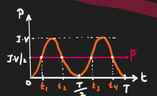
1ο ΓΕΛ ΣΑΜΑΡΙΝΑΣ

Γ' +

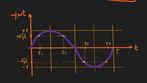
6·2·2023

Στιγμιαία: $P = i \cdot v = I \cdot \eta\mu\omega t \cdot V \cdot \eta\mu\omega t = I \cdot V \cdot \eta\mu^2\omega t$

Μέση: $\overline{P} = I_{\text{ενδ}} \cdot V_{\text{ενδ}} = \frac{I}{\sqrt{2}} \cdot \frac{V}{\sqrt{2}} = \frac{I \cdot V}{2}$



$P = \overline{P} \Rightarrow I \cdot V \cdot \eta\mu^2\omega t = \frac{I \cdot V}{2} \Rightarrow \eta\mu^2\omega t = \frac{1}{2} \Rightarrow \eta\mu\omega t = \pm\frac{1}{\sqrt{2}} = \pm\frac{\sqrt{2}}{2} = \pm\eta\mu\frac{\pi}{4}$

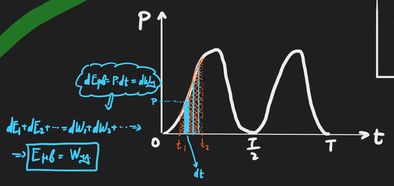


$\eta\mu\omega t = +\eta\mu\frac{\pi}{4}$

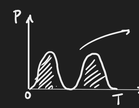
- $\omega t = 2k\pi + \frac{\pi}{4} \Rightarrow \frac{2\pi}{T}t = \frac{\pi}{4} \Rightarrow t = \frac{T}{8}$ (t1)
- $\omega t = 2k\pi + \pi - \frac{\pi}{4} \Rightarrow \frac{2\pi}{T}t = \frac{3\pi}{4} \Rightarrow t = \frac{3T}{8}$ (t2)

$\eta\mu\omega t = -\eta\mu\frac{\pi}{4} \Rightarrow \eta\mu\omega t = \eta\mu\left(-\frac{\pi}{4}\right)$

- $\omega t = 2k\pi - \frac{\pi}{4}$ ($k=0 \Rightarrow t<0$ απορ.; $k=1 \Rightarrow \frac{2\pi}{T}t = 2\pi - \frac{\pi}{4} \Rightarrow \frac{2\pi}{T}t = \frac{7\pi}{4} \Rightarrow t = \frac{7T}{8}$) (t4)
- $\omega t = 2k\pi + \pi + \frac{\pi}{4} \Rightarrow \frac{2\pi}{T}t = \frac{5\pi}{4} \Rightarrow t = \frac{5T}{8}$ (t3)



$P = \frac{dW_{\eta\mu}}{dt} \Rightarrow dW_{\eta\mu} = P\,dt$



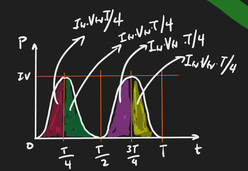
για $\Delta t = 1T$: $E_{\eta\lambda(\text{ολική})} = W_{\eta\mu(1T)}$

$\overline{P} = \frac{W_{\eta\mu}}{T} \Rightarrow W_{\eta\mu} = \overline{P} \cdot T$

$\overline{P} = I_{\text{ενδ}} \cdot V_{\text{ενδ}} = \frac{I}{\sqrt{2}} \cdot \frac{V}{\sqrt{2}} = \frac{I \cdot V}{2}$

$W_{\eta\mu}^{(1T)} = I_{\text{ενδ}} V_{\text{ενδ}} \cdot T$

$W_{\eta\mu}^{(1T)} =$ ΟΛΙΚΟ ΕΜΒΑΔΟΝ



$W_{\eta\mu} = N \cdot I_{\text{ενδ}} \cdot V_{\text{ενδ}} \cdot \frac{T}{4}$ (για $\Delta t = N \cdot \frac{T}{4}$)

Παρατήρηση:

$i = 10 \cdot \eta\mu 2\pi t$

$R = 10\,\Omega$

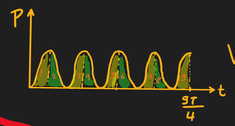
$W_{\eta\mu} = ?$

$\Delta t = 2{,}25$ sec

$i = I \cdot \eta\mu\omega t$, $i = 10 \cdot \eta\mu 2\pi t$ ⇒ $I = 10$ A, $\omega = 2\pi$ rad/s ⇒ $T = \frac{2\pi}{\omega} = \frac{2\pi}{2\pi} = 1$ sec

$\Delta t = N \cdot \frac{T}{4} \Rightarrow 2{,}25 = N\frac{1}{4} \Rightarrow N = 4 \cdot 2{,}25 \Rightarrow$

$\Rightarrow \boxed{N = 9}$



$W_{\eta\mu} = I_{\text{ενδ}} V_{\text{ενδ}} \cdot 9\frac{T}{4} = I_{\text{ενδ}}^2 R \cdot 9\frac{T}{4} =$

$= \frac{I^2}{2} R \frac{9T}{4} = \frac{10^2}{2} \cdot 10\frac{9 \cdot 1}{4} = \frac{9000}{8}$ Joule ∴