

4.4 TRACTION MOTORS AND CONTROL

TRACTION MOTORS

The motor for electric traction has to operate under different conditions which are arduous than those in most industrial applications and a special type of motor known as traction motor has been developed which incorporates the following features:

Electric features:

- High starting torque
- Series speed-torque characteristics
- Simple speed control
- Possibility of dynamic/regenerative braking
- Good commutation under rapid fluctuations of supply voltage

Mechanical features:

- Robustness
- Ability to withstand continuous vibrations
- Minimum weight and overall dimensions
- Protection against dirt and dust

No type of motor completely fulfills all these requirements. Motors, which have been found satisfactory are DC series motor for DC systems and AC series motor for AC systems. Also, AC three phase motors can be used.

TRACTION MOTOR CONTROL

The control of traction motors for starting and for smooth acceleration is very much essential to avoid damage to the motors. The control equipment is provided for manual and automatic operation. Usually a master controller is used for the purpose.

- 1) D.C series motor control or plain rheostat control
- 2) Series –Parallel control
 - i. Open circuit transition
 - ii. Shunt transition control
 - iii. Bridge transition control
- 3) Metadyne control
- 4) Multiple Unit control