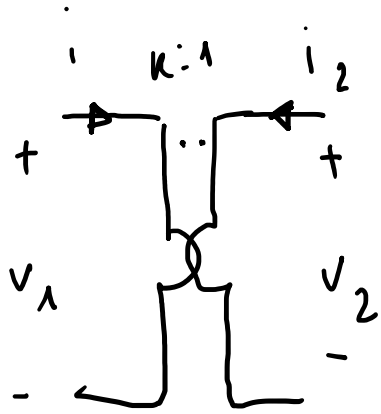


$$\frac{v_1}{v_2} = k$$

$$\frac{i_1}{i_2} = \frac{1}{k}$$

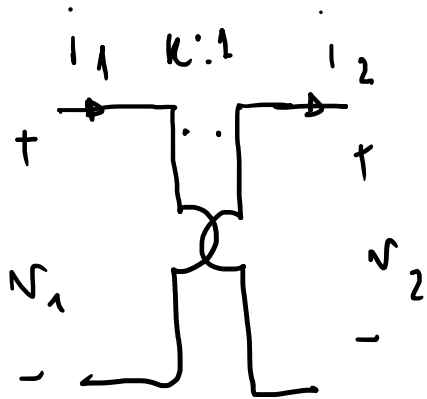
$$v_1 = kv_2$$

$$i_2 = ki_1$$



$$\frac{v_1}{v_2} = k$$

$$\frac{i_1}{i_2} = -\frac{1}{k}$$



$$\begin{aligned}
 P_{\text{ASS}}(t) &= v_1(t) i_1(t) - v_2(t) i_2(t) = \\
 &= \cancel{k} v_2(t) \frac{1}{\cancel{k}} i_2(t) - v_2(t) i_2(t) = 0
 \end{aligned}$$

$$\frac{v_1(t)}{v_2(t)} = k \quad \frac{i_1(t)}{i_2(t)} = \frac{1}{k}$$

$$P_{\text{ASS}, L} = v_1(t) i_1(t)$$

$$P_{\text{EROGATA}, 2} = v_2(t) i_2(t)$$

ASSORBITA A PRIMARIO

$$N_1 = \frac{v_1}{i_1}$$

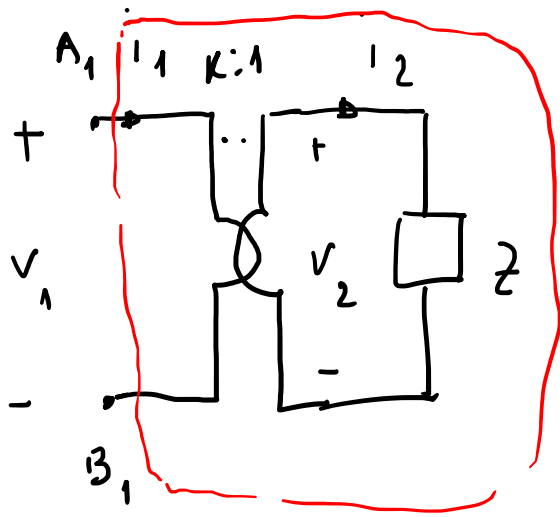
$$v_1 = k v_2$$

$$N_1 = \cancel{k} v_2 \frac{1}{\cancel{k}} i_2 = v_2 \frac{i_2}{i_2} = N_2$$

$$N_2 = \frac{v_2}{i_2}$$

$$i_1 = \frac{1}{k} i_2$$

EROGATA A SECONDARIO



$$V_2 = z I_2$$

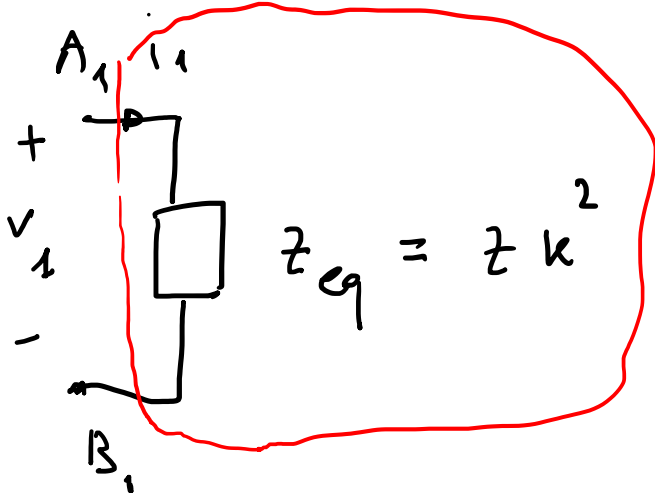
$$V_1 = k V_2 = k z I_2$$

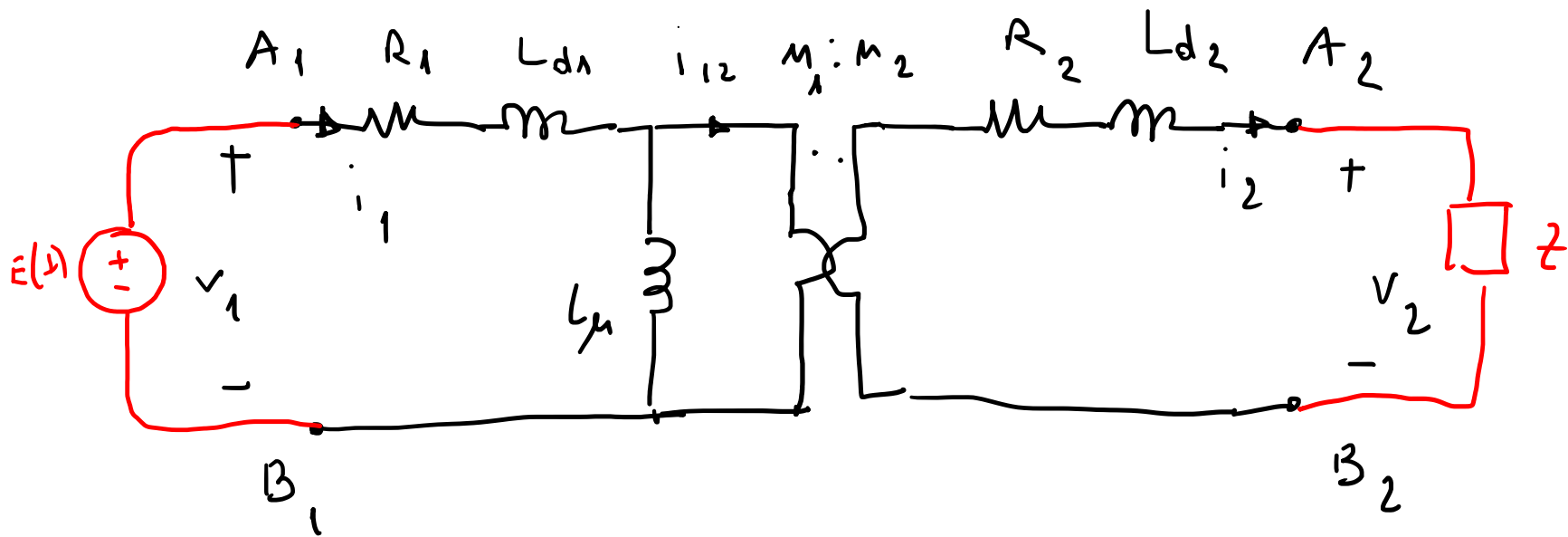
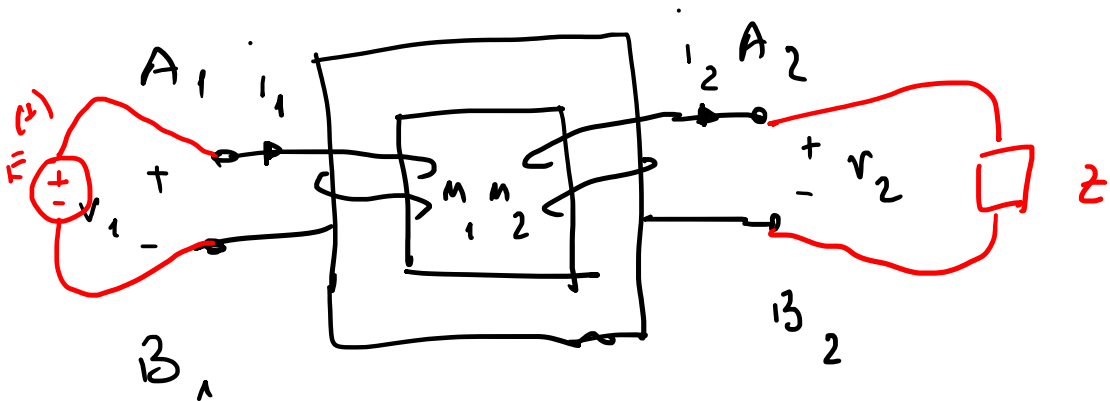
$$I_1 = \frac{1}{k} I_2 \Rightarrow I_2 = k I_1$$

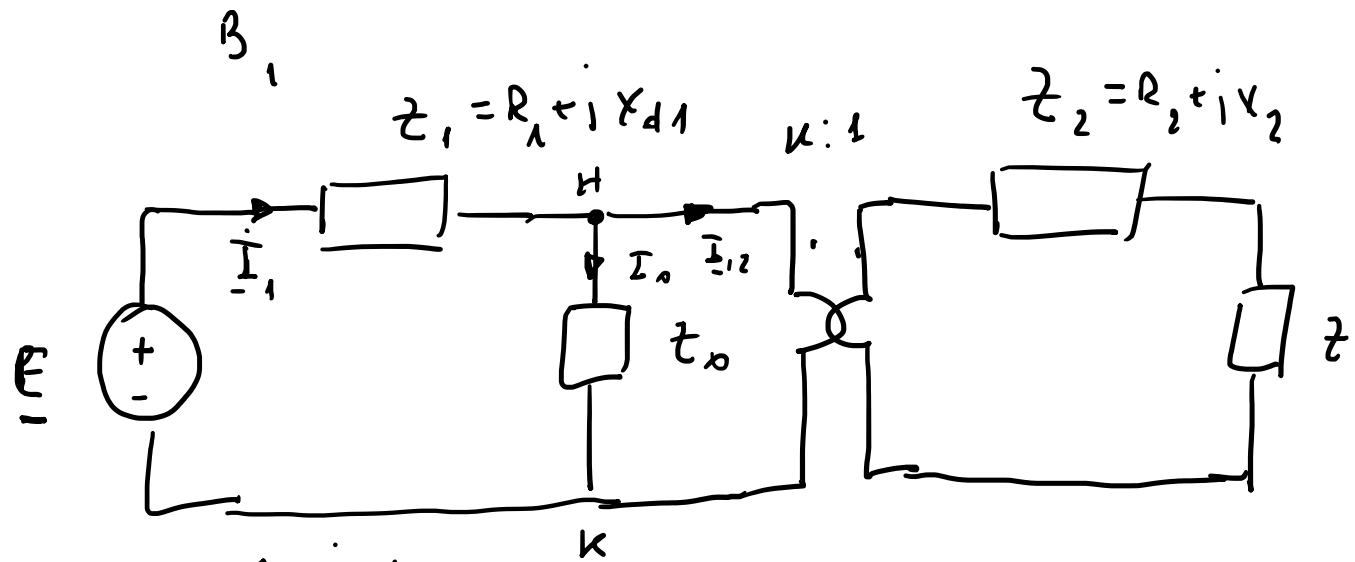
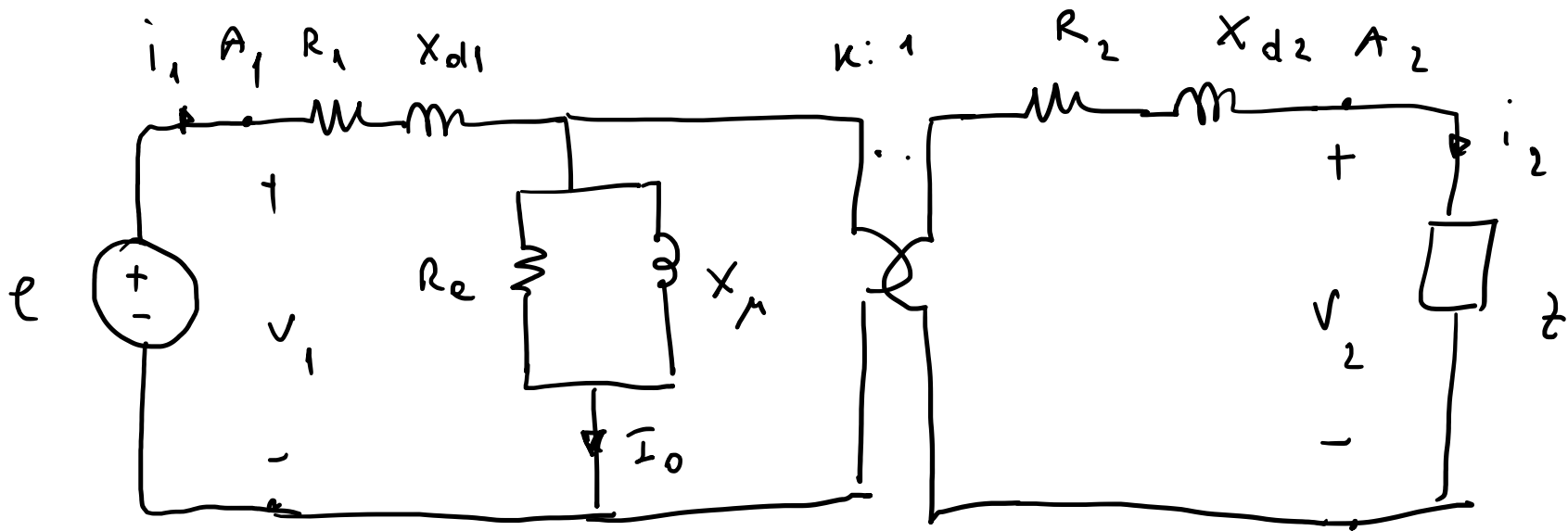
$$V_1 = k z k I_1 = k^2 z I_1$$

$$\frac{V_1}{V_2} = k$$

$$\frac{I_1}{I_2} = \frac{1}{k}$$



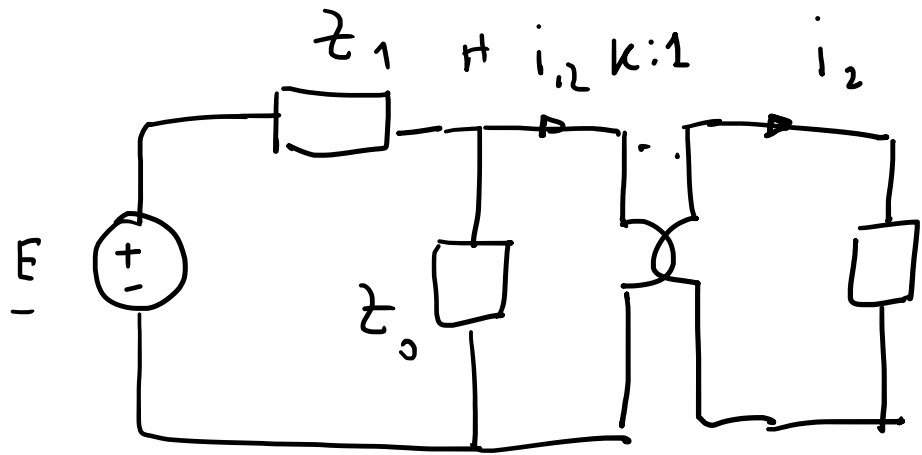




$$|z_1| \ll |z_0|$$

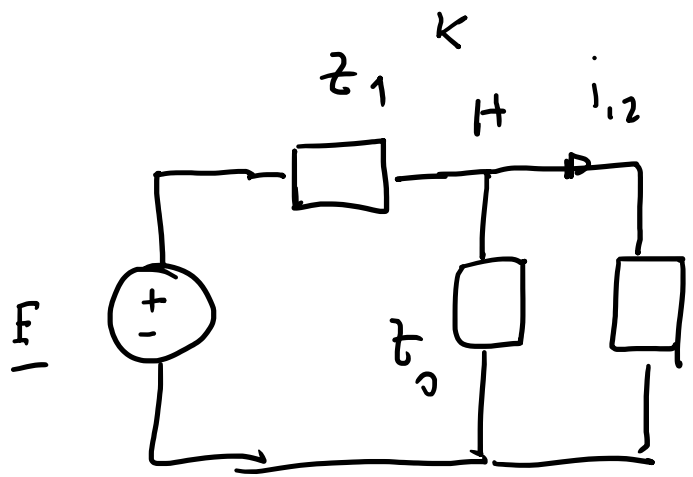
$$z_0 = \frac{R_e + jX_m}{R_e + jX_m}$$

$$I_{12} = I_1 - I_0$$



$$\underline{I}_2 = \underline{I}_1 k$$

$$z_2' = z_2 + z$$

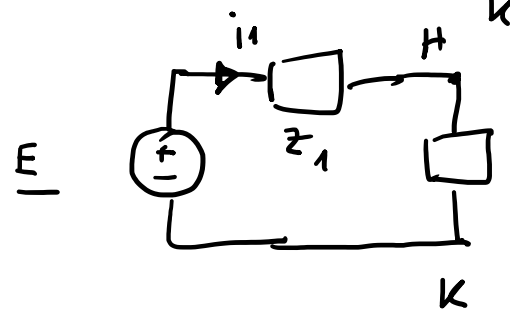


$$\underline{I}_{12} = \frac{V_{HK}}{z_{12}'}$$

$$z_{12}' = z_2' \cdot k^2$$



$$V_{HK} = z_0' \underline{I}_1$$

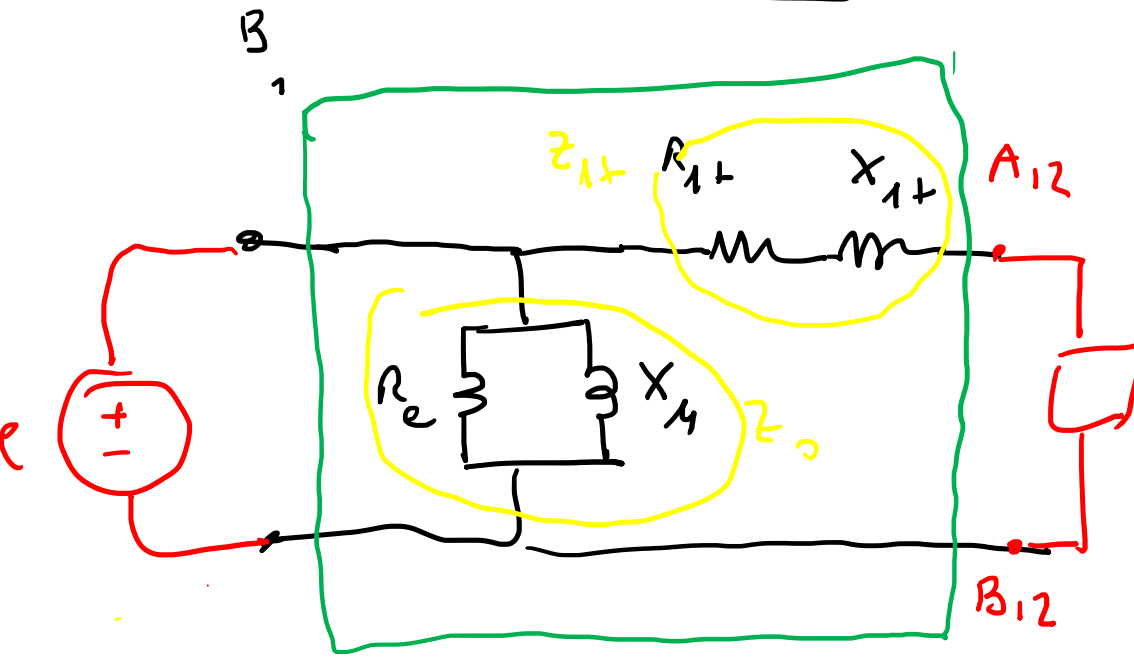
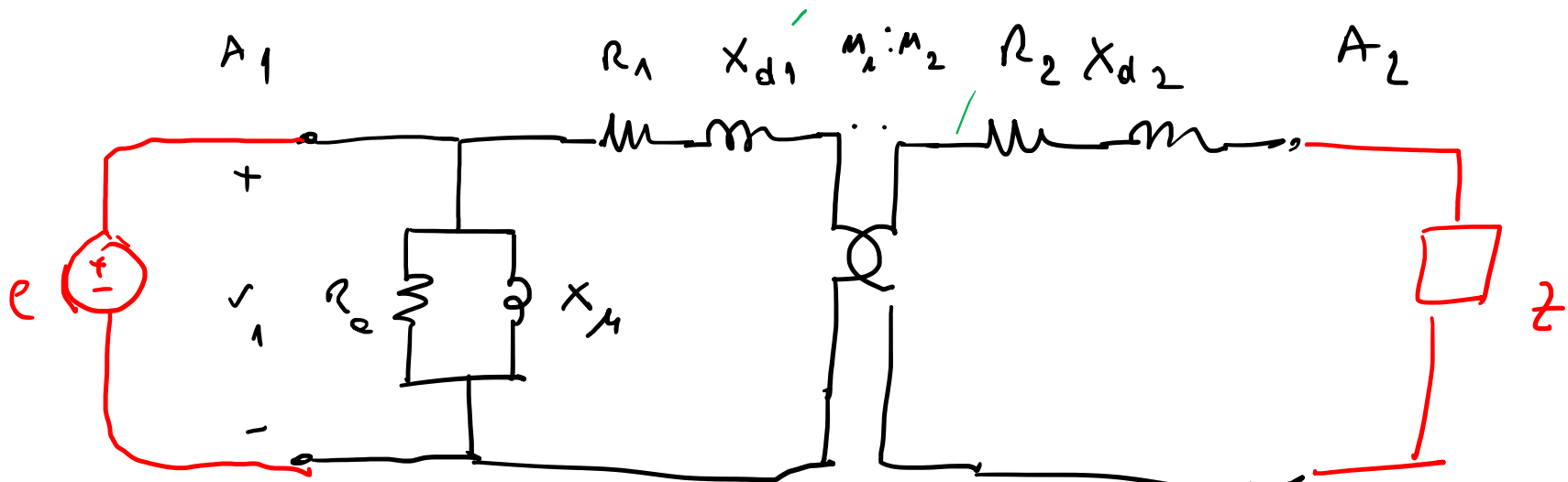


$$z_0' = \frac{z_0 z_{12}'}{z_0 + z_{12}'}$$

$$\underline{I}_1 = \frac{E}{z_1 + z_0'}$$



CIRCUITO SEMPLIFICATO RIDOTTO A PRIMARIO

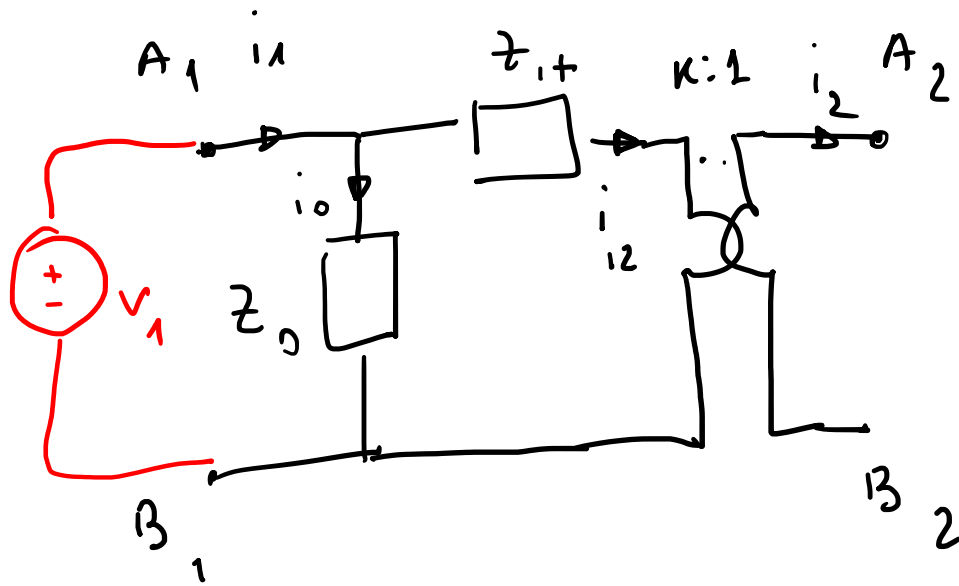


$$R_{1+} = R_1 + R_2 \left( \frac{N_1}{N_2} \right)^2$$

$$X_{1+} = X_1 + X_2 \left( \frac{N_1}{N_2} \right)^2$$

$$Z_{1+} = R_{1+} + j X_{1+}$$

$$Z_0 = \frac{R_e + j X_m}{\frac{1}{R_e} + j \frac{1}{X_m}}$$



FUNZIONE DEL VOTO A  
VUOTO

$$\bar{I}_2 = 0$$

$$\bar{I}_{12} = \frac{\bar{I}_2}{k} = 0$$

$$Q_0 = \cancel{X_\mu} \cdot \frac{V_{1e}^2}{X_\mu^2} \quad X_\mu = \frac{V_{1e}^2}{Q_0}$$

$$\bar{I}_1 = \bar{I}_0 = \frac{V_1}{Z_0}$$

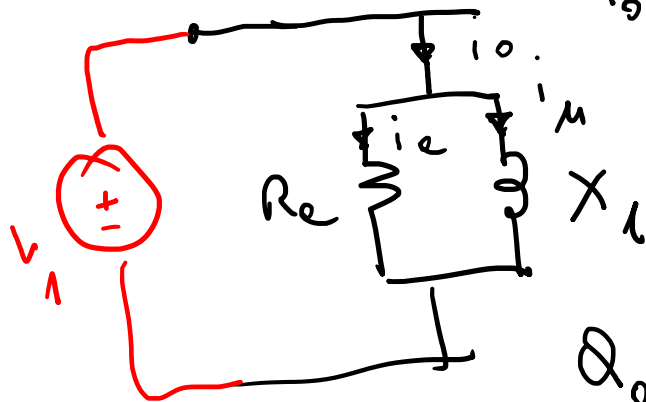
$$V_{1e} I_{1e} = \sqrt{P_0^2 + Q_0^2}$$

$$\Rightarrow Q_0 = \sqrt{V_{1e}^2 I_{1e}^2 - P_0^2}$$

$$P_0 = R_e I_{1e}^2$$

$$\bar{I}_e = \frac{V_1}{R_e}$$

$$I_{1e} = \frac{V_{1e}}{R_e}$$



$$P_0 = R_e \cdot \frac{V_{1e}^2}{R_e^2}$$

$$R_e = \frac{V_{1e}^2}{P_0}$$

$$Q_0 = X_\mu I_{\mu e}^2$$

$$\bar{I}_\mu = \frac{V_1}{j X_\mu}$$

$$I_{\mu e} = \frac{V_{1e}}{X_\mu}$$