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Topology Selection

Shunt, Series or Compound?

In the first weekly meeting, we examined the motor specifications and reviewing the EE362 notes, we observed th echaracteristis for shunt, series and compound field connections. Looking at the characteristics provided in 1, we decided that using a shunt field winding would be better for a more robust voltage with respect to changing current and a more constant speed. An outstanding advantage of shunt motors is the ease of speed control. In shunt and seperately excited motors, the field flux is nearly constant. As a result, increased torque must be accompanied by a very nearşy proportional increase in armature current and hence by a smal decrease in counter emf E_a to allow this increased current through the small armature resistance. Since counter emf is determined by flux and speed, the speed must drop slightly. The shunt motor has only 6 per cent drop in speed from no load to dull load. Starting torque and maximum torque are limited by the armature current that can be successfully commtated.

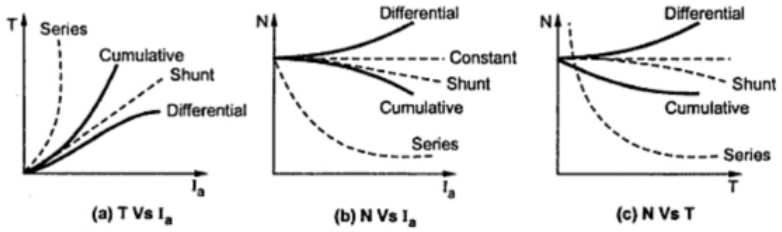

Figure 1: Characteristics of DC Motor Field Connections