

3. EGYENÁRAMÚ GÉPEK

3.1. Egyenáramú motorok

a) $U_b = I \cdot R_b = 0,06 \cdot 220 = 13,2 \text{ V}$ $I_n = \frac{P}{U_k} = \frac{14 \cdot 10^3}{220} = 63,6 \text{ A}$ $U_i = U_k - U_b = 220 - 13,2 = 206,8 \text{ V}$ $R_b = \frac{U_b}{I_n} = \frac{13,2}{64} = 0,208 \Omega$ b) $n_n = n_0 \cdot \frac{U_k - I \cdot R_b}{U_k} = 1000 \cdot \frac{220 - 13,2}{220} = 940 \text{ 1/min}$ $\omega = \frac{2 \cdot \pi \cdot n}{60} = \frac{2 \cdot \pi \cdot 940}{60} = 98,4 \text{ 1/s}$ $M_n = \frac{P}{\omega} = \frac{14 \cdot 10^3}{103,4} = 142 \text{ N}\cdot\text{m}$ d) $I_{i\max} = 2 \cdot I_n = 2 \cdot 63,6 = 127,2 \text{ A}$ $R_i = \frac{U_k}{I_{i\max}} - R_b = \frac{220}{127,2} - 0,208 = 1,52 \Omega$	3.1.10. feladat $I_n = 63,6 \text{ A}$ $U_i = 206,8 \text{ V}$ $R_b = 0,208 \Omega$ $n_n = 940 \text{ 1/min}$ $M_n = 142 \text{ N}\cdot\text{m}$ $R_i = 1,52 \Omega$
a) $P_b = \frac{P}{\eta} = \frac{50000}{0,92} = 54348 \text{ W}$ $I_{an} = \frac{P_b}{U_{kn}} = \frac{54348}{220} = 247 \text{ A}$ $C_u \cdot \Phi = \frac{U_{kn}}{n_n} \cdot 60 = \frac{220}{1344} \cdot 60 = 9,82$ $R_b = \frac{U_{kn} - C_u \cdot \Phi \cdot \frac{n_n}{60}}{I_{in}} = \frac{220 - 9,82 \cdot \frac{1270}{60}}{247} = 0,049 \Omega$ b) $R_{b1} = \frac{U_{kn} - C_u \cdot \Phi \cdot \frac{n_1}{60}}{I_{an}} = \frac{220 - 9,82 \cdot \frac{1000}{60}}{247} = 0,228 \Omega$ $R_l = R_{b1} - R_b = 0,228 - 0,049 = 0,179 \Omega$ $I_{an}^2 \cdot R_l = 247^2 \cdot 0,179 = 10920 \text{ W}$	3.1.11. feladat $I_{an} = 247 \text{ A}$ $C_u \cdot \Phi = 9,82$ $R_b = 0,049 \Omega$ $R_l = 0,179 \Omega$