

6. VEZETÉKMÉRETEZÉS

$$a) P_{1fel} = \frac{P_{1le}}{\eta_1} = \frac{50000}{0,8} = 62500 \text{ W}$$

$$P_{2fel} = 25000 \text{ W}$$

$$P_e = P_{1fel} + P_{2fel} = 62000 + 25000 = 87500 \text{ W}$$

$$b) I_e = \frac{P_e}{U_n} = \frac{87500}{550} = 159 \text{ A}$$

$$c) e = \frac{\epsilon \cdot U_n}{100} = \frac{5 \cdot 550}{100} = 27,5 \text{ V}$$

$$A_u = \frac{\rho \cdot 2 \cdot l \cdot I_e}{e} = \frac{0,0239 \cdot 2 \cdot 200 \cdot 159}{27,5} = 55,3 \text{ mm}^2$$

$$d) A_j = \frac{I_e}{J} = \frac{159}{8} = 19,8 \text{ mm}^2$$

$$e) A_j = 19,8 \text{ mm}^2 < A_u = 55,3 \text{ mm}^2 < A_{szabv} = 70 \text{ mm}^2$$

$$a) I_{1P} = \frac{P_1}{\sqrt{3} \cdot U_n} = \frac{15000}{\sqrt{3} \cdot 380} = 22,79 \text{ A}$$

$$I_{1Q} = I_{1P} \cdot \tan \phi_1 = 22,79 \cdot 0,75 = 17,09 \text{ A}$$

$$I_{2P} = \frac{P_2}{\sqrt{3} \cdot U_n} = \frac{25000}{\sqrt{3} \cdot 380} = 37,98 \text{ A}$$

$$I_{2Q} = I_{2P} \cdot \tan \phi_2 = 37,98 \cdot 1,02 = 38,75 \text{ A}$$

$$I_{3P} = \frac{P_3}{\sqrt{3} \cdot U_n} = \frac{10000}{\sqrt{3} \cdot 380} = 15,19 \text{ A}$$

$$I_{3Q} = I_{3P} \cdot \tan \phi_3 = 15,19 \cdot 0,48 = 7,36 \text{ A}$$

Szakaszáramok:

$$I'_{1P} = I_{1P} + I_{2P} + I_{3P} = 22,79 + 37,98 + 15,19 = 75,96 \text{ A}$$

$$I'_{1Q} = I_{1Q} + I_{2Q} + I_{3Q} = 17,09 + 38,75 + 7,36 = 63,2 \text{ A}$$

$$I'_{1S} = \sqrt{I_{1P}'^2 + I_{1Q}'^2} = \sqrt{75,96^2 + 63,2^2} = 98,81 \text{ A}$$

6.1. feladat

$$P_e = 87,5 \text{ kW}$$

$$I_e = 159 \text{ A}$$

$$A_u = 55,3 \text{ mm}^2$$

$$A_j = 19,8 \text{ mm}^2$$

$$A_{szabv} = 70 \text{ mm}^2$$

6.2. feladat

$$I'_{1S} = 98,81 \text{ A}$$