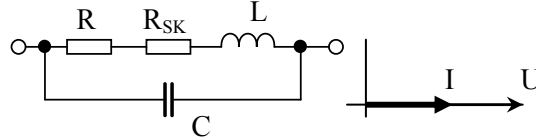
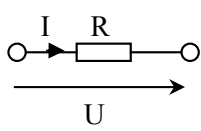
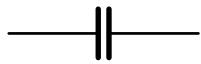


Náhradní schémata pasivních součástek

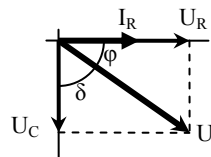
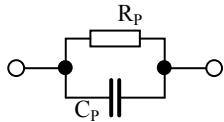
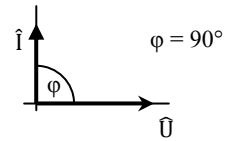
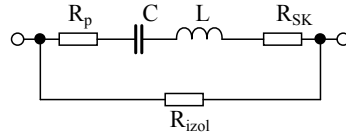
Rezistor



Kondenzátor



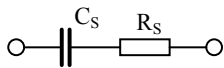
$$C = \epsilon_0 \cdot \epsilon_r \cdot \frac{S}{d}$$



Pro seriovou kombinaci platí:

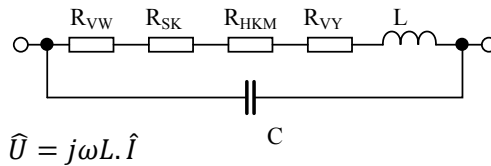
$$\text{tg } \delta = \frac{U_R}{U_C} = \frac{I \cdot R_S}{I \cdot \frac{1}{j\omega C_S}} = \omega C_S \cdot R_S$$

$$Q = \frac{1}{\text{tg } \delta} = \frac{1}{\omega C_S \cdot R_S}$$

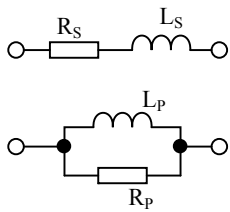


Cívka

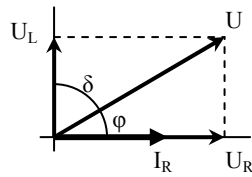
$$u_L = -L \cdot \frac{di}{dt}$$



$$\hat{U} = j\omega L \cdot \hat{I}$$



Pro seriovou kombinaci platí:



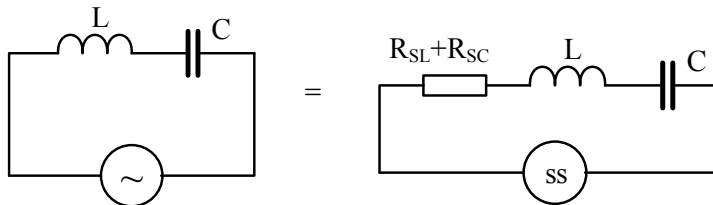
$$\text{tg } \delta = \frac{U_R}{U_L} = \frac{R \cdot I}{j\omega L \cdot I} = \frac{R_S}{\omega L_S}$$

$$Q = \frac{1}{\text{tg } \delta} = \frac{\omega L_S}{R_S}$$

- > 50 – kvalitní cívka

Také platí, že:

$$Q_C \gg Q_L$$



$$\hat{U} = \hat{I} \cdot \left(R + \frac{1}{j\omega C} + j\omega L \right) = \hat{I} \cdot \hat{Z}$$

$$\hat{Z} = R + j \cdot \left(\omega L - \frac{1}{\omega C} \right)$$

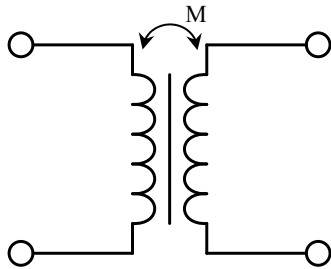
$$\text{Im } \hat{Z} = 0$$

$$\omega L_S = \frac{1}{\omega C_S} = 0$$

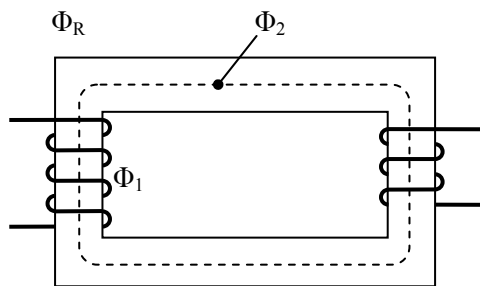
- Thomsonův vztah

$$I = \frac{U}{\text{Re } \hat{Z}} = \frac{U}{R}$$

Vzájemná indukčnost



Transformátor



$$\Phi_1 = \Phi_R + \Phi_2$$

$$u_2 = M \cdot \frac{di_2}{dt} = M \cdot \frac{d\Phi_2}{dt}$$

$$p = \frac{N_1}{N_2} = \frac{U_1}{U_2} = \frac{I_2}{I_1} = \sqrt{Z}$$

$$Z_2 = \frac{U_2}{I_2}$$

$$P_1 = P_2$$

$$Z_1 = \frac{U_1}{I_1}$$

- Ve skutečnosti $P_2 = 0,95 \cdot P_1$

$$Z_1 = \frac{U_1}{I_1}$$

$$U_1 \cdot I_1 = U_2 \cdot I_2 \quad | : U_2$$

$$\frac{U_1}{U_2} \cdot I_1 = I_2 = p \cdot I_1 \quad | : I_1$$

$$Z_1 = \frac{U_1}{I_1} = \frac{p \cdot U_2}{\frac{U_2}{I_2}} = p^2 \cdot \frac{U_2}{I_2} = p^2 \cdot Z_2$$

$$\frac{U_1}{U_2} = \frac{I_2}{I_1} = p$$