

**Abstract:**

A direct current (DC) motor is a very old machine, but the applications have become more important and developed in recent years. This article describes a new method of controlling the speed of a DC motor based on armature voltage control, armature resistance control and field excitation control with constant flux motors shunt and series field. The proposal allows improving the experimental result, and the simulation results have the same response with an expected error. This error is due to voltage drop and rotational losses. Armature voltage control is the best method and more economical; the cheapest method is armature resistance control, but this is wasteful and less versatile. The new method effectiveness evaluation has confirmed the calculation results.