

ELECTRICAL MEASUREMENT & MEASURING INSTRUMENTS

UNIT 1 Part B

Analog Measurement of Electrical Quantities

Power Measurement in 3 phase 3 wire system

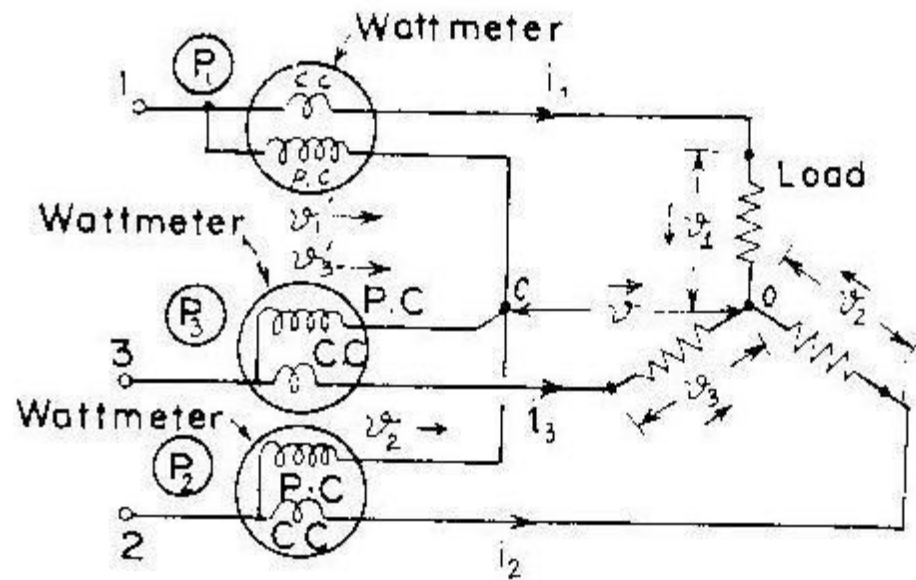


Fig. 11.23. Power measurement in a 3 phase 3 wire system.

Two wattmeter method

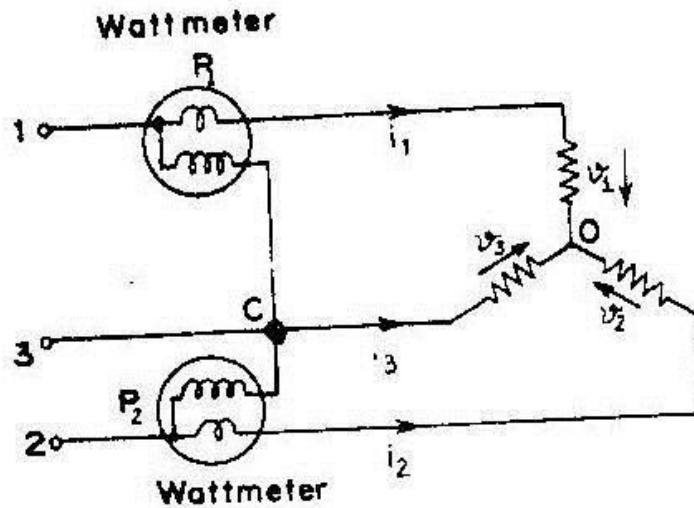


Fig. 11.25. Two wattmeter method (Star connection).

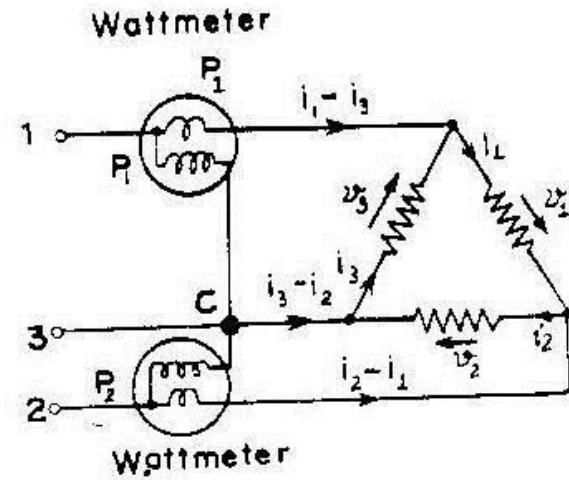
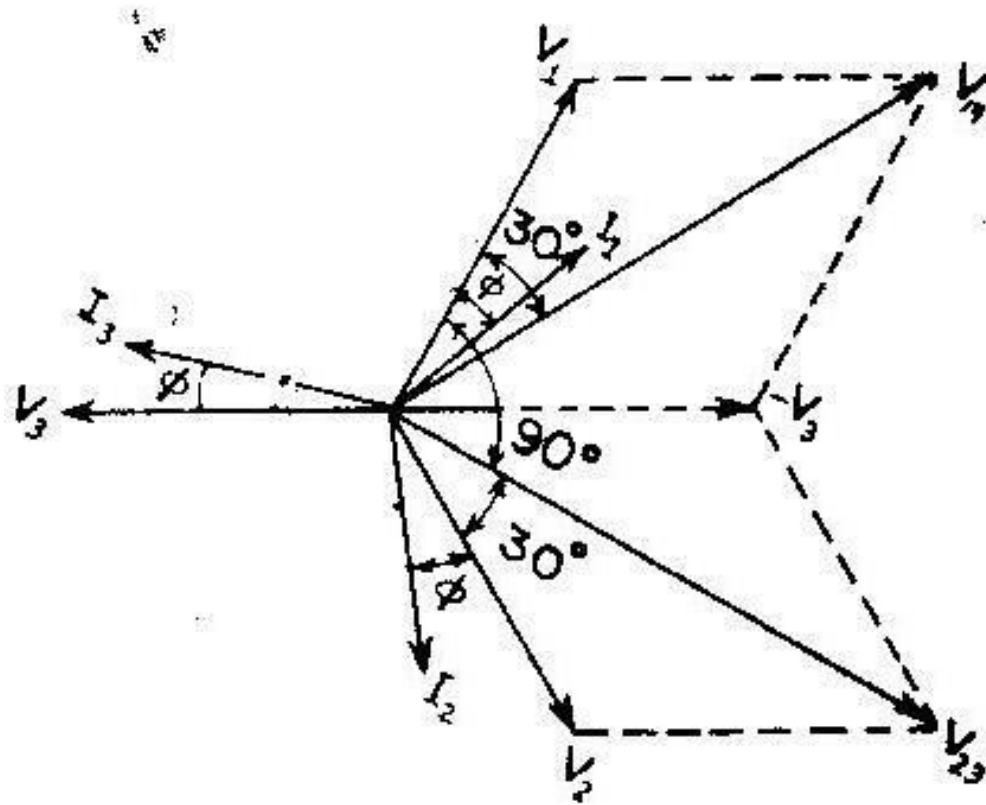


Fig. 11.26. Two wattmeter method (Delta connection).



Errors & remedies in wattmeter and energy meter

Pressure coil inductance: Ideal dynamo-meter type watt meter current in pressure coil in phase with the applied voltage.

- Practically pressure coil of watt meter has an inductance and current in it will lag behind the applied voltage.
- The wattmeter will read high when the load power factor is lagging ,as in that case the effect of pressure coil inductance is to reduce the phase angle between load current and pressure coil current .
- The wattmeter will read high. This is very serious error.
- Hence the wattmeter will read low. ***Compensation for inductance of pressure coil.*** Inductance of pressure coil can be reduced by means of **capacitor connected in parallel with a portion of multiplier (series resistance).**