SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 23EEB210 - Electrical Machines and Drives

II YEAR- MECH 'A' / VI SEMESTER

Unit 1 :

Basic Elements

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- Why do we need drives?
- What is an Electric Drives?
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INTRODUCTION

• In some countries nearly 65% of the total electric energy produced is consumed by electric motors.

• About 50% of electrical energy produced is used in electric drives today. Electric drives may run at constant speed or at variable speed.

•Nowadays, modern power electronics and drives are used in electrical as well as mechanical industry.

Why do we need drives?

•The first question that pinch our mind is why we need Drives? Are the Motors not sufficient and Reliable? If they are then why drives?

•The answer to the question is: We need the control over machines and that is not gained by a simple construction.

•Drives are systems employed for motion control.

•Require prime movers.

•Drives that employ electric motors as prime movers are known as Electrical Drives

What is an Electric Drives?

- An electrical drive can be defined as an electromechanical device for converting electrical energy into mechanical energy to impart motion to different machines and mechanisms for various kinds of process control.

- An electrical drive is an industrial system which performs the conversion of electrical energy into mechanical energy or vice versa for running and controlling various processes.

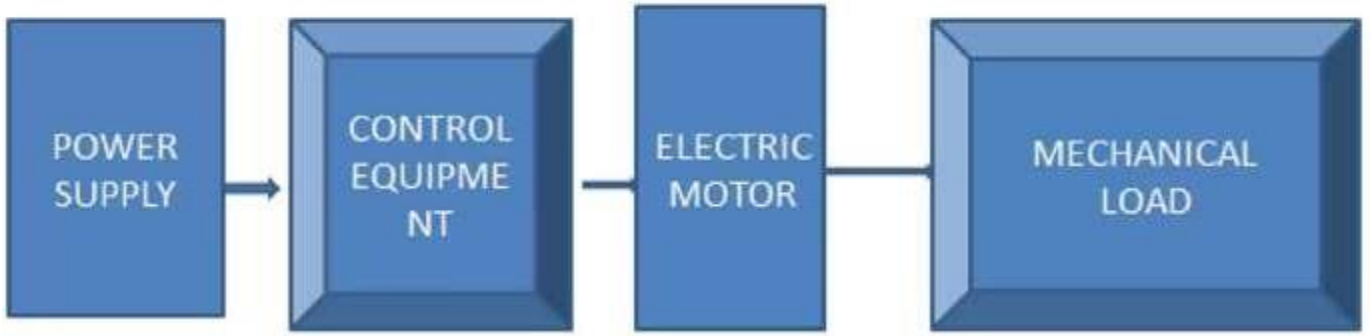
What is an Electric Drives?

- An electrical drive is defined as a form of machine equipment designed to convert electrical energy into mechanical energy and provide electrical control of the processes.

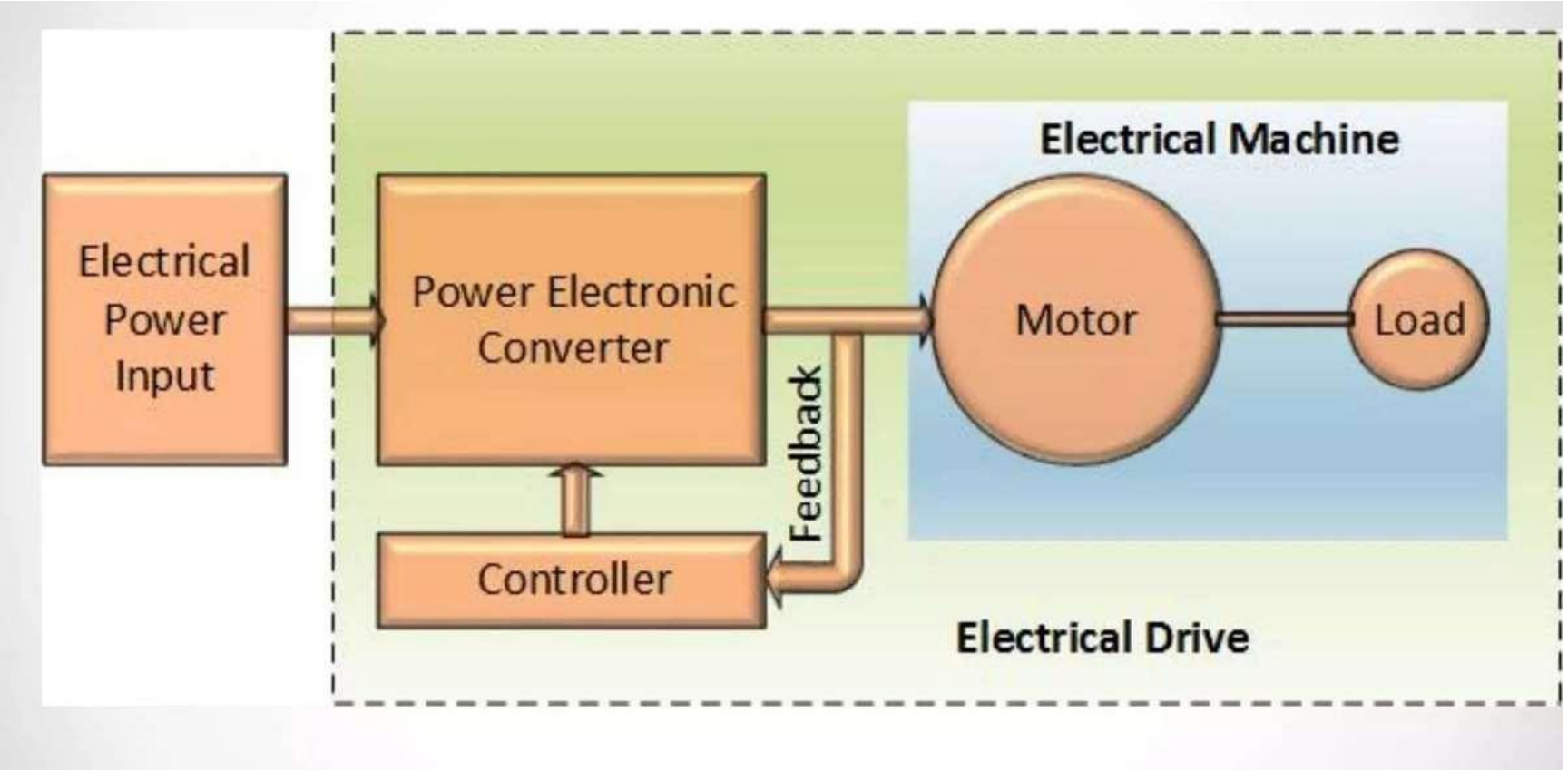
- The system employed for motion control is called an electrical drive.

Components in Electric Drives

- Power Supply- either a DC (battery) supply or from the conventional AC supply.
- The power converter or power modulator circuits are used with electrical motor drives, providing either DC or AC outputs.
- Electric motors



Block diagram



Advantages of Electric Drives in Real-life Application

- FEASIBLE CONTROL CHARACTERISTICS
- AVAILABLE IN WIDE RANGE OF SPEED, TORQUE AND POWER
- HIGHER EFFICIENCY
- LOWER NOISE
- CLEANER OPERATION
- LOW MAINTENANCE REQUIREMENT
- SELECTRIC ENERGY IS EASY TO TRANSPORT

SUMMARY