

$$P_{losses} = P_{in} - P_{out} = 122967 - 150 * 746 = 11067 \quad W$$

$$P_{losses} = P_{mech} + P_i + P_{cu}$$

$$-P_{mech} + P_i = P_{losses} - P_{cu} = 11067 - 6011 = 5056 \quad W$$

$$E_b = V_{in} - I_a R_a = 550 - 221.6 * 0.1 = 527.84 \quad V$$

$$-T = \frac{E_b I_a}{\omega} = \frac{E_b I_a}{\frac{2\pi n}{60}} = \frac{527.84 * 221.6 * 60}{2 * \pi * 960} = 1163.5 \quad N.m$$

$$T \propto \Phi I_a$$

حيث إن تيار المجال ثابت، يكون Φ ثابت

$$T \propto I_a$$

$$\frac{T_1}{T} = \frac{I_{a1}}{I_a} = 0.6$$

$$I_{a1} = 0.6 * I_a = 0.6 * 221.6 = 132.96 \quad A$$

$$E_{b1} = V_{in} - I_{a1} (R_a + R_{ad}) = 550 - 132.96 * (0.1 + 0.2) = 510.1 \quad V$$

$$T_1 = \frac{E_{b1} I_{a1}}{\omega_1} = \frac{E_{b1} I_{a1}}{\frac{2\pi n_1}{60}}$$

$$0.6 * 1163.5 = \frac{510.1 * 132.96 * 60}{2 * \pi * n_1}$$

$$-n_1 = \frac{510.1 * 132.96 * 60}{2 * \pi * 0.6 * 1163.5} = 928 \quad rpm$$