Shunt wound dc generator diagram

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The DC generator converts mechanical power into electrical power. The magnetic flux in a DC machine is produced by the field coils carry current. The circulating current in the field windings produces a magnetic flux, and the phenomenon is known as Excitation.

DC Generator is classified according to the methods of their field excitation.

By excitation, the DC Generators are classified as Separately excited DC Generators and Self-excited DC Generators. There is also Permanent magnet type DC generators.

The self-excited DC Generators are further classified as Shunt wound DC generators; Series wound DC generators and Compound wound DC generators.

The Compound Wound DC generators are further divided as long shunt-wound DC generators, and short shunt-wound DC generators.

The field pole of the DC generator is stationary, and the armature conductor rotates. The voltage generated in the armature conductor is of alternating nature, and this voltage is converted into the direct voltage at the brushes with the help of the commutator.

The detailed description of the various types of generators is explained below.

In this type of DC generator, there is no field winding is placed around the poles. The field produced by the poles of these machines remains constant. Although these machines are very compact but are used only in small sizes like dynamos in motorcycles, etc.

The main disadvantage of these machines is that the flux produced by the magnets deteriorates with the passage of time which changes the characteristics of the machine.

A DC generator whose field winding or coil is energised 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. i.e. flux is directly proportional to the field current. But in the saturated region, the flux remains constant.

The figure of self-excited DC Generator is shown below:

Ia = IL where Ia is the armature current and IL is the line current.

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