Heaven's Light is Our Guide

Rajshahi University of Engineering & Technology

Department of Electrical & Computer Engineering

Lab report

Course Code : ECE 1202

Course Title : Circuits and Systems-2 Sessional

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Submitted To:	Submitted By:
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Experiment No. 03:

Power measurement of a balanced 3 Phase system using two wattmeter method.

Objectives:

To measure the power in a balanced 3-phase system using the two-wattmeter method and to understand how total power can be determined by summing the readings from two wattmeter.

Theory:

The two-wattmeter approach may be used to determine the total power utilized by the load in a balanced three-phase system. The basis of this technology is to link any two lines of a three-phase system to two wattmeter. The system's total power is then determined using the data from the two wattmeter. The total power (P) is the sum of the two wattmeter readings (W1 and W2), i.e., Total Power = W1 + W2.

The power factor of a balanced load may also be ascertained by calculating the ratio of the wattmeter values. Because it takes both reactive and actual power into account, the two-wattmeter approach works well. It is a common technique for figuring out the power in both delta and wye-connected systems with balanced loads.

Required Apparatus:

1. Variac
2. Ammeter
3. Resistor
4. Multimeter
5. Voltmeter
6. Wattmeter
7. Connecting Wire

Circuit Diagram: -

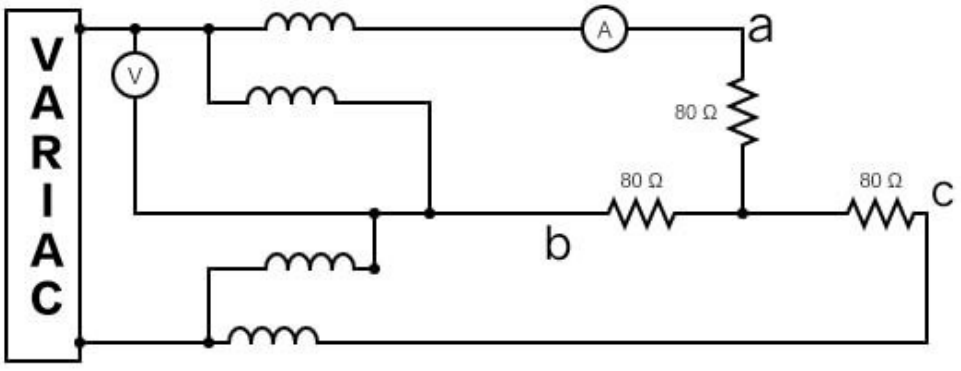
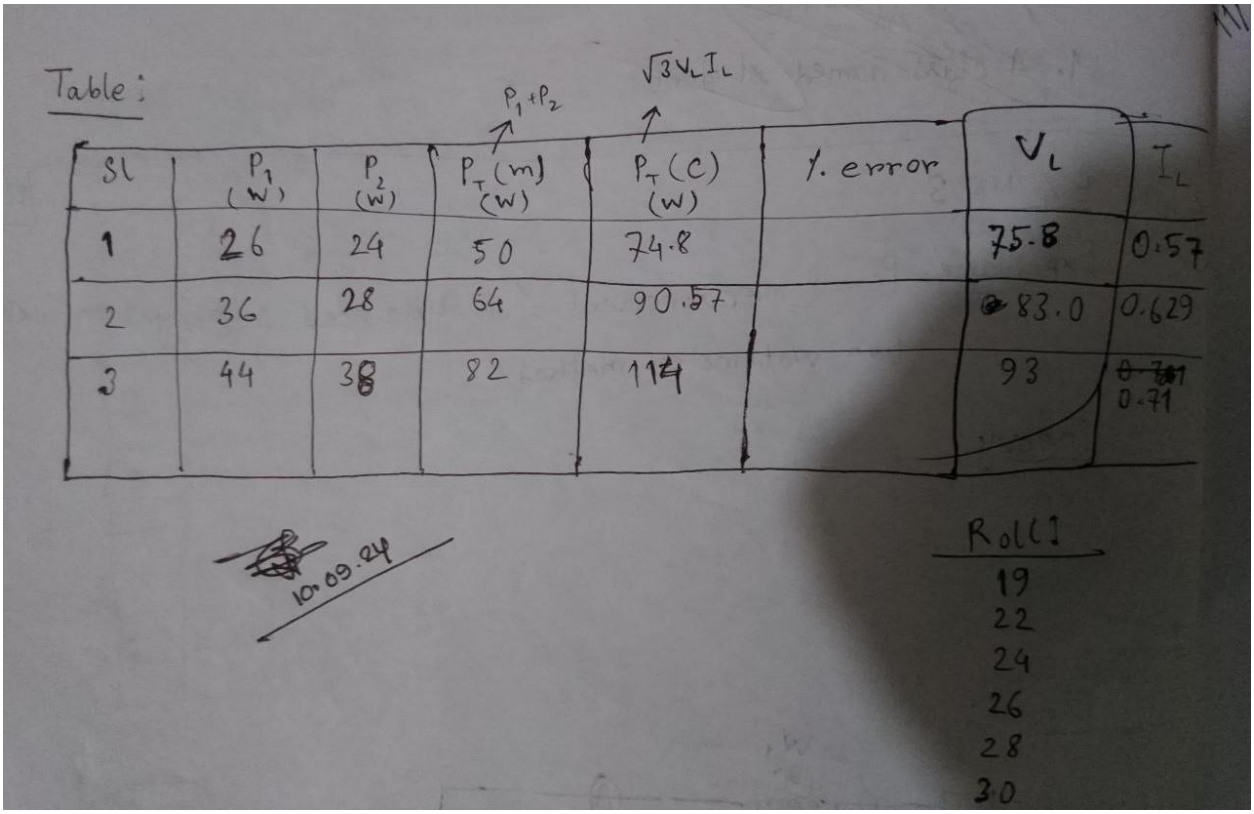


Fig-01: - Power measurement of a Delta Connected System

Data Table: -

SL No	P_1(W)	P_2(W)	P_T (measured) (W)	P_T(Calculated) (W)	V_L	I_L	Error (%)
1	26	24	50	74.8	75.8	0.57	33.5
2	36	28	64	90.57	83.0	0.629	29.33
3	44	38	82	114	93	0.71	28.07

Fig-02: - Table from lab



Result:

Following the experiment, we discovered that there is an accurate correlation between the theoretical power calculation and the total power measured using the two-wattmeter approach. The link between the wattmeter readings and the total power was confirmed, but some mistakes were noted as a result of delayed data collection and equipment heating problems.

Discussion:

1. I have learnt to operate a balanced wye connected 3 phase circuit.
2. I learnt to take measure without getting a major shock from AC circuit.
3. I learnt a important thing that: As much as we late to take data the error is getting high .