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 & Systems - II Sessional

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Submitted To:	Submitted By:
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2.1 Experiment No.: 02

2.2 Name of the Experiment: Study the relation between phase and line current of Del (wye-del system) connected three phase balanced load.

2.3 Theory:

In balanced "Delta" circuits, the line current is equal to phase current times the square root of 3, while the line voltage is equal to phase voltage.

The magnitude of the line current I_L is $\sqrt{3}$ times the magnitude of the current I_p

$$\mathbf{I_L = \sqrt{3}\ Ip}$$

The Phase voltage is equal to line voltage

$$\mathbf{V_p = V_L}$$

2.4 Circuit Diagram:

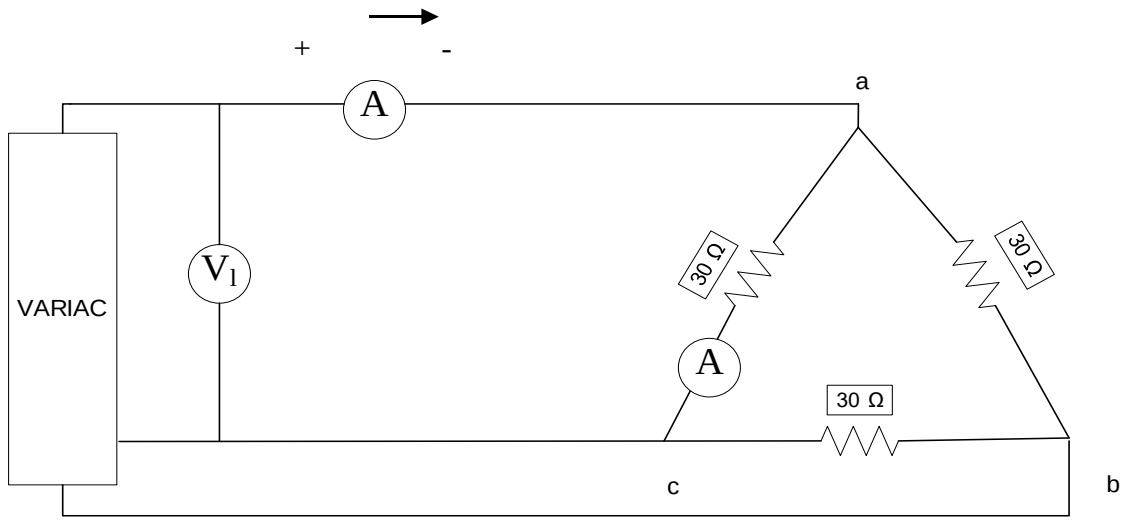


Fig. –¬01—¬ Circuit Diagram wye-del connected system.

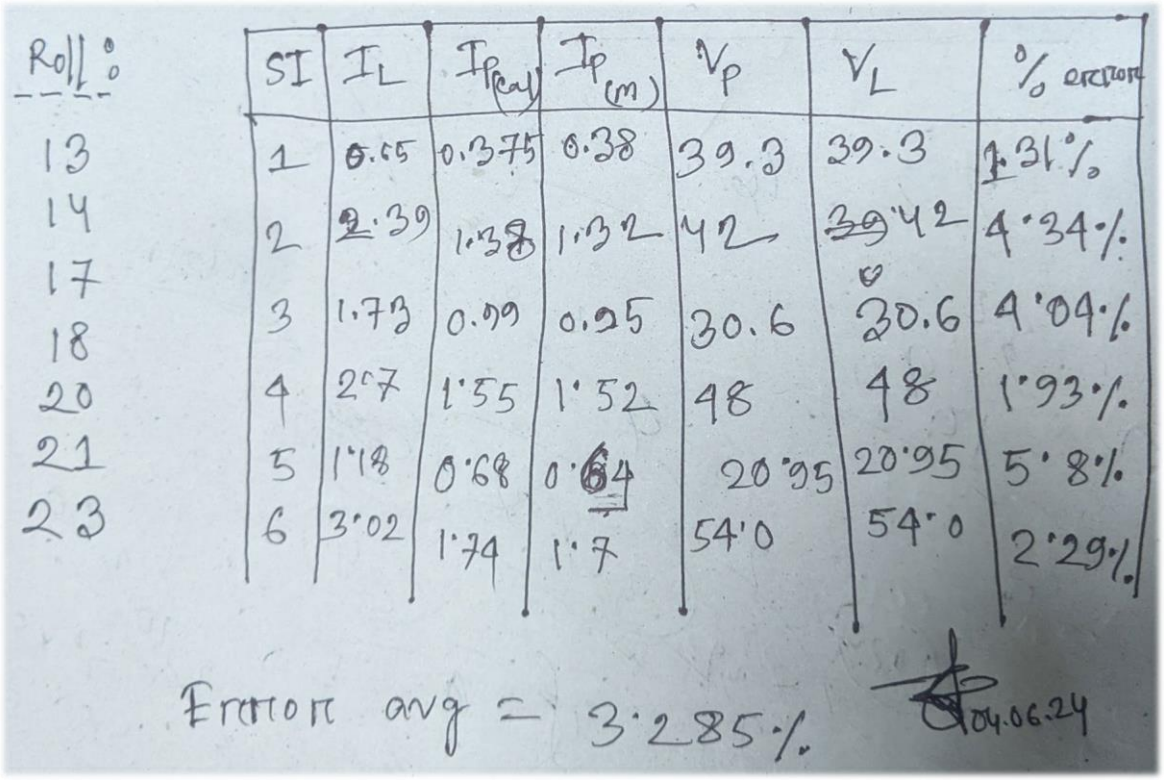
2.5 Required Apparatus:

1. AC voltage source
2. step-down transformer.
3. Resistor. (3 pieces)
4. Connecting wires.
5. Ammeter.
6. Voltmeter.
7. Multimeter.

2.6 Data Table:

Sl	I_L	$I_{P(m)}$	I_P(cal)	% error	V_L	V_P
1	0.65	0.38	0.375	1.31 %	39.3	39.3
2	2.39	1.32	1.38	4.43 %	42	42
3	1.73	0.95	0.99	4.04 %	30.6	30.6
4	2.7	1.52	1.55	1.93 %	48	48
5	1.18	0.64	0.68	5.8 %	20.95	20.95
6	3.02	1.7	1.74	2.29 %	54	54

2.7 Data table from lab Experiment:



2.9 Result:

Because of having different limitations, some errors have been found. From the experiment we can come to the decision that the relation between phase and line voltage and current is correct and applicable. $\mathbf{V_L = \sqrt{33}\ Vp\ \ I_p = I_L}$

$$Average\ \%\ of\ \ error = \frac{1.31+4.43+4.04+1.93+5.8+2.29}{66}\%$$

$$= 3.285\ \%$$

2.10 Discussion:

1. For the 1st Time I make the arrangement of "Delta" connected balanced load.
2. learn to handle three phases.

2.11 Precaution:

1. Low voltage source should be used for this experiment to avoid risks.
2. Wires should be connected properly.
3. We should keep ourself away from wire when line is ON.

2.12 Reference: Fundamentals of Electric Circuits by Charles K. Alexander & Matthew N. O. Sadiku.