EXPERIMENT 6

INTERNAL AND EXTERNAL CHARACTERISTICS OF SEPARATELY EXCITED DC GENERATOR

EQUIPMENT

* DC Excited Generator
* Variable DC Supply
* Variable Resistor
* DC Voltmeter and Ammeter

INTRODUCTION

A **DC generator** whose field winding or coil is energized by a **separate** or external **DC** source is called a **separately excited DC Generator**. The flux produced by the poles depends upon the field current with the unsaturated region of magnetic material of the poles.

Principle of DC generator

DC generator operates on the principle of the dynamically induced electromagnetic force. When a conductor is placed in a varying magnetic **field**, an electromotive force gets induced within the conductor. This induced e.m.f magnitude is measured using the equation of the electromotive force of a generator.

The a**dvantages of a dc generator** include the following.

* DC generators generate large output.
* The terminal load of these generators is high.
* The designing of dc generators are very simple
* These are used to generate uneven output power.
* These are extremely consistent with 85-95%.of efficiency ratings
* They give a reliable output.
* They are lightweight as well as compact

OBJECTIVE

* To draw the internal and external characteristics of separately excited DC shunt generator.
* The purpose of a dc generator that has been modified to function as an amplifying.

APPLICATION

* Because of their ability of giving wide range of [voltage](https://www.electrical4u.com/voltage-or-electric-potential-difference/) output, they are generally used for testing purpose in the laboratories.
* Separately excited generators operate in a stable condition with any variation in field excitation. Because of this property they are used as supply source of [DC motors](https://www.electrical4u.com/dc-motor-or-direct-current-motor/), whose speeds are to be controlled for various applications. Example- Ward Leonard Systems of speed control.
* These **generators** are used to charge batteries, provide lighting and provide excitation to alternators.
* They are used to provide field excitation current for regenerative braking in **DC** locomotives.
* They are used in **DC** motors where speed control is necessary.

PROCEDURE

GRAPH PLOTTING CODE

EXTERNAL AND INTERNAL CHARACTERISTICS





ISSUE

Slight issue faced in knowing Ra value of resistor.

CONCLUSION

To conclude, while performance this experiment I got to knew about the dc separated generator, its working and knew about its internal and external characteristics of dc excited separated generator.

POST LAB QUESTIONS

* Draw the internal characteristics of separately excited Dc shunt Generator?



* Draw the external characteristics of separately excited Dc shunt Generator?



3. Why the terminal voltage across DC shunt generator decreases as the load increases?

Current in the field windings of a **shunt**-wound **generator** is independent of the **load** current (currents in parallel branches are independent of each other). ... The output **voltage decreases** as **load** current **increases** because the **voltage** drop **across** the armature resistance **increases** (E = IR).

* What is the conclusion at which you reached from the above experiment?

From above experiment I reached at this conclusion that by change in any parameter (increase or decrease) the other parameters ay also get change. If I increases Ra factor the VT increases and IA decreases but I(f) remains constant throughout.