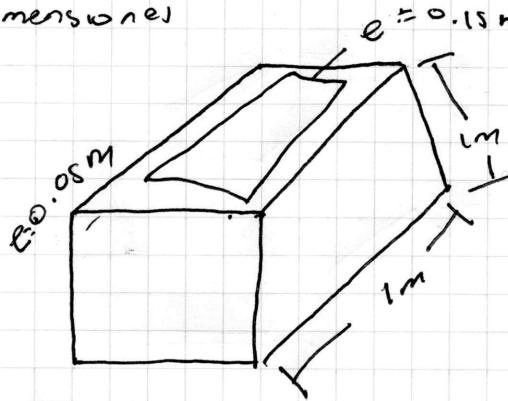


Reconocimientos previos

Sergio Ladino

Ejercicio 5: Se tiene un horno industrial que tiene las siguientes dimensiones



$T_{\text{exterior}} = 25^{\circ}\text{C}$

$$K_{\text{ladrillo}} = 0.814 \frac{\text{W}}{\text{m}^{\circ}\text{K}}$$

$$K_{\text{fibra carbono}} = 0.04 \frac{\text{W}}{\text{m}^{\circ}\text{K}}$$

calcular la tasa de calor que se pierde si la T_{interior} de 300°C y la temperatura exterior es de 25°C

$$T_{\text{interior}} = 300^{\circ}\text{C} \rightarrow 573.15 \text{ K}$$

$$\Delta T = 300 - 180 = 120^{\circ}\text{C}$$

$$T_{\text{interior}} = 180^{\circ}\text{C} \rightarrow 453.15 \text{ K}$$

$$\Delta T = 393^{\circ}\text{K}$$

$$T_{\text{exterior}} = 25^{\circ}\text{C} \rightarrow 298$$

$$\Delta T = 180 - 25 = 155^{\circ}\text{C}$$

$$\frac{273}{428}$$

$$\Delta T = 428^{\circ}\text{K}$$

$$Q_{\text{ladrillo}} = \frac{0.814 (5) (393)}{0.15} = 12.796 \text{ W}$$

$$[1.27 \text{ Kw}] \cdot \text{ladrillo}$$

$$Q_{\text{fibra}} = \frac{0.04 (6) (428)}{0.05} = 2.054 \text{ W}$$

$$\downarrow$$

$$2.05 \text{ Kw}$$