Three Phase Delta Connected Unbalanced Load

Power consumed by three phase load

The power consumed by the three phase load is given by sum of power consumed by each individual load in each phase.

$$P = |V_{RY}|\ |I_1|\ \cos\varnothing_{RY} + |V_{YB}|\ |I_2|\ \cos\varnothing_{YB} + |V_{RB}|\ |I_3|\ \cos\varnothing_{RB}$$

$$= V_L I_3\ \cos\varnothing_{RY} + V_L I_2\ \cos\varnothing_{YB} + V_L I_3\ \cos\varnothing_{BR}$$

Where, θ_{RY} = Phase difference between V_{RY} and I_{RY}

θ_{YB} = Phase difference between V_{YB} and I_{YB}

θ_{BR} = Phase difference between V_{BR} and I_{BR}