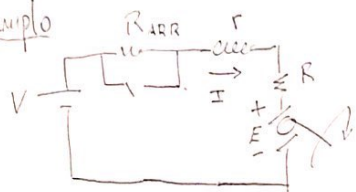


M.C.C. Serie.

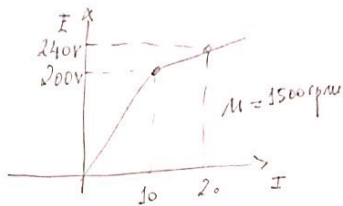
Ejemplo



$$R = 1 \Omega$$

$$r = 3 \Omega$$

$$V = 200 \text{ V}$$



1) $R_{ARR} / I_{ARR} = 20 \text{ A}$.

Arranque $M=0 \Rightarrow E=0 \Rightarrow I_{ARR} = \frac{V}{R+r+R_{ARR}} = \frac{200}{1+3+4} = 20 \text{ A} \Rightarrow R_{ARR} = 6 \Omega$

$E = A m \phi(I)$

2) Per de Arranque.

$$P_M = E \cdot I = C \cdot \omega \Rightarrow C = \frac{E \cdot I}{\omega} = \frac{30}{\pi} \frac{E \cdot I}{M} \quad \#$$

$$E = A m \phi(I) \Rightarrow C = \frac{30}{\pi} A \phi(I) I$$

Arranque: $I_{ARR} = 20 \text{ A} \Rightarrow C_{ARR} = \frac{30}{\pi} A \phi(20) \cdot 20$

$$E_{1500}(20) = 240 = A \phi(20) \cdot 1500 \Rightarrow A \phi(20) = \frac{240}{1500}$$

$$C_{ARR} = \frac{30 \cdot 240 \cdot 20}{\pi \cdot 1500}$$

$$C_{ARR} = 30,6 \text{ N} \cdot \text{m}$$

3) El motor mueva una carga mecánica / $C_r = 15 \text{ N} \cdot \text{m}$

$$C = C_r \Rightarrow C = C_r$$

$$\# \quad I = 11,5 \text{ A}$$

$$C = \frac{30}{\pi} A \phi(I) I = \frac{30}{\pi} \frac{20 \cdot I^2}{1500} = 15 \Rightarrow I = 10,8 \text{ A}$$

$$\frac{30}{\pi} \left(\frac{4I + 160}{1500} \right) I = 15$$

busco solución en zona lineal.

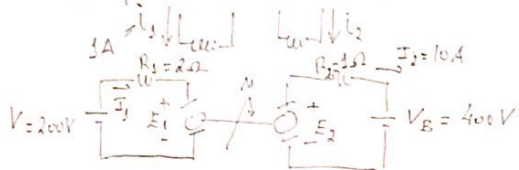
solución en zona saturada

$$\Rightarrow V = 4 \cdot I + E \Rightarrow E = 200 - 4 \cdot 11,5 \Rightarrow E = 154 \text{ V} = A \phi(11,5) \cdot M$$

$$A \phi(11,5) = \frac{46 + 160}{1500} = 0,137 \Rightarrow M = 1124 \text{ rpm}$$

$$E \cdot I = 154 \cdot 11,5 = C \cdot \omega = 15 \cdot \omega \Rightarrow \omega = 1181,2 \text{ rad/s} \Rightarrow M = 1124 \text{ rpm}$$

Ejemplo Máquinas Acopladas



$$MCC1: E_1 = 300 i_1 \text{ @ } 1500 \text{ rpm.}$$

$$MCC2: E_2 = 450 i_2 \text{ @ } 1500 \text{ rpm.}$$

$$i_1 = 1 \text{ A}$$

Determinar: i_2 y M .

$$E_2 = R_2 i_2 + 400 = 450 \text{ V} \Rightarrow P_{M2} = E_2 i_2 = 4500 \text{ W}$$

$$P_{M2} = P_{M1} = E_1 i_1 \quad 200 = R_1 i_1 + E_1$$

$$\Rightarrow 4500 = (200 - R_1 i_1) i_1 \Rightarrow 2i_1^2 - 200i_1 + 4500 = 0$$

$$i_1 = \frac{200 \pm \sqrt{40000 - 32800}}{4}$$

$$\Rightarrow i_1 = \frac{200 \pm 87,9}{4} \begin{cases} i_1 = 71,2 \text{ A} \\ i_1 = 28,8 \text{ A} \end{cases}$$

$$i_1 = 71,2 \text{ A} \Rightarrow E_1 = 57,6 \text{ V}$$

$$i_1 = 28,8 \text{ A} \Rightarrow E_1 = 142,4 \text{ V} \quad \#$$

$$A_p(i_1) = \frac{300 \times i_1}{1500} = 0,2 = \frac{E_1}{M}$$

$$M = \frac{142,4}{0,2} = 712 \text{ rpm} \quad \#$$

$$\frac{57,6}{0,2} = 288 \text{ rpm}$$

$$A_p(i_2) = \frac{450 i_2}{1500} \Rightarrow E_2^{712} = \frac{712}{1500} \times 450 i_2 = 410 \text{ V} \quad \underline{i_2 = 1,92 \text{ A}}$$