



# **SNS COLLEGE OF ENGINEERING**

Kurumbapalayam (Po), Coimbatore – 641 107

**An Autonomous Institution**

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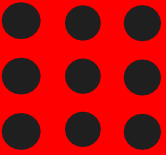
**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**COURSE NAME : 19EE407 ELECTRICAL MACHINES AND DRIVES**

**I YEAR /IV SEMESTER MECH**

**Unit 1 – OVERVIEW OF ELECTRICAL DRIVE**

**TOPIC: BASIC ELEMENTS OF ELECTRICAL DRIVE**





# Why Electrical Energy?

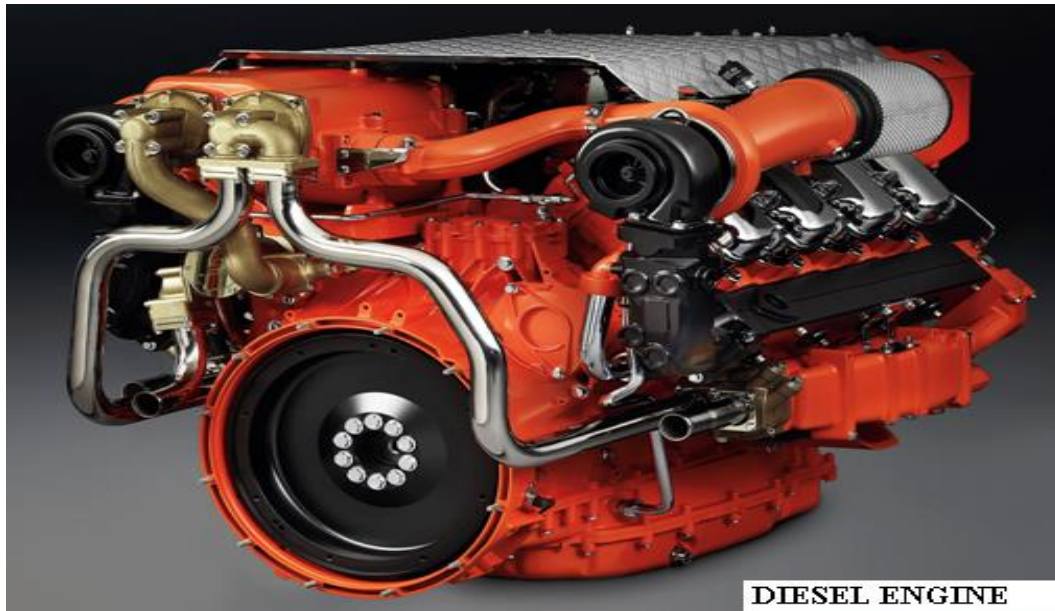
- ✓ Easy to Transfer from one place to another
- ✓ Easily convert into other form of energy
- ✓ Can be easily subdivided
- ✓ Less transportation losses
- ✓ Easy to control
- ✓ Cheapness
- ✓ Cleanliness





# What is DRIVE?

- ✓ System / machine employed for motion control are called as Drives.
- ✓ It may employ any of the prime movers (Diesel engines, steam turbines and electric motors) for supplying mechanical energy for motion control.







# Electric Drive

- ✓ Drives employing electric motors are called as Electrical Drives.



# Why It is IMPORTANT?



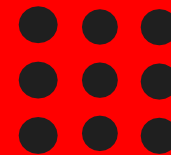
- ✓ Now a days industries are increases the Process Automation in all possible direction.
- ✓ It Boost Results, Better Quality, Increased Production with Reduced Operating cost.





# Advantages of Electrical Drive

- ✓ Do not pollute the environment.
- ✓ Do not need refueling, preheating
- ✓ Easy Starting
- ✓ They are available with wide range of torque, speed and power.
- ✓ Electric braking can be employed. Therefore they are having flexible control characteristics.
- ✓ They give high efficiency.
- ✓ Being compact requires less space.
- ✓ Can be remotely controlled.





# APPLICATIONS

- ✓ Steel mills
- ✓ CD/DVD players
- ✓ Paper making machines
- ✓ Electric vehicles, Cranes & JCB
- ✓ Aircraft applications
- ✓ fans, blowers and compressors
- ✓ Clocks, timers & recording equipment.
- ✓ Textile mills, Automation
- ✓ Robotics
- ✓ Mixi, Grinder, Washing Machine, etc....





# Application (Traction motors):

To transport men and materials from one place to another. Various types of Electric Traction are

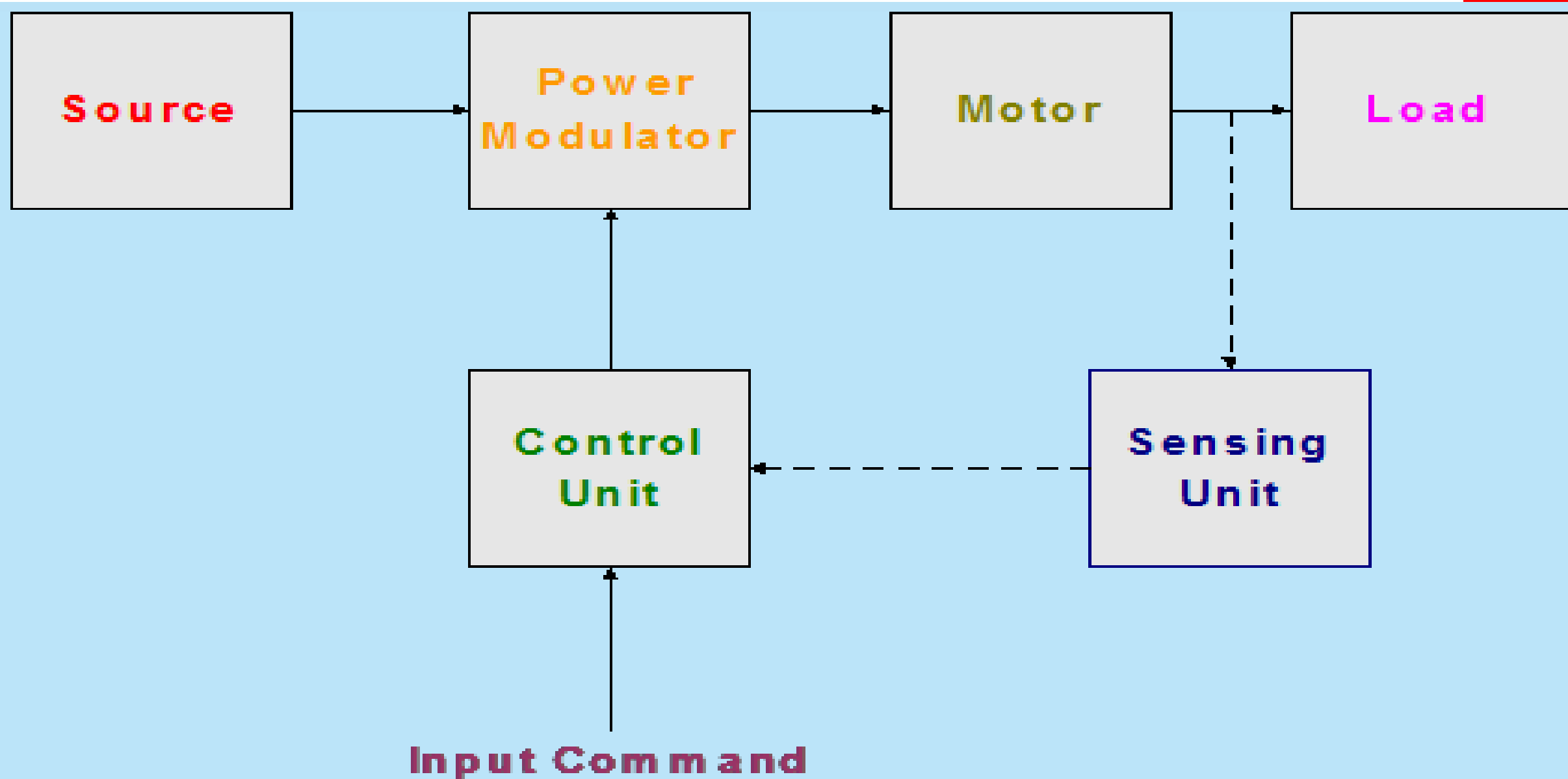
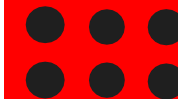
- (i) Electric trains
- (ii) Electric buses
- (iii) Trams(tramways) & trolleys
- (iii) Battery driven solar-powered vehicles







# BASIC ELEMENTS OF ELECTRICAL DRIVE



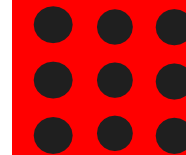


# POWER MODULATORS

## Rectifier:



## Chopper:





# POWER MODULATORS

## Inverter:



## Cyclo converter:





# POWER MODULATORS

## AC Voltage Regulator:







# References:

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