

## POWER CALCULATIONS

$$1) P = \frac{E}{t}$$

$$E = Pt$$

kWh is a unit  
of Energy!

$$E_{\text{total}} = E_{3-h} + E_{21-h}$$

$$= (18 \text{ W})(3 \text{ h}) + (12 \text{ W})(21 \text{ h})$$

$$= 306 \text{ Wh}$$

$$= 0.306 \text{ kWh}$$

$$\begin{aligned} 2) \quad P &= \frac{E}{t} \\ &= \frac{0.0044 \text{ kWh}}{0.5 \text{ h}} \\ &= 0.0088 \text{ kW} \\ &= 8.8 \text{ W} \end{aligned}$$

4)

$$\# \text{ houses} = (\text{plant power}) \left( \frac{1 \text{ house}}{\times \text{ kWh/month}} \right) \left( \frac{720 \text{ h}}{1 \text{ month}} \right)$$

$$= (5,000,000 \text{ kW}) \left( \frac{1 \text{ house}}{1900 \text{ kWh/month}} \right) \left( \frac{720 \text{ h}}{1 \text{ month}} \right)$$

$$= 1.9 \text{ E } 6 \text{ houses}$$

$$5) \quad \frac{(Emf)}{NB\omega} = \frac{NAB\omega}{NB\omega}$$

$$A = \frac{(Emf)}{NB\omega}$$
$$= \frac{400 \text{ V}}{(35)(0.13 \text{ T})(376.8 \text{ rev/s})}$$

$$= 0.233 \text{ m}^2$$

$$Emf = 400 \text{ V}$$

$$N = 35$$

$$A = ?$$

$$B = 0.13 \text{ T}$$

$$\omega = 376.8 \text{ rev/s}$$

$$6) \quad (\text{Emf}) = NAB\omega$$

$$B = \frac{(\text{Emf})}{NA\omega}$$

$$= \frac{600 \text{ V}}{(110)(0.233 \text{ m}^2)(376.8 \text{ rad/s})}$$

$$= 0.062 \text{ T}$$

$$\text{Emf} = 600 \text{ V}$$

$$N = 110$$

$$A = 0.233 \text{ m}^2$$

$$B = ?$$

$$\omega = 376.8 \text{ rad/s}$$