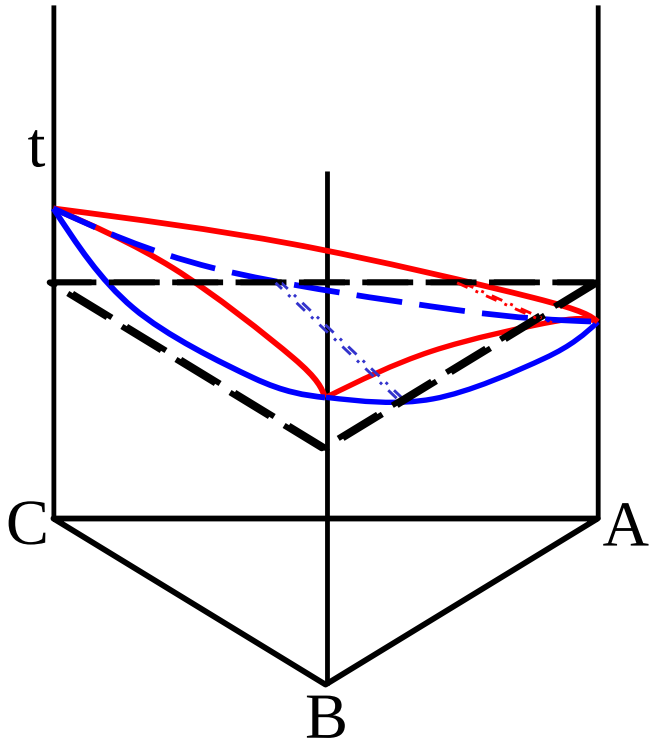
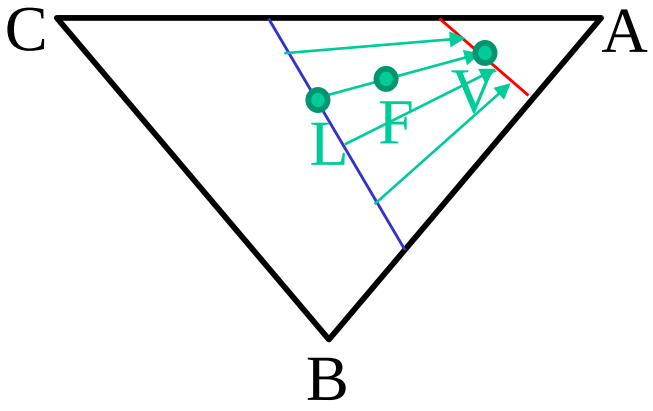
3-složková rovnovážná destilace

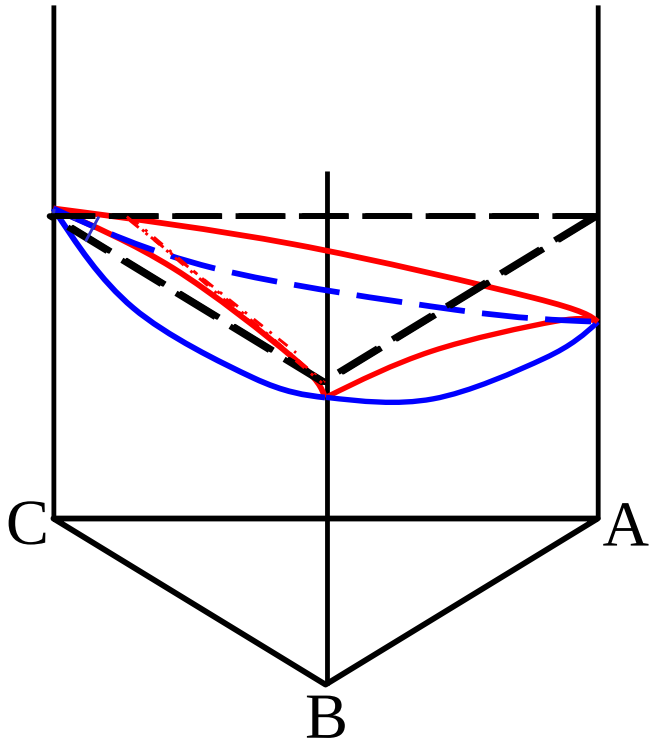


izotermní řezy v t,x,y diagramu



3-složková rovnovážná destilace

izotermní řezy v t,x,y diagramu

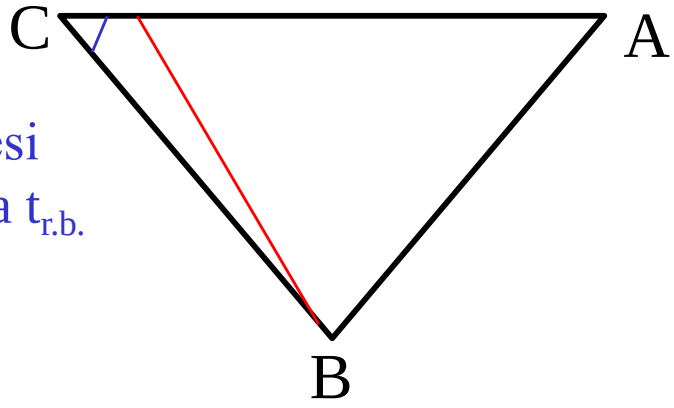


$$K_A \cdot x_A + K_B \cdot x_B + K_C \cdot x_C = 1$$

$$K_A \cdot x_A + K_B \cdot x_B + K_C \cdot (1 - x_A - x_B) = 1$$

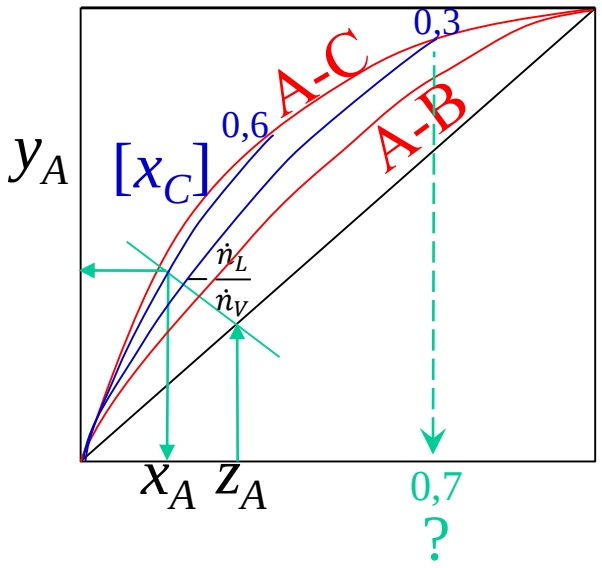
$$x_A = -\frac{K_B - K_A}{K_A - K_C} \cdot x_B + \frac{1 - K_C}{K_A - K_C}$$

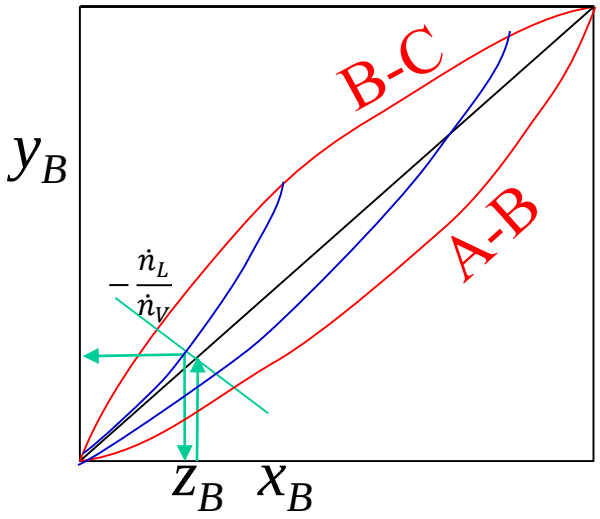
v případě id. L směsi
($\gamma_i \sim 1$) **přímky** $t_{b.v.}$ a $t_{r.b.}$



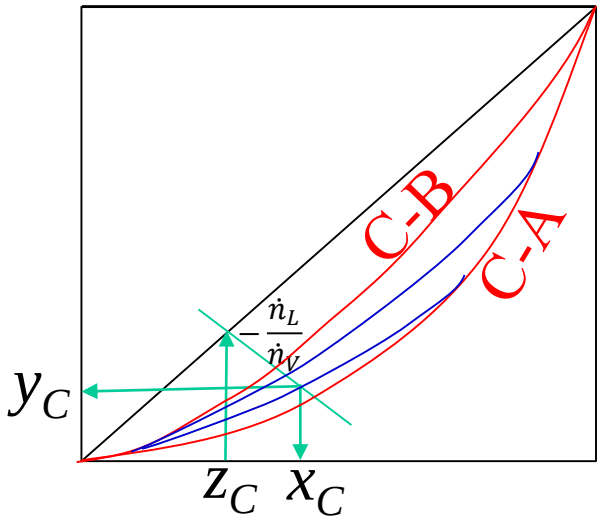
3-složková rovnovážná destilace

rozdělovací diagramy s pracovní čárou



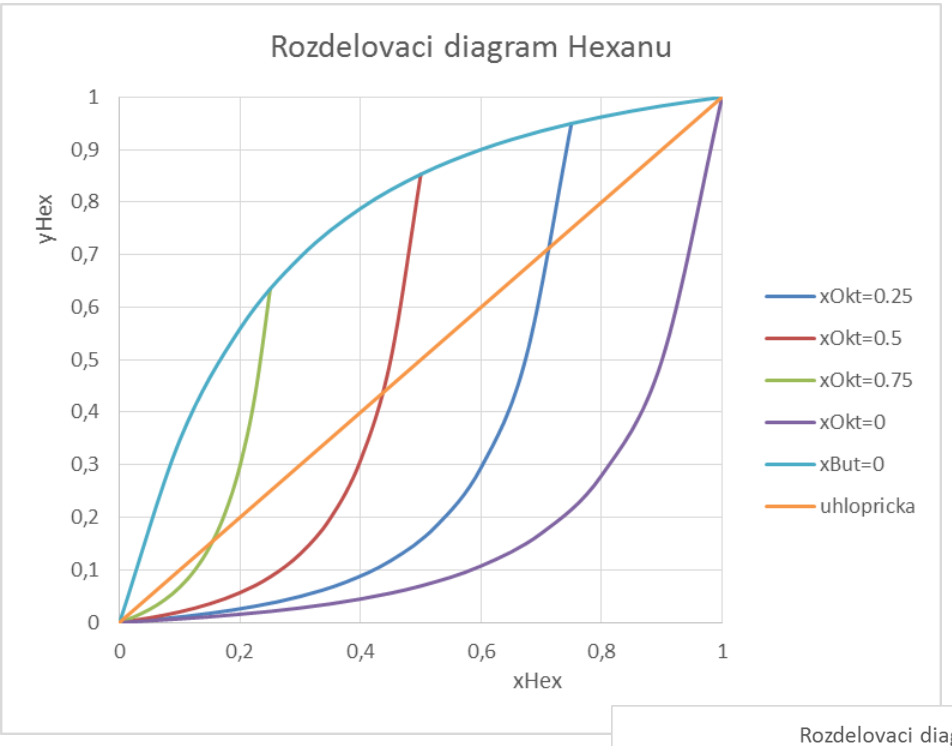


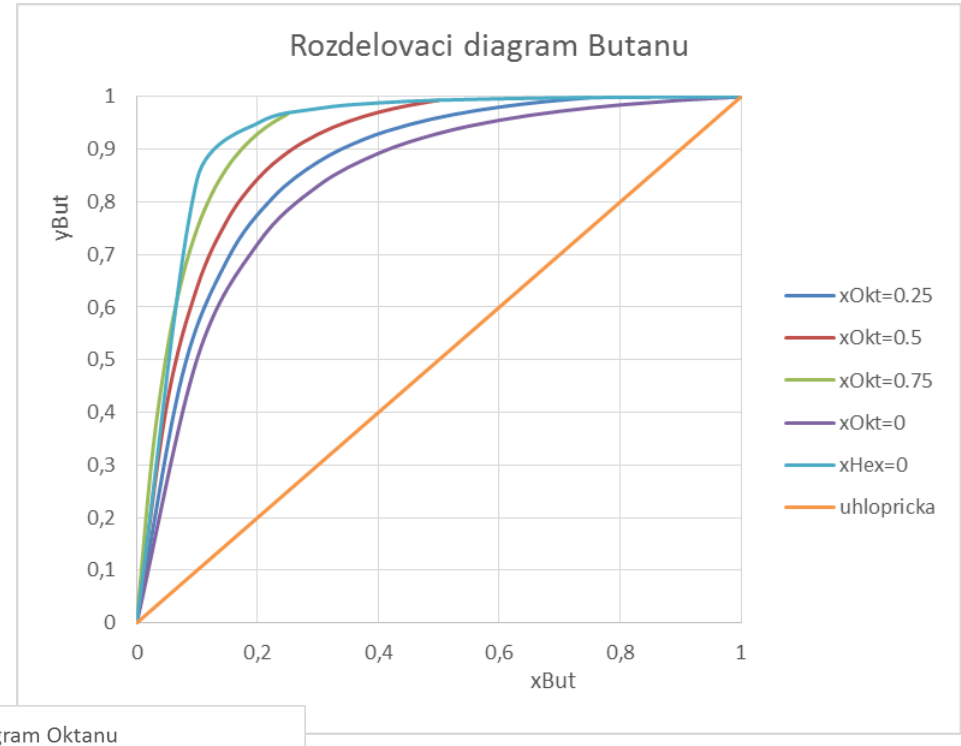
? 0,6 0,3

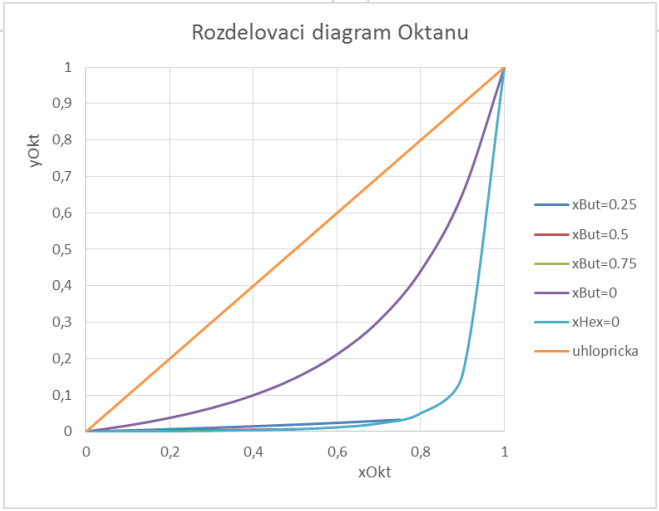


3-složková rovnovážná destilace

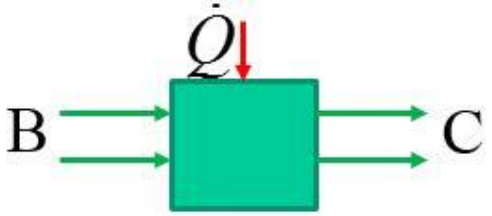
butan-hexan-oktan







Stupně volnosti



P: (proměnné)

- $\dot{n}, x_1, x_2, \ldots, x_{c-1}, t, p$
- $\dot{Q}$

V: (vazné podmínky)

B: (bilance) $(i = 1, 2, \ldots, c)$

- $MB: \sum_B x_{iB} \cdot \dot{n}_B = \sum_C x_{iC} \cdot \dot{n}_C$ $\boxed{MB = c}$
- $HB: \sum_B h_B \cdot \dot{n}_B + \dot{Q} = \sum_C h_C \cdot \dot{n}_C$ $\boxed{HB = 1}$

R: (rovnováhy)

- $x_{iK} = K_i \cdot x_{iL}$ $\boxed{R_f = c(f-1)}$
- $t_K = t_L$
  - $N_{mt} < N_m \vee N_Q > 0 \Rightarrow \boxed{R_t = N_{mt} - 1}$
  - $N_{mt} = N_m \wedge N_Q = 0 \Rightarrow \boxed{R_t = N_{mt} - 2}$ (HB)
- $p_K = p_L$ $\boxed{R_p = N_{mp} - 1}$

f.r.

- $x_{iK} = x_{iL}$
  - $N_{ms} < N_m \Rightarrow \boxed{R_s = (N_{ms} - 1)(c-1)}$
  - $N_{ms} = N_m \Rightarrow \boxed{R_s = (N_{ms} - 2)(c-1)}$ (MB)

$$P_m = c + 2$$
$$P_Q = 1$$
$$P = N_m \cdot (c+2) + N_Q \cdot 1$$

$\boxed{N_v = P - V}$ $\quad N_{vr} = N_v - S$ $\quad N_{vr} > 0 \Rightarrow$ *param. studie*