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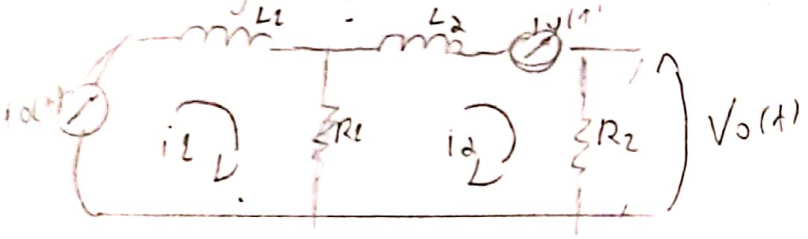
1- $C = \frac{A \cdot x}{RT} = \frac{2}{287 \cdot 323,15} \rightarrow C = 2,1565 \cdot 10^{-5}\ m s^2$

2- Hipóteses: Liq. incompressível
Regime permanente
Regime turbulento
$\ell << 1$
Sist. adiabático

Analogia tipo 1:



Malha 1: $L_1 D i_1 + R_1 (i_1 - i_2) = 0$ (I)

Malha 2: $(L_2 D + R_2) i_2 + R_2 (i_2 - i_1) = 0$ (II)

$V \rightarrow Q \qquad i \rightarrow p$

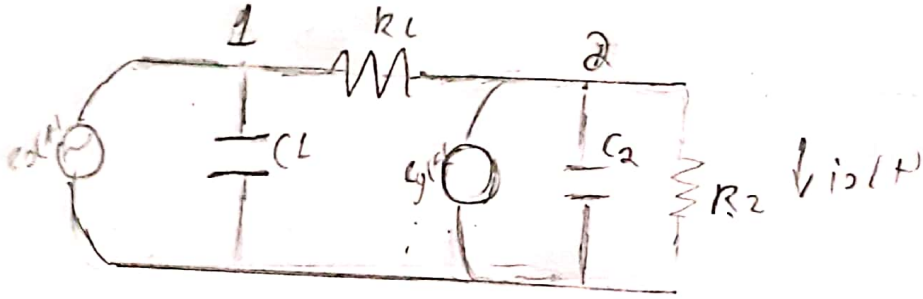
$R \rightarrow \frac{1}{n_1 \rho g} \qquad L \rightarrow \frac{A}{\rho g}$

(I) $\therefore i_1 = i_0(t) \quad p_1 = p_0(t) \rightarrow \left(\frac{A_1}{\rho g} D + \frac{1}{\rho g R}\right) p_0 = \frac{p_1}{\rho g R}$ (I)

II - $i_2 = i_y(t) \quad p_2 = p_y(t) \quad \left(\frac{A_2 D}{\rho g} + \frac{1}{\rho g R_c} + \frac{1}{\rho g R}\right) p_y = \frac{p_0}{\rho g R}$

$$\boxed{\begin{aligned} \left(\frac{A_1}{\rho g} D + \frac{1}{\rho g R}\right) p_0 &= \frac{R_c}{n} q_0 \\ \left(A_2 R_c D + L + \frac{R_c}{n}\right) q_0 &= \frac{p_0}{\rho g R} \end{aligned}}$$

Analogia tipo 2



$V \rightarrow p$

$i \rightarrow Q$

$R \rightarrow \rho_g R_c$

$C \rightarrow \frac{A}{\rho_g}$

Nó 1: $V_1\left(C_1 D + \frac{1}{R_1}\right) - V_2 \cdot \frac{1}{R_1} = 0$

$V_1 = p_0 \rightarrow p_0\left(C_1 D + \frac{1}{R_1}\right) - p_g \frac{1}{R_1} = 0$

$$p_0\left(\frac{A_1}{\rho_g} D + \frac{1}{\rho_g R}\right) = \frac{p_g}{\rho_g R}$$

Nó 2: $V_2\left(C_2 D + \frac{1}{R_1} + \frac{1}{R_2}\right) - V_1 \cdot \frac{1}{R_1} = 0$

$$p_g\left(\frac{A_2 D}{\rho_g} + \frac{1}{\rho_g R_c} + \frac{1}{\rho_g R}\right) = \frac{p_0}{\rho_g R}$$

$V_2 = R_2 i_0(t) \rightarrow p_g = \rho_g R_c Q_0(t)$

$$p_0\left(\frac{A_1 D}{\rho_g} + \frac{1}{\rho_g R}\right) = \frac{R_c}{R} Q_0(t)$$

$$A_2 R_c \dot{Q}_0 + \left(1 + \frac{R_c}{R}\right) Q_0 = \frac{p_0}{\rho_g R}$$