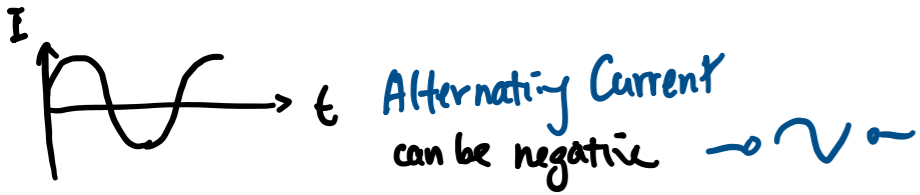


Ch 22 Concept

Tuesday, 27 October 2020 22:10

D.C./A.C.



AC!

HK: 220V, 50Hz

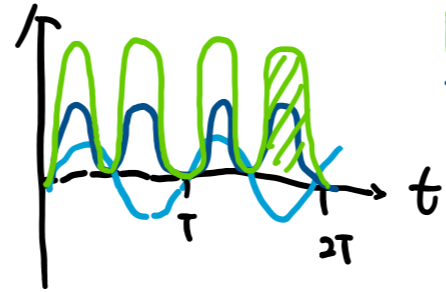


Sinusoidal = \sim (sine function)
 Peak value = V_0
 Root mean sq. value = $\langle V \rangle$

AC!!!

In sinusoidal
 $V_{rms} = V_0 \sin \omega t$
 $= V_0 \sin 2\pi f t$
 (similar in I
 $\langle I \rangle = I_0 \sin \omega t$)

$\langle V \rangle = \langle I \rangle R$ P&V
 $V_0 = I_0 R$
 $P_0 = V_0 I_0$
 $P_0 = V_0^2 / R$
 $\langle P \rangle = \frac{V_0^2 \sin^2 \omega t}{R}$

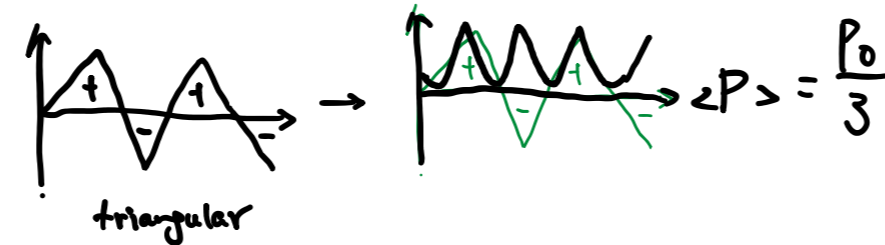
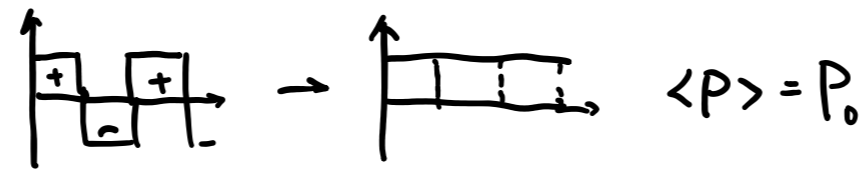


$E = \int_0^T P dt$

Area $P = \int P dt$

$P = V^2 / R$

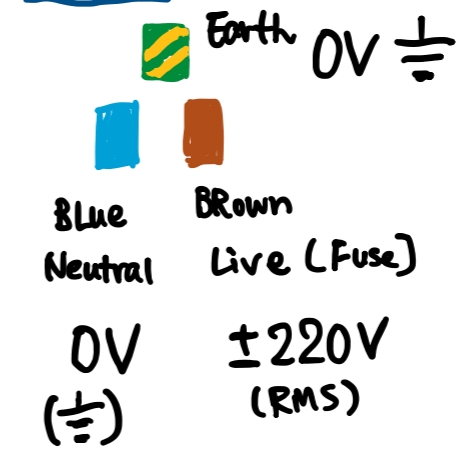
V-t graph \rightarrow P-t rms graph



★ Sinusoidal AC

$\langle V \rangle = \frac{V_0}{\sqrt{2}}$ $\langle I \rangle = \frac{I_0}{\sqrt{2}}$

Socket



Ring / Household

- Circuit Breaker / Fuse
 - Designated fuse \rightarrow Air con.
 - Each Ring per fuse
- Ring Circuit
 - Low I component \rightarrow Socket
 - 2 Path \rightarrow Cheaper / thinner
 - Parallel

Fuse Rating: 1, 3, 5, 8, 13, 15 A

- DB insulation
 - No earth wire connect

Calculate Rating

220V, 1000W
 $I \rightarrow P = VI$
 $R \rightarrow P = V^2 / R$

In circuit

- cal. R_i (const!)
- $V_i = \frac{R_i}{\sum R} \epsilon \Rightarrow V_i$
- $P_i = \frac{V_i^2}{R_i}$

Checked
 Joshua @
 27 Oct 2020