AC MOTOR

STATOR

In AC motor, there's a ring of electromagnets arranged around the outside (making up the stator) which are designed to produce a rotating magnetic field.

Unlike in a DC motor, where power is sent to the inner rotor, in an AC motor, power is sent to the outer coils that make up the stator. The coils are energized in pairs, in sequence, producing a magnetic field that rotates around the outside of the motor

(The stator makes magnetic field using tightly wound coils of copper wire)

HOW DOES THE ROTATING FIELD MAKES THE MOTOR MOVE?

The rotor, suspended inside the magnetic field, is an electrical conductor. The magnetic field is constantly changing (bcz it's rotating) so according to Faraday's law, the changi magnetic field induces an electric current inside the rotor. If the conductor is a ring or a wire, the current flows around it in a loop. If the conductor is simply a solid piece of metal, eddy currents swirl around it insted. Either way, the induced current produces its own magnetic field and according to Lenz's law,

Date:

tries to stop whatever it is that causes it - the rotating magnetic field - by rotating as well

INDUCTION MOTOR

Electromagnetic induction is the key to why a motor like this spins - and that's why it is called an induction motor

ADVANTAGES

The biggest advantage of AC induction motors is their sheer simplicity. They have only one moving part, the rotor, which makes them low-cost, quiet, long-lasting and relatively trouble free. DC motors, by contrast, have a commutator and carbon brushes that wear out and need replacing from time to time. The friction b.w the brushes and commutator also makes DC motors relatively noisy

What Controls The Speed Of An AC Motor

In synchronous AC motors, the rotor turns at exactly the same speed as the rotating magnetic field; in an induction motor, the rotor always turns at a lower speed than the field, making it an example of an asynchronous AC motor.

The theoretical speed of the rotor depends on the frequency of AC supply and the

number of coils that make up the stator and, with no load on the motor, comes close to the speed of the rotating magnetic field. In practice, the load on the motor also tends to slow the rotor down. The greater the load, the greater the 'slip' b.w the speed of the magnetic field and the actual speed of the rotor. To control the speed of the AC motor (make it go faster or slower), we have to increase or decrease the frequency of the AC supply using a variable-frequency drive.