

EC drives

DC motors have a stator winding similar to an AC motor, but differ to AC motor having a permanent magnet in the rotor. DC motors require commutation units to provide an alternating electric current to the stator. An alternating electric current is required to create a rotating magnetic field to interact with the permanent magnet in the rotor.

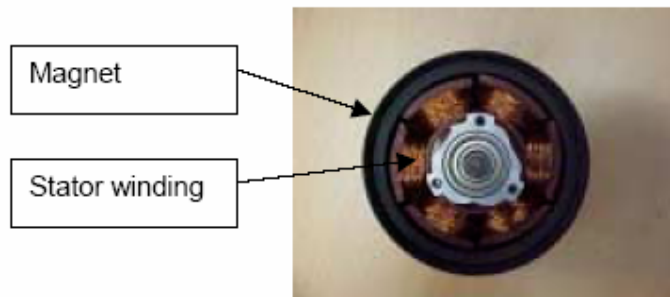
Traditionally mechanical methods were used using carbon brushes running on segmented slip rings. This method is still used on some large DC motors. A more reliable, longer lasting and cleaner technology is brush less DC or Electric Commutation (EC).

The electronic commutation of a DC motor consists of an array of transistors or thyristors to switch the current on and off and to alternate the current through the winding. The timing of this action is dependant on the position of the magnetic poles in the permanent magnetic rotor. This is determined by a hall effect transistor determining the rotor position and providing a feedback to the processor in the electronic commutation.

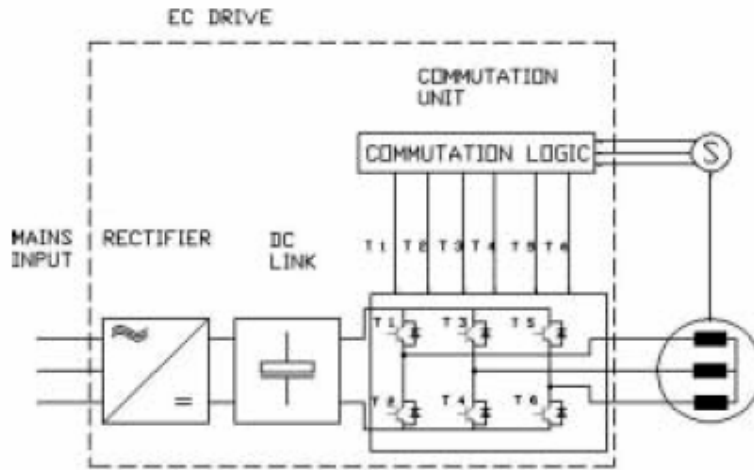


DC motor showing electronic commutation

The electronic commutation of an EC drive is the same as that of a DC motor but also incorporate an inverter to convert AC mains to DC line voltage. EC drives give the higher efficiencies of DC motor, the ease of AC motors and the flexibility of frequency drives as the EC drive also include full speed control functionality.



An EC motor winding



Schematic of an EC drive showing the thyristor array