EXPERIMENT 7

DESIGN A SPEED CONTROL CIRCUIT FOR DC SHUNT MOTOR (DESIGN EXPERIMENT)

INTRODUCTION

A **DC shunt motor** (also known as a **shunt** wound **DC motor**) is a type of self-excited **DC motor** where the field windings are shunted to or are connected in parallel to the armature winding of the **motor**. Since they are connected in parallel, the armature and field windings are exposed to the same supply voltage.

**Popular DC motor designs include:**

* Permanent magnet
* Brushless
* Shunt
* Series

**Characteristics of a DC Shunt Motor:**

* **Speed**-Armature Current Characteristic.
* Torque-Armature Current Characteristic.
* **Speed**-Torque Characteristic.

**The applications of shunt DC motor include the following:**

* These motors are used wherever stable speed is required.
* This kind of DC motor can be used in **Centrifugal Pumps**, Lifts, **Weaving Machine**, **Lathe** Machines, **Blowers**, **Fans**, **Conveyors**, **Spinning machines**, etc.

**Advantages of Dc shunt motor:**

* The **power** supply of the DC motor is any way cheap.
* Shunt would motor able to runs at a predetermined **speed**.
* The **speed** of a dc shunt motor is sufficiently constant.
* Direct current machines can use for heavy industrial applications where the torque and **speed** wider **range**.

**Disadvantage of a shunt motor**

* As the load changes, a **shunt** wound **motor** runs at a predictable speed. If variable speed is desired, constant speed can be a **disadvantage**. The lifetime of the **motor** is usually not improved by brushes.

OBJECTIVE

* Design a control circuit to operate the DC Shunt motor in a range of speed.
* Speed (N) control of a **DC shunt motor** by field control method and to draw speed (N) vs. field current (If) characteristics.

APPLICATION

* DC motors are suitable for many applications – including conveyors, turntables and others for which adjustable speed and constant or low-speed torque are required.
* They also work well in dynamic braking and reversing applications, which are common in many industrial machines.
* DC shunt motors are used wherever stable speed is required.
* **DC motor** can be used in Centrifugal Pumps, Lifts, Weaving Machine, Lathe Machines, Blowers, Fans, Conveyors, Spinning machines, etc.

PROCEDURE

We measure all reading with our roll and and all calculation is in accordance with there will be some difference in calculating and measured values due to some measureing errors in speed due to techometer its always show some large values or greater value but our instructor says its not bad.



ISSUE

Faced issue in finding in measureing reading but after chnage of machine we resolve our issue and find corrected readings.

CONCLUSION

A **shunt** or separately excited **dc motor** has a torque-speed characteristic whose speed drops linearly with increasing load torque. Its speed can be controlled by changing its field current, its armature voltage or its armature resistance. Whereas the speed decreases as the torque increase in a steady manner.