

3. EGYENÁRAMÚ GÉPEK

3.2. Egyenáramú generátorok

3.2.1. feladat

$$a) I_t = \frac{P_n}{U_k} = \frac{120000}{220} = 545,45 \text{ A}$$

$$I_g = \frac{U_k}{R_g} = \frac{220}{42} = 5,24 \text{ A}$$

$$I_a = I_t + I_g = 545,45 + 5,24 = 550,69 \text{ A}$$

$$b) U_{igen} = U_k + I_a \cdot R_b = 220 + 550,69 \cdot 0,012 = 226,61 \text{ V}$$

$$c) I_{tmot} = \frac{P_{felv}}{U_k} = \frac{60000}{220} = 272,72 \text{ A}$$

$$I_{amot} = I_{tmot} - I_g = 272,72 - 5,24 = 267,48 \text{ A}$$

$$d) n_{mot} = \frac{U_k - I_{amot} \cdot R_b}{c_u \cdot \Phi}; \text{ ahol } c_u \cdot \Phi = \frac{U_{igen}}{n_{gen}} = \frac{226,61}{24} = 9,44 \text{ V} \cdot \text{s}$$

$$n_{mot} = \frac{220 - 267,48 \cdot 0,012}{9,44} = 22,96 \text{ 1/s}$$

$$I_t = 545,45 \text{ A}$$

$$I_g = 5,24 \text{ A}$$

$$I_a = 550,69 \text{ A}$$

$$U_{igen} = 226,61 \text{ V}$$

$$I_{amot} = 267,48 \text{ A}$$

$$n_{mot} = 22,96 \text{ 1/s}$$

3.2.2. feladat

$$a) I_n = \frac{P_n}{U_k} = \frac{15000}{220} = 68,2 \text{ A}$$

$$P_g = 0,085 \cdot P_n = 0,085 \cdot 15000 = 1275 \text{ W}$$

$$I_g = \frac{P_g}{U_k} = \frac{1275}{220} = 5,8 \text{ A}$$

$$I_a = I_g + I_n = 68,2 + 5,8 = 74 \text{ A}$$

$$b) P_a = 0,1 \cdot P_n = 0,1 \cdot 15000 = 1500 \text{ W}$$

$$P_a = I_a^2 \cdot R_b \rightarrow R_b = \frac{P_a}{I_a^2} = \frac{1500}{74^2} = 0,274 \Omega$$

$$c) U_i = U_k + I_a \cdot R_b = 220 + 74 \cdot 0,274 = 240,3 \text{ V}$$

$$d) M_n = \frac{P_n}{\eta \cdot \omega} = \frac{P_n}{\eta \cdot 2 \cdot \pi \cdot n} = \frac{15000}{0,86 \cdot 2 \cdot \pi \cdot 25} = 111 \text{ N} \cdot \text{m}$$

$$I_n = 68,2 \text{ A}$$

$$I_g = 5,8 \text{ A}$$

$$I_a = 74 \text{ A}$$

$$R_b = 0,274 \Omega$$

$$U_i = 240,3 \text{ V}$$

$$M_n = 111 \text{ N} \cdot \text{m}$$