



SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
COIMBATORE-35

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 19EEB210 - Electrical Machines and Drives

II YEAR- MECH / VI SEMESTER

Unit 1 :

Basic Elements



CONTENTS

- Introduction
- Why do we need drives?
- What is an Electric Drives?
- Components in Electric Drives
- Block diagram
- Advantages of Electric Drives in Real-life Application





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?

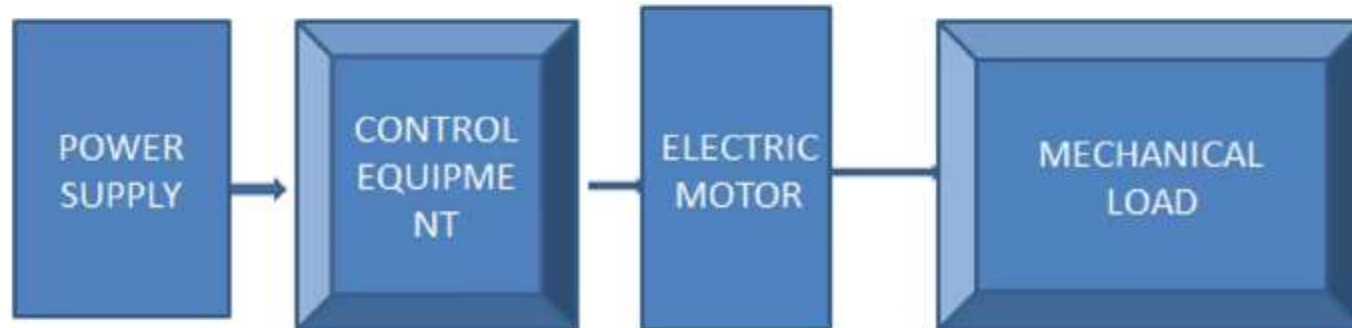
- An electrical drive is defined as a form of machine equipment designed to convert electrical energy into mechanical energy and provide electrical control of the processes.
- The system employed for motion control is called an electrical drive.





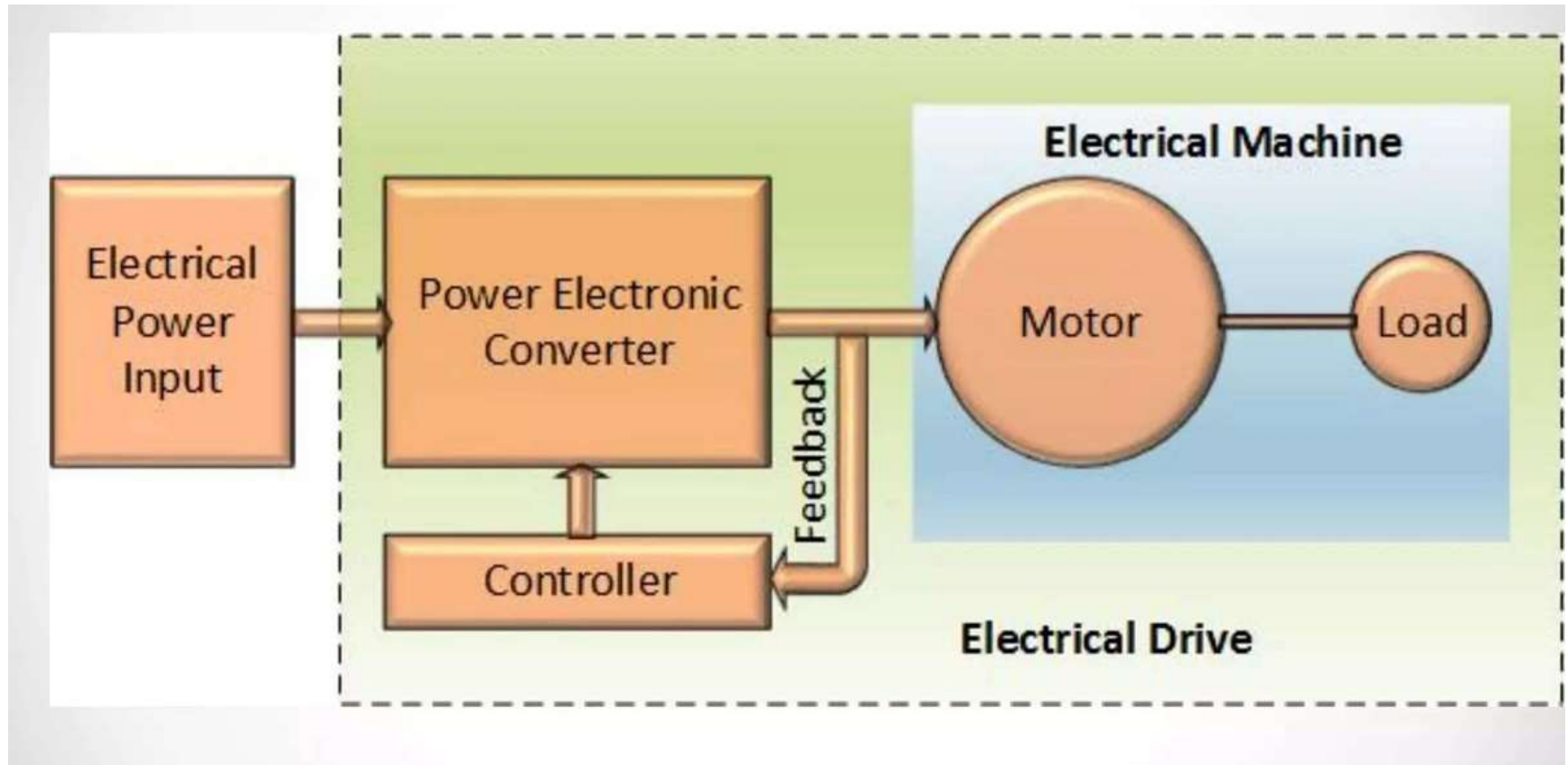
Components in Electric Drives

- 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

