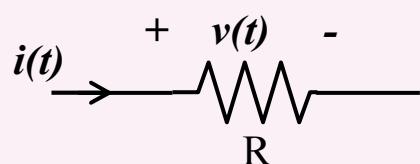


8. Alternatif Akımda (AC) (Sinüzoidal Sürekli Durum) Devre Elemanları

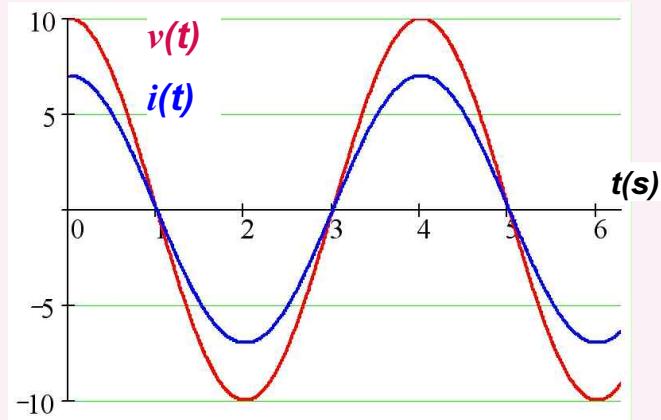
Direnç, R



$$i(t) = Im \cdot \cos(\omega \cdot t) \Rightarrow v(t) = R \cdot Im \cdot \cos(\omega \cdot t)$$

$$v(t) = Vm \cdot \cos(\omega \cdot t) \Rightarrow i(t) = \frac{Vm}{R} \cdot \cos(\omega \cdot t)$$

Direnç, R



Endüktans

$$i(t) \rightarrow + v(t) - \quad v = L \frac{di}{dt}$$

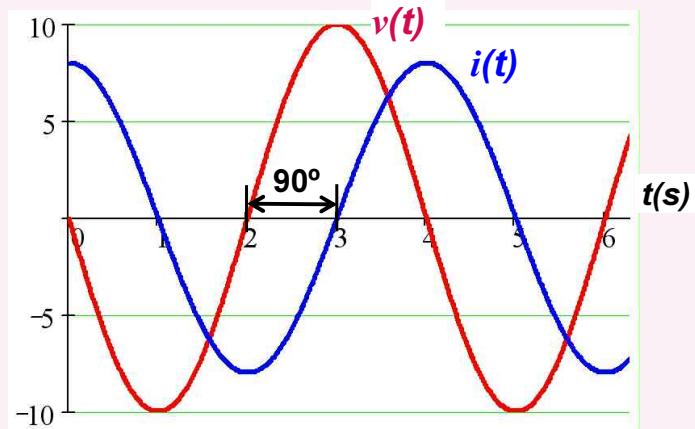
A circuit diagram showing an inductor represented by a coil symbol with a value of L . An arrow above the coil indicates the direction of current flow $i(t)$. The voltage $v(t)$ is indicated across the inductor, with the positive terminal at the top.

$$i(t) = Im \cdot \cos(\omega \cdot t) \Rightarrow v(t) = \omega \cdot L \cdot Im \cdot \cos(\omega \cdot t + 90^\circ)$$

$$v(t) = Vm \cdot \cos(\omega \cdot t) \Rightarrow i(t) = \frac{Vm}{\omega \cdot L} \cdot \cos(\omega \cdot t - 90^\circ)$$

$$\text{Endüktif reaktans } XL = \omega \cdot L = 2 \cdot \pi f \cdot L$$

Endüktans, L



Kapasite

$$i(t) \rightarrow \begin{array}{c} + \\ | \\ C \\ | \\ - \end{array} \quad i = C \frac{dv}{dt}$$

$$i(t) = I_m \cdot \cos(\omega \cdot t) \Rightarrow v(t) = \frac{I_m}{\omega \cdot C} \cdot \cos(\omega \cdot t - 90^\circ)$$

$$v(t) = V_m \cdot \cos(\omega \cdot t) \Rightarrow i(t) = \omega \cdot C \cdot V_m \cdot \cos(\omega \cdot t + 90^\circ)$$

$$\text{Kapasitif reaktans } X_C = \frac{1}{\omega \cdot C} = \frac{1}{2 \cdot \pi \cdot f \cdot C}$$

Kapasite, C

