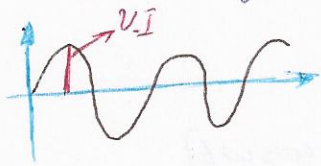


Моментна емоциона:

$$p = u \cdot i = U_m \sin \omega t \cdot I_m (-\cos \omega t) = -\sqrt{2} U \cdot \sqrt{2} I \frac{1}{2} \sin 2\omega t = -UI \sin 2\omega t$$

$$P = \frac{1}{T} \int_0^T p dt = \frac{1}{T} \int_0^T -UI \sin 2\omega t dt = 0! \text{ Бобината не консумира активна}$$

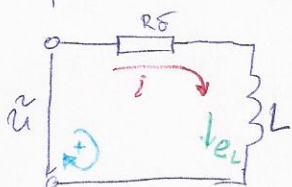
моќност.



Q - реактивна моќност.

$$Q_L = U \cdot I = X_L \cdot I^2 = \frac{U^2}{X_L} [\text{VAR}]_{\text{exp}}$$

б) реална бобина



$$R_s \neq 0 \quad L = \text{const}$$

$$u = U_m \sin \omega t \quad (\varphi_u = 0)$$

II закон на К. $\sum iR = \sum e$

$$iR_s - u = e_L \quad e_L = -L \frac{di}{dt}$$

$$iR_s - u = -L \frac{di}{dt}$$

$$L \frac{di}{dt} + iR_s = u$$

$$i = I_m \sin(\omega t - \varphi)$$

$$u = U_m e^{j\omega t} \cdot e^{j0} = U_m e^{j\omega t} = U_m e^{j\omega t}$$

$$i = I_m e^{j(\omega t - \varphi)} = I_m e^{j\omega t} \cdot e^{-j\varphi} = \hat{I}_m e^{j\omega t}$$

$$j\omega L \hat{I}_m e^{j\omega t} + R_s \hat{I}_m e^{j\omega t} = U_m e^{j\omega t}$$

$$\hat{I}_m (R_s + jX_L) = U_m \quad \hat{I}_m = \frac{U}{R + jX_L}$$

$$Z = R_s + jX_L \text{ (векторно сложување)}$$

им педанс!

$$\begin{cases} Z = \sqrt{R_s^2 + X_L^2} \\ \varphi = \arctg \frac{X_L}{R_s} \end{cases}$$

$$Z = z e^{j\varphi}$$

$$\hat{I}_m = \frac{U_m}{Z}$$

$$\hat{I}_m e^{-j\varphi} = \frac{U_m}{z e^{j\varphi}} = \frac{U_m}{z} e^{-j\varphi}$$