

Distinguish, differentiate, compare and explain what is the difference Between stepper motor and servo motor. Comparison and Differences.

Stepper Motor

The structure of the stepper motor is that its consists of a rotor that is created through a permanent magnet and a stator that carries winding. If we connect the supply to the stator then the flux will generate that will make link to the rotor and due to that force applied at the rotor.

Servo Motor

The structure of the servo motor is like the stepper motor in that it also consists of a rotor created through a permanent magnet and stator having winding. The flux generated at the stator make a link to the rotor and apply the force of rotation.

Servo motors are suitable for high torque & speed applications whereas the stepper motor is less expensive so they are used where the high holding torque, acceleration with low-to-medium, the open otherwise closed-loop operation flexibility is required. The difference between the stepper motor and servo motor includes the following.

Difference between Stepper and Servo Motor

| S.No. | Stepper Motor | Servo Motor |
|-------|---|---|
| 1 | Provide high torque in low speed. | Provide high torque in high speed. |
| 2 | It operates in an open-loop. | It operates in an closed-loop. |
| 3 | Stepper motors are more prone to error as they have no feedback system. | Servo motors are less prone to error as they have internal feedback system. |
| 4 | Encoder is not required. | Servo motors requires an encoder and gearbox for more accurate controls. |
| 5 | Less costly. | More costly. |
| 6 | Low in speed. | High in speed. |
| 7 | No hunting during stop position. | Hunting during stop position. |
| 8 | Suitable for fluctuating loads. | Not suitable for fluctuating loads. |