Experiment 8

OBTAINING THE INHERENT CHARACTERISTIC CURVES OF A SEPERATELY EXCITED DC MOTOR

# PURPOSE OF THE EXPERIMENT

Purpose of this experiment is to obtain a temperature rise in an electrical machine, draw its curve and learn the effects of the temperature rise in a machine.

# CONNECTION DIAGRAM

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# Explanatıon of Experıment

In this experiment, a transformer is used as an electrical machine. At first, windings are at the room temperature, so it is written down on the sheet. A short period DC current is applied to the machine and measured the current value on the windings. Using 10 minutes time intervals between measurements, current values are obtained.

The transformer used in this experiment has following values;

Primer winding: 220 V – 4.4A

Seconder winding: 110 V – 8.5 A

Also 10 A, 12 ohm load is used.

In the experiment, transformer is worked normally (in AC voltage), at the measurement points a DC voltage is applied to the machine so that pure resistance is measured.

Then, using voltage 3.3V) and current values (see table 1), resistance values at each time interval are calculated.

R = V/I

Temperature values are calculated with the following formula;

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Note: I’ve worked for 2 hours to obtain a least square method in matlab, also used “Numerical Methods for Engineers” written by Steven C. C. and Raymond P. C. ( ch. 17, p. 481-484) as a guide. But I could not obtain a reasonable result. When I used the book’s example’s values code was perfectly good but with experiment’s values it was trivial. So I couldn’t wrote them in the report.

# QUESTIONS

# RESOURCES

FITZGERALD, A., E., KINGSLEY, C., Jr., Umans, S., D., Electric Machinery, 6th edition, Mc-Graw Hill, Pg. 360-363

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