

Delta Connection :

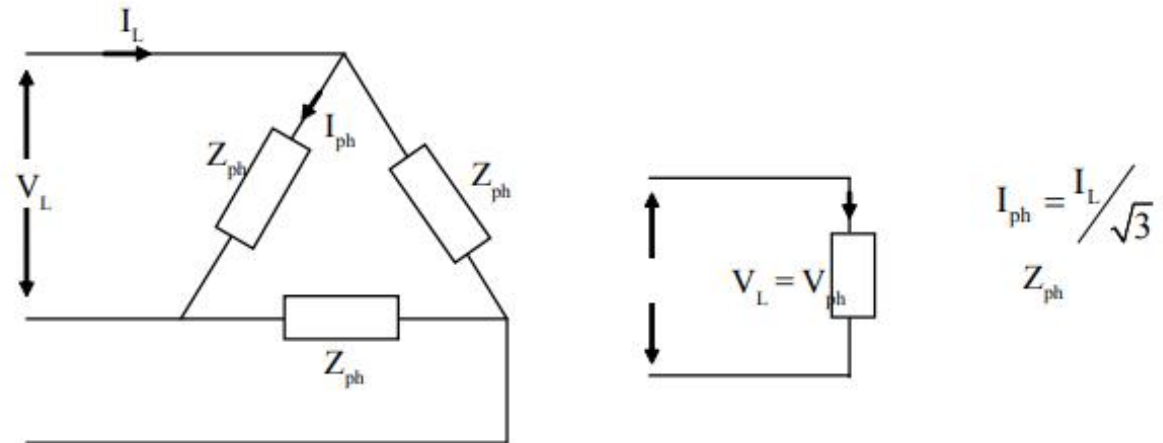


Fig. 4.30 Balanced Delta Load

A balanced 3 phase load when connected in delta across a 3 phase balanced supply, the total power in three phase delta connected load is equal to the three times of power in star connected load.

Phase voltage, $V_{ph} = V_L$

Phase impedance, $Z_{ph} = R + jX = \sqrt{R^2 + X^2}$

$$\text{Phase current, } I_{\text{ph}} = \frac{V_{\text{ph}}}{Z_{\text{ph}}}$$

$$\text{Line current, } I_{\text{L}} = \sqrt{3} I_{\text{ph}}$$

$$\text{Power factor, } \cos \phi = \frac{R}{Z}$$

$$\text{per phase power} = V_{\text{ph}} I_{\text{ph}} \cos \phi$$

$$\text{Total power, } P = \sqrt{3} V_{\text{L}} I_{\text{L}} \cos \phi$$

$$\text{Reactive power per phase} = V_{\text{ph}} I_{\text{ph}} \sin \phi$$

$$\text{Total reactive power, } Q = \sqrt{3} V_{\text{L}} I_{\text{L}} \sin \phi$$

$$\text{Apparent power per phase} = V_{\text{ph}} I_{\text{ph}}$$

$$\text{Total apparent power, } S = \sqrt{3} V_{\text{L}} I_{\text{L}}$$