

$\Delta p = \text{konst}$

4-6

$$S_f = 8 \text{ m}^2$$

$$V_s = 1.125 \text{ m}^3 \text{ vodnej suspenzie}$$

$$\rho_s = 1105 \text{ kg/m}^3$$

$$\rho_f = 1000 \text{ kg/m}^3$$

$$\Delta p = 150 \text{ kPa}$$

$$w_s = 0.15$$

$$V_p = 0.125 \cdot V_f$$

$$K = 1.61 \cdot 10^{-6} \text{ m}^2/\text{s}$$

$$q_n = 3.036 \cdot 10^{-3} \text{ m}$$

$$1 - w_k = 0.75$$

$$\tau_z = 35 \text{ min}$$

$$? m_s \text{ za } 24 \text{ h}$$

$$? V_p \text{ za } 24 \text{ hod}$$

$$q_f^2 + 2q_f q_n - 2K \cdot \tau_f = 0$$

1. cyklus

$$m_s = V_s \cdot \rho_s = 1.125 \cdot 1105 = 1243.125 \text{ kg}$$

$$\left. \begin{array}{l} m_s = m_k + m_f \\ w_s m_s = w_k m_k \end{array} \right\} \rightarrow m_f = m_s - \frac{w_s \cdot m_s}{w_k} = 1243.125 \cdot \left(1 - \frac{0.15}{0.75}\right) = 994.5 \text{ kg}$$

$$V_f = \frac{m_f}{\rho_f} = \frac{994.5}{1000} = \underline{\underline{0.9945 \text{ m}^3}}$$

$$q_f = \frac{V_f}{S_f} = \frac{0.9945}{8} = 0.12431 \text{ m}$$

$$0.12431^2 + 2 \cdot 0.12431 \cdot 3.036 \cdot 10^{-3} - 2 \cdot 1.61 \cdot 10^{-6} \tau_f = 0$$

$$\underline{\underline{\tau_f = 5033 \text{ s}}}$$

$$V_p = 0.125 \cdot 0.9945 = 0.12431 \text{ m}^3$$

$$q_p = 0.12431 / 8 = 0.015539 \text{ m}$$

$$4q_p \cdot (q_n + q_f) - k_p \cdot \tau_p = 0$$

$$4 \cdot 0.015539 \cdot (3.036 \cdot 10^{-3} + 0.12431) - 1.61 \cdot 10^{-6} \cdot \tau_p = 0$$

$$\underline{\underline{\tau_p = 4916 \text{ s}}}$$

$$\tau = \tau_f + \tau_p + \tau_z = 5033 + 4916 + 35 \cdot 60 = 12049 \text{ s} / 1 \text{ cyklus}$$

$$\underline{\text{Počet cyklov za 24 hodín:}} \quad \frac{24 \cdot 3600}{12049} = 7.1707 \text{ cyklov/den}$$

$$m_s (24 \text{ hod}) = 7.1707 \cdot 1.125 \cdot 1105 = \underline{\underline{8914 \text{ kg} / 24 \text{ hodín}}} \leftarrow \text{výkon filtra}$$

$$V_p (24 \text{ hod}) = 7.1707 \cdot 0.12431 = \underline{\underline{0.891 \text{ m}^3 / 24 \text{ hodín}}} \leftarrow \text{spotreba prenosovej vody}$$