

Ejercicio 6

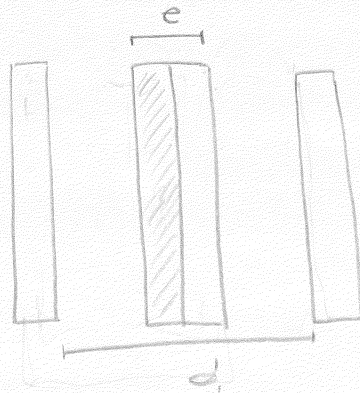
$$A = 0,118 \text{ m}^2$$

$$d = 0,0122 \text{ m}$$

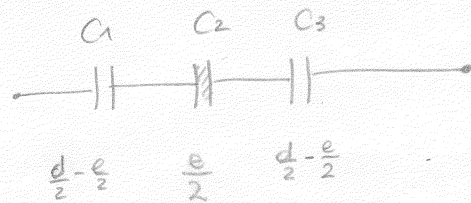
$$V_0 = 120 \text{ V}$$

$$e = 4,3 \text{ mm}$$

$$K_1 = 4,8$$



\Rightarrow se tienen tres capacitores en serie :



$$C_{eq} = \frac{1}{\frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}}$$

$$V = 120 \text{ v} \Rightarrow \text{inicialmente } \left. \begin{array}{l} Q_0 = C_0 V_0 \\ \text{donde } C_0 = \frac{\epsilon_0 A}{d} \end{array} \right\} Q_0 = \frac{\epsilon_0 A V_0}{d}$$

$$C_1 = C_3 = \frac{\epsilon_0 A}{\frac{d-e}{2}} = \frac{2\epsilon_0 A}{d-e} \quad \text{y} \quad C_2 = \frac{2\epsilon_0 A K_1}{e}$$

$$C_{eq} = \frac{1}{\frac{d-e}{\epsilon_0 A} + \frac{e}{2\epsilon_0 A K_1}}$$

$$V = \frac{Q_0}{C_{eq}} = \frac{\epsilon_0 A V_0}{d} \cdot \left(\frac{d-e}{\epsilon_0 A} + \frac{e}{2\epsilon_0 A K_1} \right) = \frac{V_0}{d} \left(d-e + \frac{e}{2K_1} \right)$$

$$V = 82 \text{ V}$$