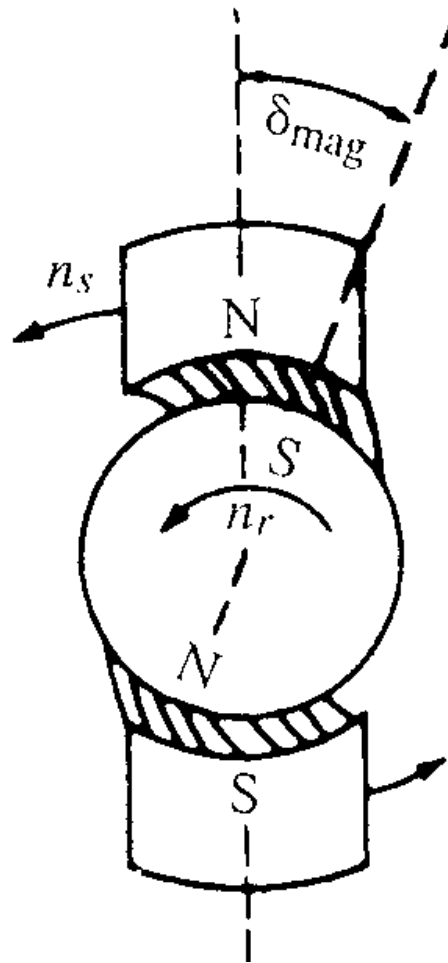


Special Electrical Machines

Hysteresis Motor at Synchronous Speed

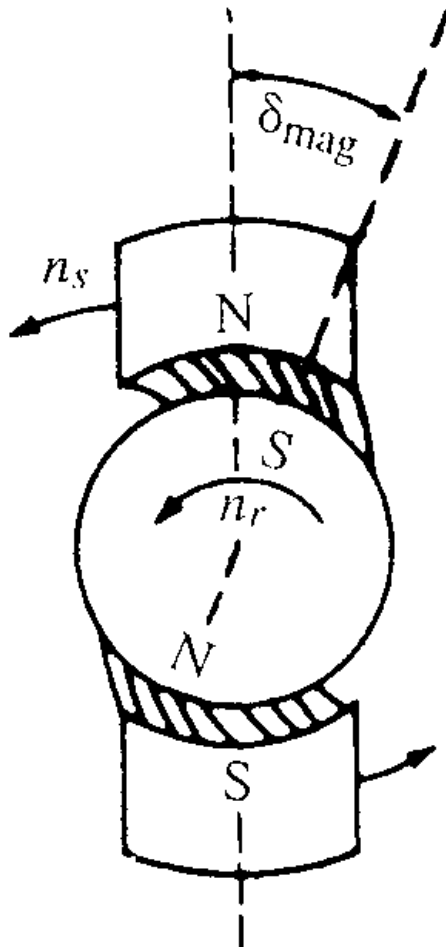
Apply a step increase in shaft load.



The rotor slows down and the induced rotor magnets lag the rotating poles of the stator by an angle δ_{mag} .

The rotor returns to synchronous speed at the new torque angle.

Hysteresis Motor at Synchronous Speed



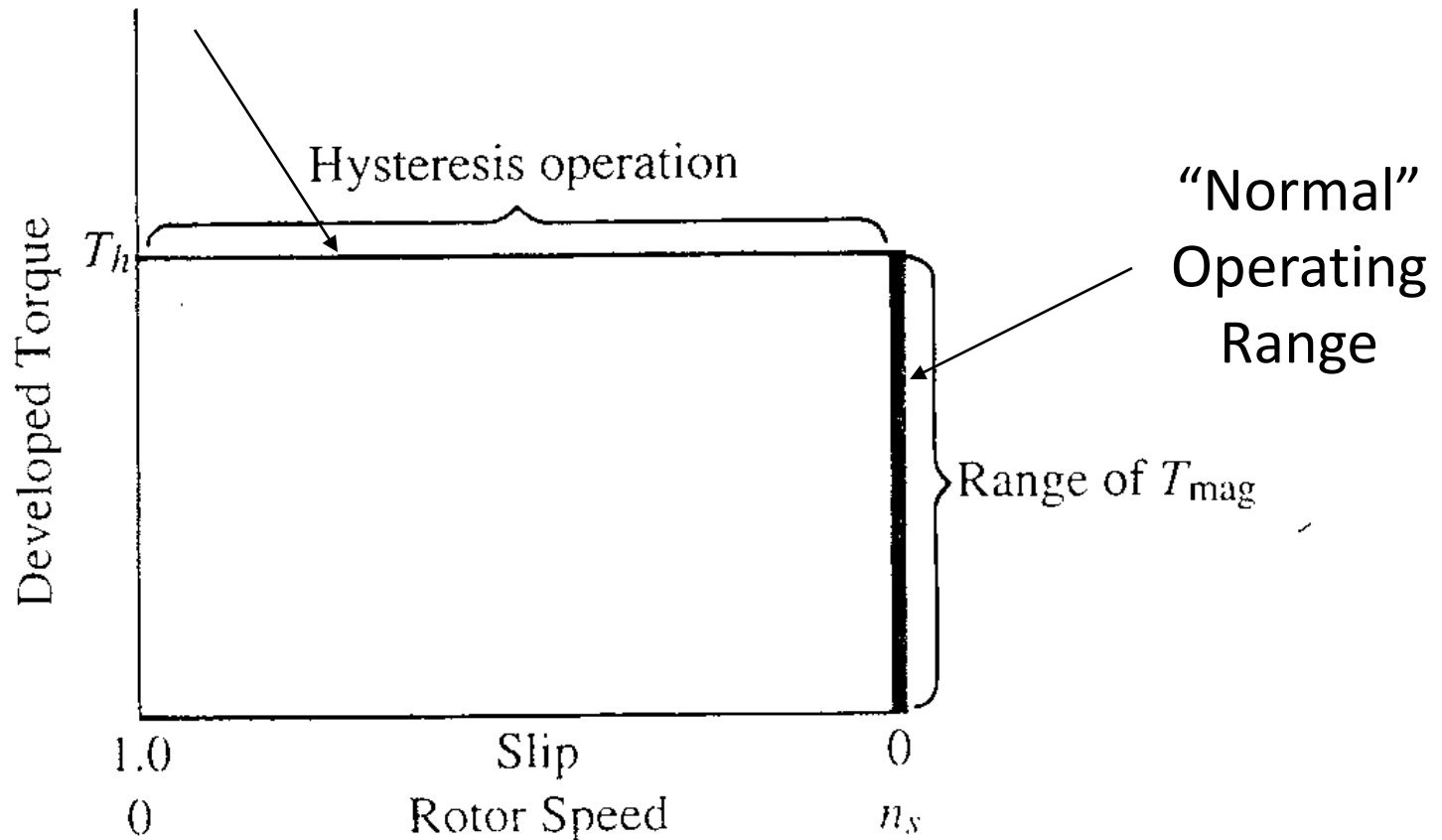
$$T_{mag} \propto \sin(\delta_{mag})$$

$$T_{mag_{max}} \text{ occurs @ } \delta_{mag} = 90^\circ$$

If shaft load causes $\delta_{mag} > 90^\circ$, the rotor pulls out of synchronism, the magnet torque drops to zero, and the machine develops hysteresis torque. This torque is not sufficient to carry the load.

Torque-Speed Characteristic

Constant Hysteresis Torque allows the motor to synchronize any load it can accelerate.



THANKS....

Queries Please...