

# Power in AC circuits

- The voltage generator supplies power.
  - Only resistor dissipates power.
  - Capacitor and Inductor store and release energy.
- $P(t) = I(t)V_R(t)$  oscillates so sometimes power loss is large, sometimes small.
- Average power dissipated by resistor:

$$\begin{aligned}\overline{P} &= \frac{1}{2} I_{\max} V_{R,\max} \\ &= \frac{1}{2} I_{\max} V_{\text{gen},\max} \cos(\phi) \\ &= I_{\text{rms}} V_{\text{gen},\text{rms}} \cos(\phi)\end{aligned}$$