

13.02.2019

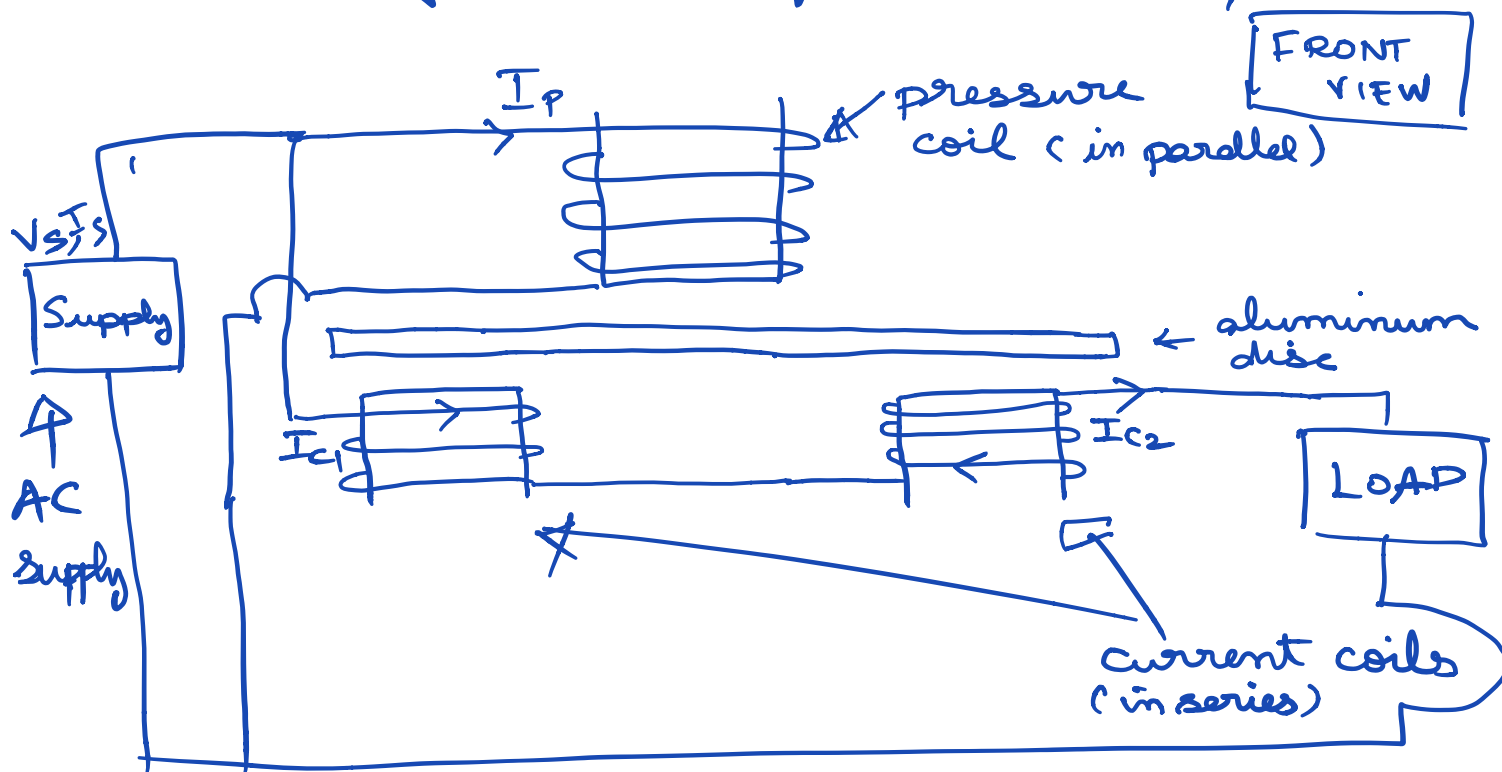
EEL301

Energy meter video

<https://youtu.be/AaLfiwqCvRA>

$$\dot{w} + b\omega = z$$

How to generate torque $\propto VI \cos \phi$?



• All coils are fixed.

• Coils generate magnetic fields as shown



TOP VIEW

$$\phi_p \sim I_p \sim V_p$$

$$\phi_{c1} \sim I_{c1}$$

$$\phi_{c2} \sim I_{c2}$$

- As the fluxes are time-varying (sinusoidal) eddy currents are generated.

$$V_s = V_0 \sin \omega t$$

$$I_s = I_0 \sin(\omega t + \phi)$$

$$V_p = V_s, \quad I_p \propto V_0 \sin(\omega t - 90^\circ)$$

Assumption:
pressure coil
is inductive

$$I_{c1} = I_{c2} = I_s = I_0 \sin(\omega t + \phi)$$

