ref}) = \sum \dot{m}_i \langle C_{p,i} \rangle (T_{in} - T_{ref}) + \Delta_R h (T_{ref}) \cdot \dot{\xi}$$~~

$$T_{ref} = T_{out}$$

$$\sum \dot{m}_{i0} \langle C_{p,i} \rangle (T_{in} - T_{out}) = \underbrace{\sum \dot{m}_i \langle C_{p,i} \rangle (T_{out} - T_{out})}_{=0} + \Delta_R h (T_{out}) \cdot \dot{\xi}$$

$$\dot{m}_{A0} = 1 \text{ mol}$$

$$\dot{m}_{A0} \langle C_{p,A} \rangle (T_{in} - T_{out}) = \left[\sum \nu_i \Delta_f h_i + \sum \nu_i \langle C_{p,i} \rangle (T_{out} - 25^\circ\text{C}) \right] \cdot \dot{\xi}$$

$$\dot{m}_A = \dot{m}_{A0} - 1 \cdot \dot{\xi}$$

$$\dot{m}_A = \dot{m}_{A0} (1 - \xi_A) = \dot{m}_{A0} - \dot{m}_{A0} \xi_A \quad \left. \begin{array}{l} \dot{\xi} = \dot{m}_{A0} \xi_A \\ 1 \text{ mol} \cdot 0,25 = 0,25 \text{ mol-R.O.} \end{array} \right\}$$

U15-10 adiabaticky reaktor, e.b.
 A = CH₃OH, B = HCHO, C = H₂

[> restart:

> Cp_A := 71e-3 : Cp_B := 50e-3 : Cp_C := 29e-3 : # $\frac{\text{kJ}}{\text{mol} \cdot \text{K}}$

> hF_A := -201.3 : hF_B := -116 : hF_C := 0 : # $\frac{\text{kJ}}{\text{mol}}$

dhR_25 := -1 · hF_A + 1 · hF_B + 1 · hF_C; # $\frac{\text{kJ}}{\text{mol}}$

$$dhR_{25} := 85.3 \quad (1)$$

dCpR := -1 · Cp_A + 1 · Cp_B + 1 · Cp_C; # $\frac{\text{kJ}}{\text{mol} \cdot \text{K}}$

$$dCpR := 0.008 \quad (2)$$

nA0 := 1 : # mol

ksi := 0.25 : # mol (r.o.)

Tin := 675 : # C

ebil := nA0 · Cp_A · (Tin - Tout) = (dhR_25 + dCpR · (Tout - 25)) · ksi;
 ebil := 47.925 - 0.071 Tout = 21.27500 + 0.00200 Tout

$$(3)$$

Tout := solve(ebil); # C

$$Tout := 365.0684932 \quad (4)$$

Vystupni teplota z reaktoru je Tout (365 C)