

$$L_1 (\text{amarillo}) \rightarrow R_1 = 21,5 \Omega$$

$$L_2 (\text{rojo}) \rightarrow R_2 = 23 \Omega$$

$$\omega = 100 \text{ rad/s}$$

Núcleo Laminado



$$V_{\text{eff}} = 30 \text{ V}; f = 50 \text{ Hz}$$

$$30 \text{ V} = V_1, i_1 = 150 \text{ mA} \Rightarrow V_1 = i_1 R_1 + i_1 j \omega L_1$$

(Valores ef)

$$\left| \frac{V_1}{i_1} \right| = \sqrt{R_1^2 + (\omega L_1)^2} \Leftrightarrow L_1 = 0,633 \text{ H}$$

$$30 \text{ V} = V_2, i_2 = 110 \text{ mA}$$

$$\Rightarrow V_2 = i_2 R_2 + i_2 j \omega L_2 \Leftrightarrow 0,865 \text{ H} = L_2$$

$$\text{Con } i_2 = 0 \Rightarrow V_1 = i_1 R_1 + i_1 j \omega L_1, V_2 = -j \omega L_2 i_1$$

$$\hookrightarrow \left| \frac{V_2}{i_1} \right| = \omega L_2 \text{ H} \quad L_2 = 0,30666 \text{ H} \quad \text{Sección } k$$

$$\hookrightarrow 0,414 = k$$

Núcleo Aluminio:

$$i_1 = 310 \text{ mA}; V_1 = 30 \text{ V}$$

$$\rightarrow i_2 = 0 \Rightarrow V_2 = 2,8 \text{ V}$$

$$\hookrightarrow \frac{V_2}{i_1} \cdot \frac{1}{\omega L_2} = M$$

$$i_2 = 290 \text{ mA}; V_2 = 30 \text{ V}$$

$$\Rightarrow M = 0,08957 \text{ H}$$

$$\rightarrow k = 0,0833$$

$$\sqrt{\left( \frac{V_1}{i_1} \right)^2 - R_1^2} \cdot \frac{1}{\omega} = L_1 = 0,3 \text{ H}$$

$$\sqrt{\left( \frac{V_2}{i_2} \right)^2 - R_2^2} \cdot \frac{1}{\omega} = L_2 = 0,321 \text{ H}$$

Núcleo Hierro (no laminado)

$$V_1 = 30 \text{ V}; i_1 = 120 \text{ mA}$$

$$\rightarrow i_2 = 0 \Rightarrow V_2 = 8,4 \text{ V}$$

$$M = 0,4 \text{ H}$$

$$V_2 = 30 \text{ V}; i_2 = 170 \text{ mA}$$

$$k = 0,3625$$

$$\sqrt{\left( \frac{V_1}{i_1} \right)^2 - R_1^2} \cdot \frac{1}{\omega} = L_1 = 0,793 \text{ H}$$

$$\sqrt{\left( \frac{V_2}{i_2} \right)^2 - R_2^2} \cdot \frac{1}{\omega} = L_2 = 0,5569 \text{ H}$$

Sin núcleo:

$$V_1 = 30 \text{ V}; i_1 = 310 \text{ mA} \rightarrow i_2 = 0 \Rightarrow V_2 = 3,1 \text{ V}$$

$$\sqrt{\left( \frac{V_1}{i_1} \right)^2 - R_1^2} \cdot \frac{1}{\omega} = L_1 = 0,3 \text{ H}$$

$$V_2 = 30 \text{ V}; i_2 = 280 \text{ mA}$$

$$M = 0,095589 \text{ H}$$

$$k = 0,09146$$

$$\sqrt{\left( \frac{V_2}{i_2} \right)^2 - R_2^2} \cdot \frac{1}{\omega} = L_2 = 0,333 \text{ H}$$

calcular con  $V_2 \rightarrow \frac{V_2}{R_d} = i_2$

| $V_1$ (V) | $i_1$ (mA) | $V_2$ (V) | $i_2$ (mA) | $R_d$ (Ω) | $M$ (H) | $k$     |
|-----------|------------|-----------|------------|-----------|---------|---------|
| 30        | 160        | 8,3       | 41,5       | 200       | 0,3067  | 0,414   |
| 30        | 320        | 2,1       | 10,5       | 200       | 0,08957 | 0,0833  |
| 30        | 130        | 6         | 30         | 200       | 0,4     | 0,3625  |
| 30        | 300        | 2,4       | 12         | 200       | 0,09559 | 0,09146 |

LAMINADO

ALUMINIO

Hierro

SIN Núcleo