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Subject- ED

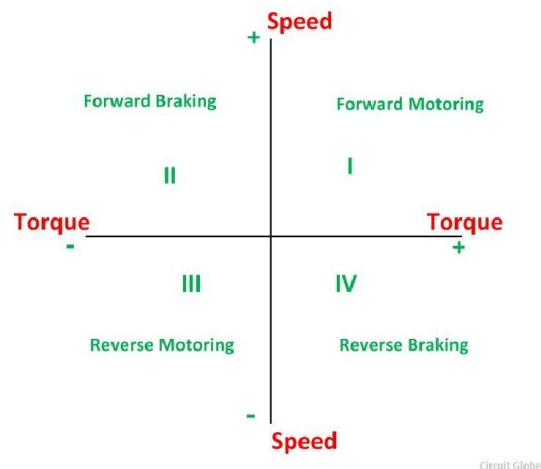
Semester-B-Tech 7th Sem

Speed torque conventions and Multi quadrant operation

- For consideration of Multi quadrant operation of drives it is useful to establish suitable converters about the signs of torque and speed .
- Motor speed is considered the when rotating in the forward direction in load involving up and down motions the speed of motor which causes upward motions is consider forward motion and as the +ve .
- For reversing drives forward speed is chosen arbitrarily .
- Positive motor torque is defined as the torque which produces acceleration or the +ve rate of change of speed in forward direction.
- The load torque is possible is opposite in the direction to the +ve motor torque.
- Motor torque is considered -ve if it produces deceleration.
- A motor operate in two modes motoring and braking.

In motoring mode:-

- It converts electrical energy to mechanical energy which support its motion. In braking it works as a generator converting mechanical energy to electrical energy and opposes the motion.
- Motor can be providing motoring and braking operating for both forward and reverse direction.
- The torque and speed coordinates for both forward and reverse motions are shown in fig.



- Power developed by a motor is given by the product of speed and torque.
- In quadrant 1st developed power is the +ve and called forward motoring mode.L

- In quadrant 2nd developed power is -ve hence machine works under braking opposing the motion and this is known as forward braking mode .
- Similarly quadrant 3rd known as reverse motoring and quadrant 4th known as reverse braking.

Reference: -

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