Heaven's Light is Our Guide

Rajshahi University of Engineering and Technology

Course Code
ECE 2208

Course Title
Electrical Machines - I Sessional

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Lab Report 5: Blocked rotor test & no-load test of 3-phase induction motor and determination of circuit parameters.

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Constructing of three phase transformer using three single phase transformers & observing line & phase voltage relation in primary and secondary windings.

1 Introduction

Three phase motor

Circuit Diagrams

Figure 1: Circuit diagrams for Y-Δ three transformer connection.

2 Tools Used

- Three Phase Motor, (220/440V, 9.1/4.55A)
- Ammeter (0A - 5A)
- Voltmeter (0V - 120V)
- Wattmeter
- Three Phase AC supply (220V)
- Three phase Variac (0-250V)
- Connecting wires

3 Data & Calculation

3.1 Data Table:

Table 1: Y Connection

$\mathbf{V_{an}}$	$\mathbf{V_{bn}}$	$\mathbf{V_{cn}}$	$\mathbf{V_{AB}}$	$\mathbf{V_{BC}}$	$\mathbf{V_{CA}}$
100.8	100.7	101.5	175.8	176.8	177.4

Table 2: Δ Connection

$\mathbf{V_{an}}$	$\mathbf{V_{AB}}$
150.6	131.7

3.2 Calculation:

For Y-connection,

$$V_L = \sqrt{3}V_P$$

Line Voltage,

$$V_{an} = 100.8V$$

$\therefore$ Phase voltage,

$$V_{AB} = \sqrt{3} \times 100.8 = 174.59$$

Average Measured phase voltage,

$$V_{AB} = \frac{175.8 + 176.8 + 177.4}{3} = 176.67V$$

For Δ-connection,

$$V_L = V_P$$

Line voltage,

$$V_{an} = 100.7V$$

Measured phase voltage,

$$V_{AB} = 100.7V$$

4 Discussion

Just like three phase supply, in transformers, the relation persists. In wye connection, the line & phase voltages aren't the same but in delta connection, they are the same.

5 Conclusion

Since this experiment was done with AC supply, utmost caution was exercised to avoid any accident. Additionally, the line and phase current relation wasn't tested as it'd require precise and cautious connection. To avoid any dangers, only the voltage relation was done in this experiment.