National Institute of Technology, Durgapur
Department of Electrical Engineering

Experiment No. 2

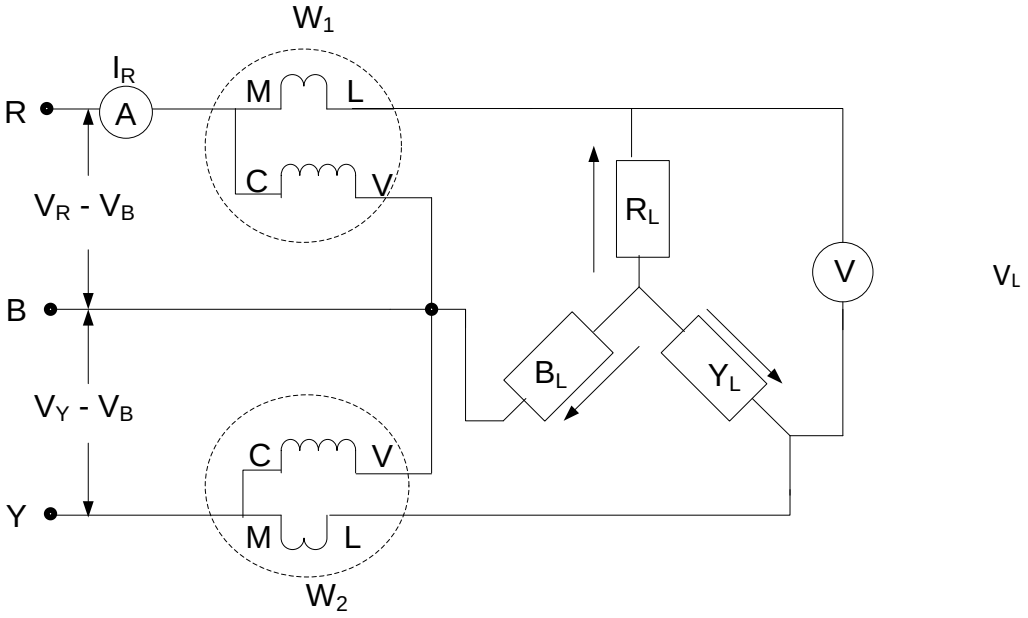
Measurement power in a 3-phase circuit.

Object: To measure power in a 3-phase load by two wattmeter method.

Apparatus Required: It consists of following instruments

Sr No	Instrument Name	Specification	Quantity	Makers Name

Circuit diagram:



Circuit diagram of Power measurement by two wattmeter method

Procedure:

1. Connect as per the connection shown in figure and take readings in steps of increasing load currents by varying the load.
2. Repeat procedure (1) with one of the phases having unequal load currents.

Table:

SL. NO.	LINE CURRENT (I_L) in Amp	LINE VOLTAGE (V_L)2 in Volt	1st Wattmeter reading (W_1) in watt	2nd Wattmeter reading (W_2) in watt	POWER= W_1+W_2	$\Phi = \tan^{-1}\left(\frac{\sqrt{3}*(W1-W2)}{W1+W2}\right)$	P.F= $\cos\varphi$

Report:

1. Draw phasor diagram.
2. Complete t6he table.
3. Establish then to measured power supplied to the load in a system that require (n-1) wattmeter.
4. Established that power factor may also be estimated from two wattmeter readings.
5. Explain why the wattmeter will give (a) zero reading (b) negative reading.

Suggested Reading:

1. Electrical Measurement & Measuring Instrument by E.W.Golding