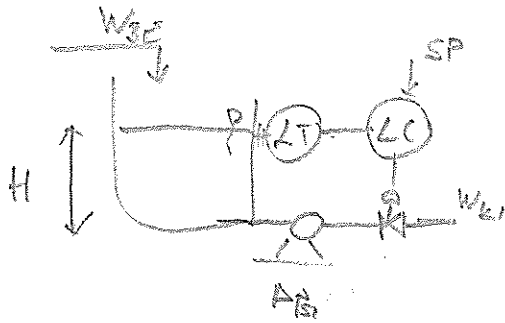


FIR gyár pzh

2014. 11. 10.



$$D = 0,35 \text{ m}$$

$$L = 1,4 \text{ m}$$

$$\bar{H} = 0,8 \text{ m}$$

$$\bar{W} = 0,6 \text{ m}^3/\text{h}$$

$$G_{TA} = K_{PA} = \frac{100\% - 0\%}{1,2 \text{ m} - 0,2 \text{ m}} = 100 \frac{\%}{\text{m}}$$

Zavarás:

$$a = 800 \frac{\text{m}^3/\text{h}}{\text{h}} - 600 \frac{\text{m}^3/\text{h}}{\text{h}} = 200 \frac{\text{m}^3/\text{h}}{\text{h}}$$

$$K_{PSI} = 2 \text{ bar}$$

$$\approx 0,2 \text{ m}^3/\text{h}$$

$$G_{SE} = K_{SE} = 1,2 \frac{\text{m}^3/\text{h}}{\%} \approx 0,0012 \frac{\text{m}^3/\text{h}}{\%}$$

① A rálass a zárt seb. kör ábrái jvitöl (G^*) számolható!

$$G^* = \frac{H}{W_{SE}} = \frac{G_2}{1 + G_7 \cdot G_{TA} \cdot G_C \cdot G_{SE}}$$

$$\text{ahol } G_C = 0,1 \frac{\%}{\%} \quad \text{és } G_7 = G_2 = \frac{K_7}{S} = \frac{1}{\frac{2^2 \pi}{4}} \cdot \frac{1}{5} = \frac{1}{(0,55 \text{ m})^2} \cdot \frac{1}{5}$$

$$G_7 = \frac{10,4}{5} \text{ m}^3/\text{m}^3/\text{h} \approx \frac{10,4}{5} \frac{1}{\text{m}^2}$$

$$G^* = \frac{\frac{10,4}{5} \frac{1}{\text{m}^2}}{1 + \frac{10,4}{5} \frac{1}{\text{m}^2} \cdot 100 \frac{\%}{\text{m}} \cdot 0,1 \frac{\%}{\%} \cdot 0,0012 \frac{\text{m}^3/\text{h}}{\%}}$$

$$= \frac{10,4}{5 + 10,4 \cdot 100 \cdot 0,1 \cdot 0,0012} = \frac{8,33 \frac{\text{m}}{\text{m}^3/\text{h}}}{(0,802)5 + 1}$$

G^* első rendű arányos tag, egyrés zavarásra adott válaszfunkció:

$$H(t) = \bar{H} + a \cdot K^* \left(1 - e^{-\frac{t}{T^*}} \right)$$

$$H(0,25 \text{ h}) = 0,8 \text{ m} + 0,2 \frac{\text{m}^3/\text{h}}{\text{h}} \cdot 8,33 \frac{\text{m}}{\text{m}^3/\text{h}} \left(1 - e^{-\frac{0,25 \text{ h}}{0,8 \text{ h}}} \right) = \underline{\underline{1,25 \text{ m}}}$$

2

$$G^* = \frac{H}{w_{be}} = \frac{\frac{10,4 \frac{l}{m^2}}{5}}{1 + \frac{10,4 \frac{l}{m^2}}{5} \cdot 100 \frac{\%}{m} \cdot 5 \frac{\%}{l} \cdot 2,0012 \frac{m^3/l}}{\%}}$$

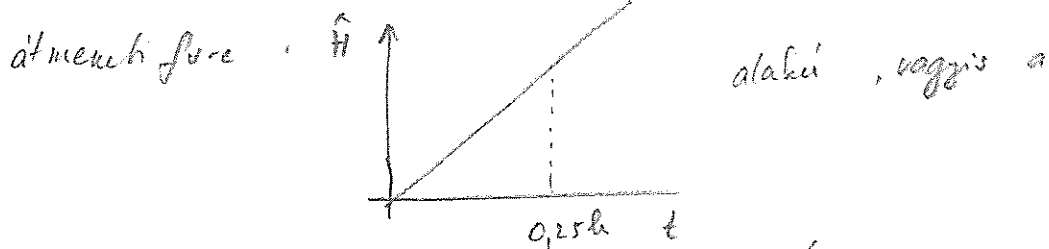
$$= \frac{0,17 \frac{m}{m^3/h}}{(0,016h)5 + 1}$$

$$H(0,25h) = 0,8m + 0,2 \frac{m^3}{h} \cdot 0,17 \frac{m}{m^3/h} \left(1 - e^{-\frac{0,25h}{0,016h}}\right) = \underline{\underline{0,83m}}$$

3

Ha a szabályos kézi átlátlós van, G_2 átviteli fűt kell megadni

$$G_2 = \frac{10,4}{5} \frac{m}{m^3/h} \text{ alaki, integráló tag}$$



tartály tük A folyadékot az új változó, amely új 15perc alatt befejeződik:

$$\Delta V(0,25h) = a \cdot 0,25h = 0,2 \frac{m^3}{h} \cdot 0,25h = 0,05 m^3$$

Er a tartályban \hat{H} változó jelen

$$\hat{H} = \frac{\Delta V}{\frac{D^2 H}{4}} = \frac{0,05 m^3}{\frac{(0,35m)^2 H}{4}} = 0,52m$$

$$H(0,25h) = \bar{H} + \hat{H} = 0,8m + 0,52m = \underline{\underline{1,32m}}$$

④ $\bar{W} = 0,6 \text{ m}^3/\text{h}$; $\Delta p_{st} = 2 \text{ bar}$

a)
$$\left. \begin{aligned} \frac{\bar{H}}{H_{max}} &= \frac{\bar{W}}{W_{max}} \\ \frac{\bar{H}}{H_{max}} &= 0,5 \end{aligned} \right\} \Rightarrow W_{max} = 2 \cdot \bar{W} = 1,2 \text{ m}^3/\text{h}$$

$$W_{max} = k_{max} \sqrt{\frac{\Delta p_{rel}}{\rho_{rel}}}$$

abel $\Delta p_{rel} = \frac{\Delta p_{st}}{1 \text{ bar}} = \frac{2 \text{ bar}}{1 \text{ bar}} = 2$

$$\rho_{rel} = \frac{\rho}{\rho_{st}} = \frac{1000 \text{ kg/m}^3}{1000 \text{ kg/m}^3} = 1$$

ig $k_{max} = \frac{1,2 \text{ m}^3/\text{h}}{\sqrt{2}} = \underline{\underline{0,85 \text{ m}^3/\text{h}}}$

b)
$$\left. \begin{aligned} \frac{\bar{W}}{W_{max}} &= e^{\bar{h}n - n} \\ \bar{h} = \frac{\bar{H}}{H_{max}} &= 0,5 \end{aligned} \right\} W_{max} = \frac{0,6 \text{ m}^3/\text{h}}{e^{0,5 \cdot 3 - 3}} = 2,69 \text{ m}^3/\text{h}$$

$$k_{max} = \frac{2,69 \text{ m}^3/\text{h}}{\sqrt{2}} = \underline{\underline{1,9 \text{ m}^3/\text{h}}}$$