

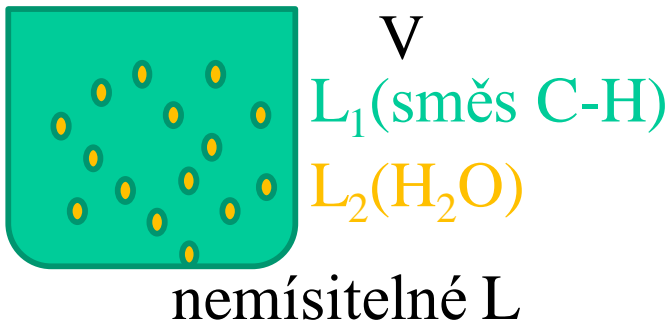
# Bod varu a rosný bod v systému se 2 kapalnými fázemi

jedna kapalná f.:

$$\sum_{i \in L} x_i \cdot K_i(t) = 1$$

$$\sum_{i \in L} x_i \cdot p_i^0(t) = p_T$$

$$\sum_{i \in L} y_i / K_i(t) = 1$$



$$\sum_{i \in L1} x^{-L2}_i \cdot K_i(t) + K_{L2}(t) = 1$$

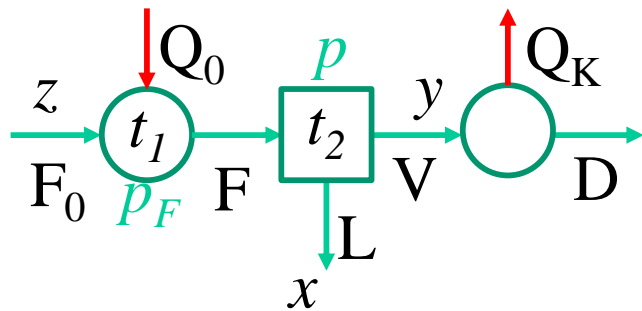
$$\sum_{i \in L1} x^{-L2}_i \cdot p^0_i(t) + p^0_{L2}(t) = p_T$$

$$\sum_{i \in L1} y_i / K_i(t) = 1 \quad \left( \sum y_i = 1 - y_{L2} \right)$$

$$\sum_{i \in L2} y_i / K_{L2}(t) = 1$$

# Rovnovážná (mžiková) destilace

## Flash



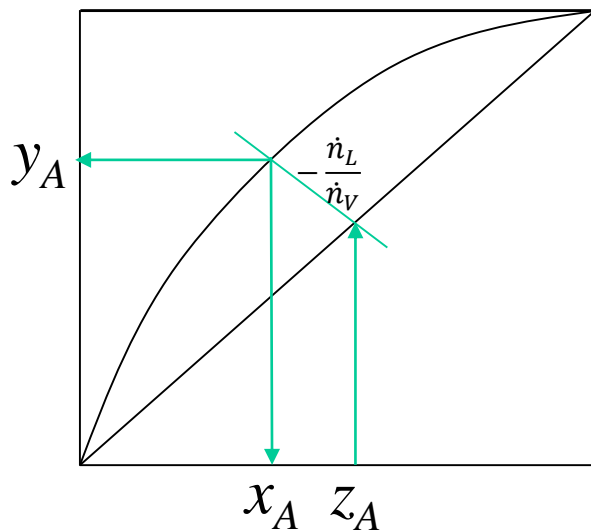
$$\dot{n}_F = \dot{n}_L + \dot{n}_V$$

$$z_i \cdot \dot{n}_F = x_i \cdot \dot{n}_L + y_i \cdot \dot{n}_V$$

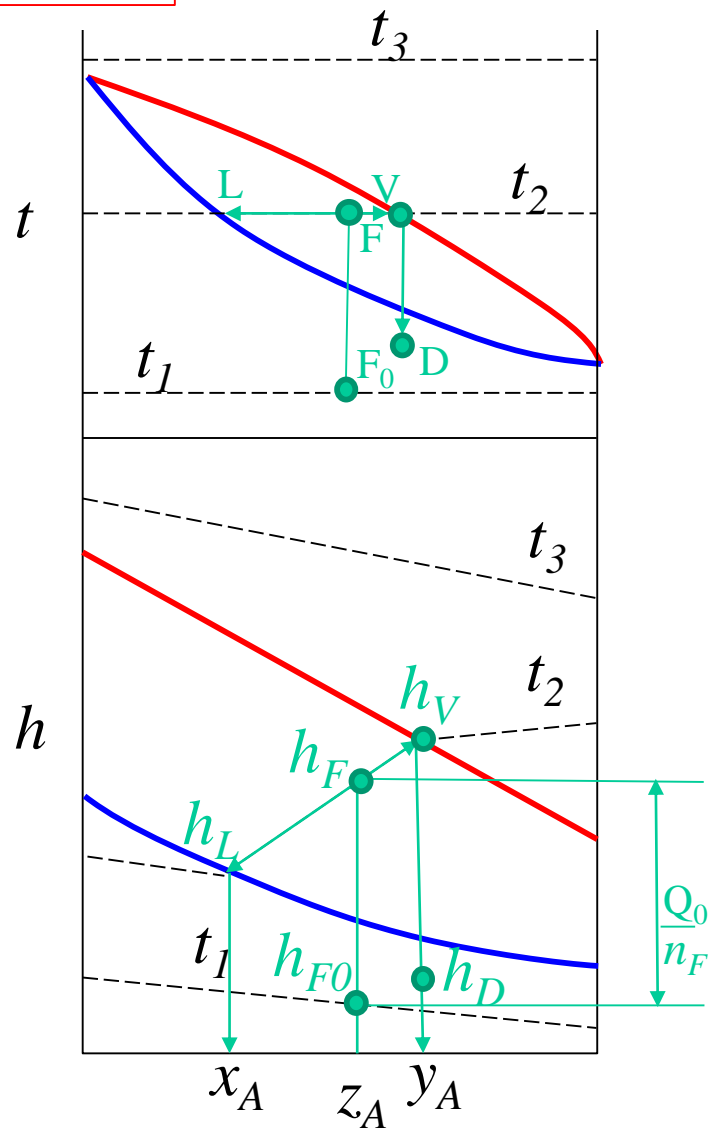
$$h_F \cdot \dot{n}_F = Q_0 + h_{F0} \cdot \dot{n}_F$$

$$h_F \cdot \dot{n}_F = h_L \cdot \dot{n}_L + h_V \cdot \dot{n}_V$$

$$h_V \cdot \dot{n}_V = Q_K + h_D \cdot \dot{n}_D$$

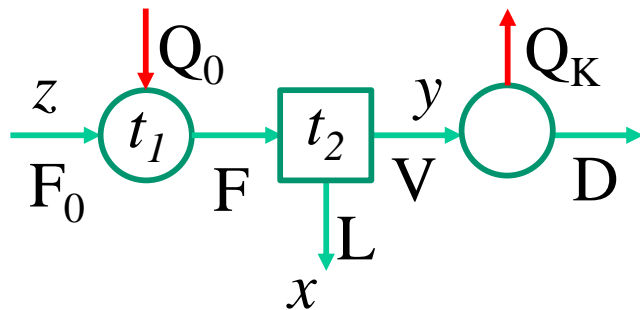


2 složky



# Rovnovážná (mžiková) destilace

## Flash

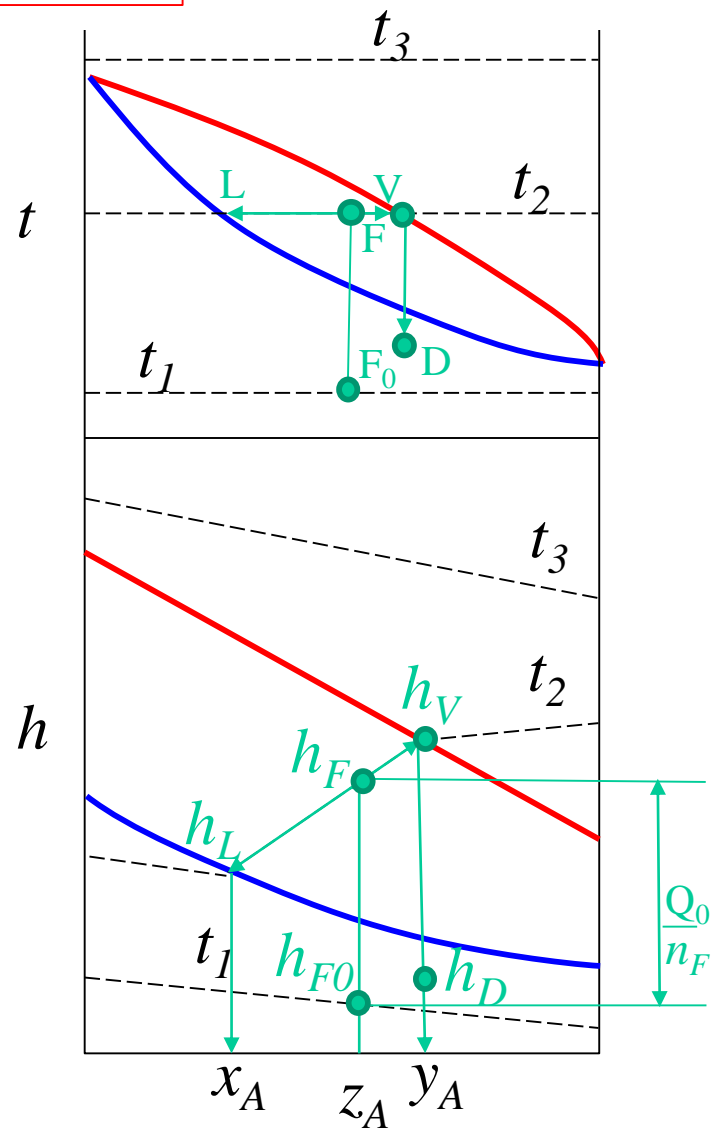


jak z bilance obsahující  $\dot{n}_F, \dot{n}_L$  a  $\dot{n}_V$  získat pákové pravidlo obsahující pouze  $\dot{n}_L$  a  $\dot{n}_V$ ?  
(nebo třeba  $\dot{n}_F$  a  $\dot{n}_V$ )

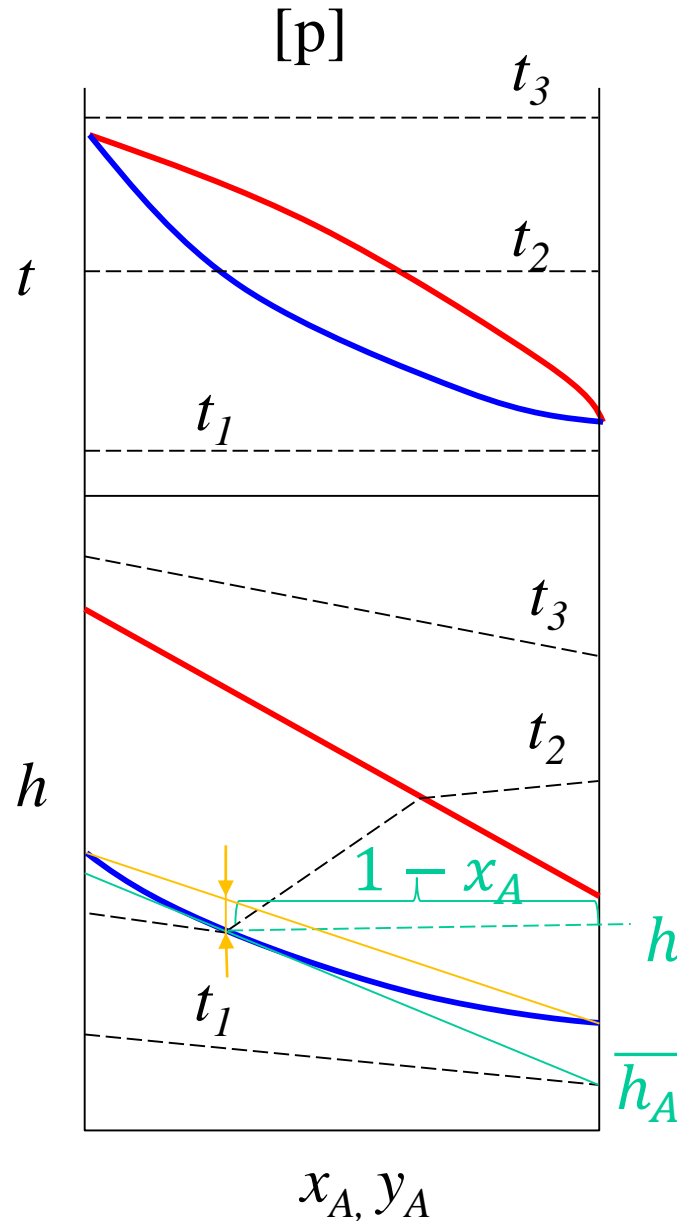
... ??

... ??

$$\frac{\dot{n}_L}{\dot{n}_V} = \frac{y_i - z_i}{z_i - x_i} = \frac{\overline{FV}}{\overline{LF}} = \frac{h_V - h_F}{h_F - h_L}$$



# Entalpie neideální směsi



$$h = h_A \cdot x_A + h_B \cdot x_B + \Delta h_{mix}$$

parciální molární/měrné veličiny

$$h = \bar{h}_A \cdot x_A + \bar{h}_B \cdot x_B$$

$$\bar{h}_i = h + (1 - x_i) \cdot \left. \frac{\partial h}{\partial x_i} \right|_{t,p}$$

# Rovnovážná (mžiková) destilace

Flash

$$f_V = \frac{\dot{n}_V}{\dot{n}_F}$$

$$f_L = \frac{\dot{n}_L}{\dot{n}_F}$$

$$f_L + f_V = 1$$

$$z = x_i \cdot f_L + y_i \cdot f_V \quad + \quad y_i = K_i \cdot x_i \begin{cases} x_i = \frac{z_i}{1 + f_V(K_i - 1)} \\ y_i = \frac{z_i}{1 + f_L(\frac{1}{K_i} - 1)} \end{cases}$$

$$h_F = h_L \cdot f_L + h_V \cdot f_V$$

$$h_F = \frac{Q_0}{\dot{n}_F} + h_{F0}$$

$$\sum x_i = 1 \quad \longleftrightarrow \quad \sum \frac{z_i}{1 + f_V(K_i - 1)} = 1 \quad (\text{t}_{\text{r.b.V}})$$

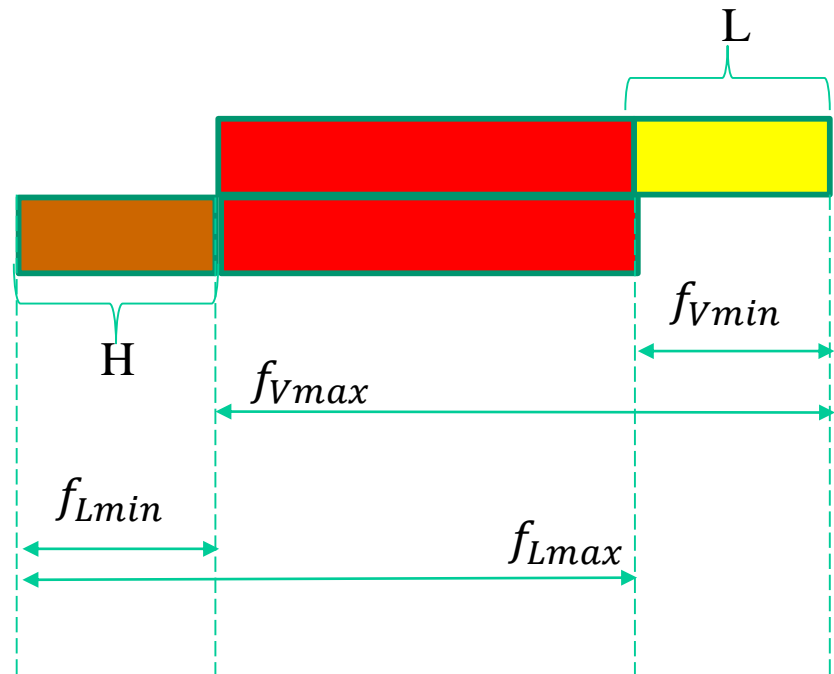
?  $\wedge$   $\vee$   $\parallel$  ?

$$\sum y_i = 1 \quad \longleftrightarrow \quad \sum \frac{z_i}{1 + f_L(\frac{1}{K_i} - 1)} = 1 \quad (\text{t}_{\text{b.v.L}})$$

# vícesložková rovnovážná destilace

$$\sum x_i = 1 \quad \longleftrightarrow \quad \sum_{i \neq L} \frac{z_i}{1 + f_V(K_i - 1)} = 1$$

$$\sum y_i = 1 \quad \longleftrightarrow \quad \sum_{i \neq H} \frac{z_i}{1 + f_L\left(\frac{1}{K_i} - 1\right)} = 1$$



destilační  
křivka

