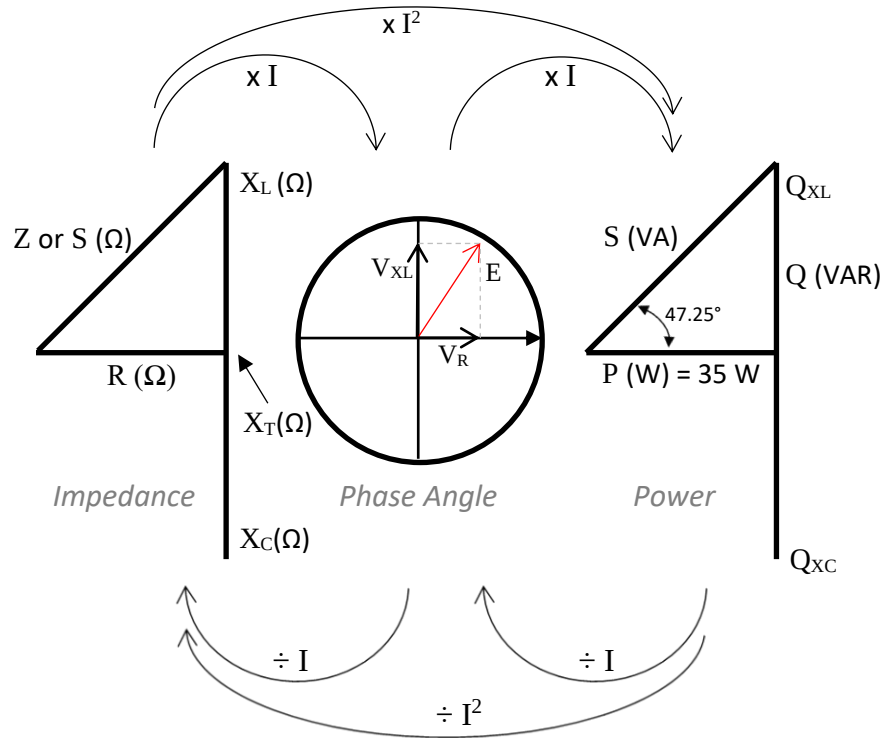


All Calculations are based on a 240V Supply with a Power Output of 35 W and a Power Factor Angle of 47.25°

Remember 404



$$Q = \tan(\theta) \times P$$

$$Q = \tan(47.25) \times 35$$

$$Q = 37.863$$

$$S = \sqrt{P^2 + Q^2}$$

$$S = \sqrt{35^2 + 37.863^2}$$

$$S = 51.562$$

$$I = \frac{S}{V}$$

$$I = \frac{51.562}{240}$$

$$I = 0.215$$

$$PF = \cos(\theta)$$

$$PF = \cos(47.25)$$

$$PF = 0.679$$

$$Z = \frac{S}{I^2}$$

$$Z = \frac{51.562}{0.215^2}$$

$$Z = 1,115.457$$

$$R = \frac{P}{I^2}$$

$$R = \frac{35}{0.215^2}$$

$$R = 757.166$$

$$X_L = \frac{Q}{I^2}$$

$$X_L = \frac{37.863}{0.215^2}$$

$$X_L = 819.102$$

$$V_R = \frac{P}{I}$$

$$V_R = \frac{35}{0.215}$$

$$V_R = 162.79$$

$$V_{XL} = \frac{Q}{I}$$

$$V_{XL} = \frac{37.863}{0.215}$$

$$V_{XL} = 176.107$$

$$E = \sqrt{V_R^2 + V_{XL}^2}$$

$$E = \sqrt{162.79^2 + 176.107^2}$$

$$E = 240.0$$