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Basics of induction Motors

Differences between SCIM and SRIM

The squirrel cage induction motor is the most popular type of AC motor. It is very commonly used in industries because it is very cheap, robust, efficient, and reliable. The slip ring motor has very little application in industries. Rarely 5% – 10% slip ring motors are used in industries because it has several disadvantages like it required frequent maintenance, having a high copper loss, etc.

One of the major differences between the slip ring and the squirrel cage motor is that the slip ring motor has an external resistance circuit for controlling the speed of the motor. Whereas in squirrel cage motor, it is not possible to add any external circuit because the bar of the motor is permanently slotted at the end of the ring. Some other differences between them are explained below in the comparison chart.

Comparison Chart: Slip Ring V/s Squirrel Cage Motor:

Basis for Comparison	**Slip Ring Motor**	**Squirrel Cage motor**
Definition	The rotor of the motor is constructed as a slip ring type.	The rotor of the motor is a squirrel cage type.
Rotor	Cylindrical laminated core with parallel slots and each slot consist one bar.	The slots of the rotor are not parallel, but are skewed.
Other name	Phase wound rotor	Cage motor
Construction	Complicated	Simple
Resistance	Added external to the rotor	The rotor bar is permanently shorted at the end of the ring; thus, it is not possible to add any external resistance.
Starter	The rotor resistance starter can be used.	Rotor resistance starter cannot be used.
Starting Torque	High	Low
Brushes	Present	Absent
Maintenance	Frequent maintenance required	Less maintenance required
Copper Loss	High	Low
Efficiency	Low	High
Speed Control	Possible	Not Possible
Power Factor	Low	High
Cost	Costly	Cheap
Starting Current	Low	High