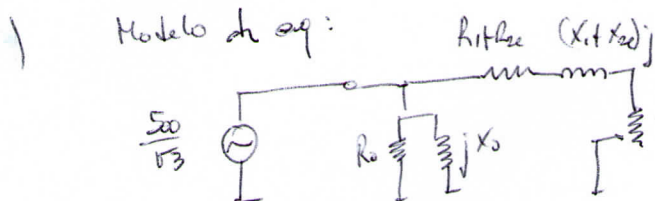
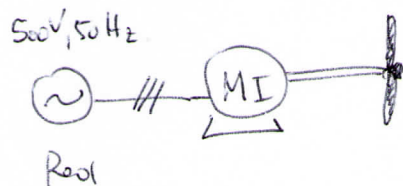


# PROBLEMA 1. Parcial 2 - 2013



Robot  $M_p$ :

$$Z_{cc} = \frac{100/\sqrt{3}}{511} \left( \frac{21,2 \text{ kW}}{\sqrt{3} \cdot 100 \cdot 511} \right) = \frac{0,027}{R_1 + R_2} + \frac{0,110}{jX_1 + jX_2} \Omega$$

$$R_1 = \frac{2V}{50,2} = 0,02 \Omega \Rightarrow R_2 = 0,027 - 0,02 = 0,007 \Omega$$

Empuje  $v_{cc}$ :

$$R_0 = \frac{V_0^2}{P_0} = \frac{500^2}{10 \text{ kW}} = 25 \Omega$$

$$X_0 = \frac{V_0^2}{Q_0} = \frac{500^2}{200,67 \text{ kvar}} = 1,25 \Omega$$

$$Q_0 = \sqrt{(\sqrt{3} U_0 I_0)^2 - P_0^2} = 200,67 \text{ kvar}$$

3)

$$C = k n^2 = \frac{3 R_{cc}}{\omega_s f} I_{2c}^2 = \frac{V^2}{\omega_s f (R_{cc}/s)} = C_{motor}$$

$k = 0,00213$

$MPO$

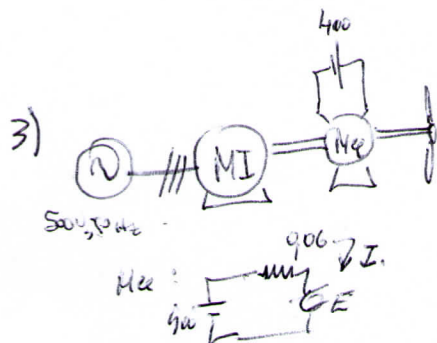
$$k n_s^2 (1-s)^2 = \frac{V^2}{R_{cc} \omega_s f} s \Rightarrow \text{resolviendo } s \rightarrow 0,0202 \Rightarrow s = 2\%$$

$n = 1469,7 \text{ rpm}$

$$C = 0,00213 n^2 = 4601 \text{ Nm}$$

$$P = C \cdot \omega = 708 \text{ kW}$$

MI sobrecargado



MI a potencia nominal

$$\frac{V^2 (1-s) s}{R_2} = 500 \text{ kW} \rightarrow s \rightarrow 0,0142 \Rightarrow 1,42\% \Rightarrow n = 1478,7 \text{ rpm}$$

$\rightarrow 0,985 \times$

$$P_{MI} + P_{Mcc} = C \omega = k \frac{2\pi}{60} n^3$$

$\rightarrow I_1$

$$500 \text{ kW} + E \left( \frac{V-E}{R_{cc}} \right) = 721,2 \text{ kW} \Rightarrow \frac{E^2}{0,06} - \frac{400}{0,06} E + 221,2 = 0$$

$R_{cc} = 0,06 \Omega$   $V = 400V$

$$E \rightarrow 32,7 \times$$

$\rightarrow 367,3V$

$\rightarrow I_{cc} = 9,3 A$