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Basics of induction Motors

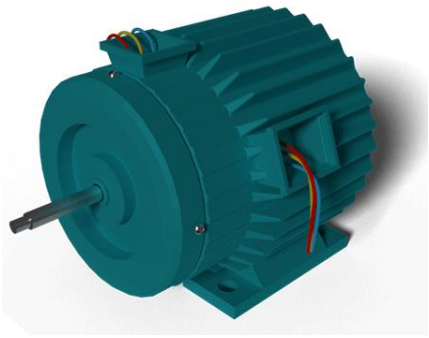
What is an Electric motor? Definition and Types.

Electric motors in industry are estimated to be responsible for approximately 29% of overall global and 69% of industrial electricity consumption. And it means, that in a typical industry almost all the works/processes are being done by motor.

Now, it is very important to understand the concept, construction and performance of motor. Improving the performance of motor will eventually save the energy consumption globally. The associated switch gear with the motor plays an important role in deciding the performance and life of the motor. One of the most commonly used electrical motors is induction motor.

We also call this motor as asynchronous motor because it runs at speed less than its synchronous speed.

Three-phase squirrel-cage induction motors are widely used as industrial drives because they are rugged, reliable and economical. Single-phase induction motors are used extensively for smaller loads, such as household appliances like fans. Although traditionally used in fixed-speed service, induction motors are increasingly being used with variable-frequency drives (VFDs) in variable-speed service. VFDs offer especially important energy savings opportunities for existing and prospective induction motors in variable-torque centrifugal fan, pump and compressor load applications. Squirrel cage induction motors are very widely used in both fixed-speed and variable-frequency drive (VFD) applications.



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The classification of motors is defined based on various factors. In the above diagram motors are classified into various categories depending on the type of opration. These are furthur divided into categories depending on type of motion and then depending on type of supply.

Motors are classified into two types
- Electric motor
- Pneumatic motor

Electric motors are again classified into
- Linear
- Rotary

Rotary Rotary motors are furthur classified into
- AC motors
- DC motors
- Special motors

Pneumatic motors are classified into
- Linear
- Pneumatic

We are mostly discussing on AC motors. Now, the classification is again divided based on the type of supply. And depending on the operating principle, they are again classified into induction, synchronous motors.

AC motors are classified into two types
- Single phase
- Three phase

Single phase motors are again classified into
- Synchronous motors
- Induction motors AC series motor

Induction motors are furthur classified into
- Capacitor start capacitor run
- Capacitor start induction run
- Induction start induction run

Shaded pole Ac motors are classified basically into two types.
- 1-Phase
- 2-Phase

Three phase motors are again classified into two types
- Synchronous motors
- Induction motors

Again, synchronous motors divided in two types
- Prime mover
- Self-starting

Prime mover and Self-starting motors are further divided into
- permanent magnet
- Electro magnet