

BME Course Syllabus

Heat and Power related topics (Thermal)

1. Properties of steam
2. Steam boilers
3. Prime Movers
4. Power Plants
5. Refrigeration
6. I. C. Engines
7. Lubrication

Production related

1. Transmission of power
2. Machine tools
3. Casting & Forging
4. Welding



COURSE OUTCOMES (CO's)

At the end of the course, the students will be able to:

CO1: *Describe the function of various boiler mountings and accessories and calculate the basic thermodynamic properties of steam.*

CO2: *Explain the working principle of various power transmission system and calculate the basic parameters of power transmission system.*

CO3: *Describe the working principle of I.C engine, Lubrication in engine and calculate the basic engine performance parameters.*

CO4: *Describe the working principle and operations of lathe and drilling machine, Stem turbine, power plants and refrigeration system.*

CO5: *Explain the process of casting, forging and welding and soldering.*



Reference books

1. **Mechanical Engineering Science:**
K.R. Gopalakrishna, Subhas Publications
2. **Elements of Mechanical Engineering:**
Roy & Choudhury, Laxmi Publications Pvt. Ltd
3. **Mechanical Engineering Science:**
B.K. Mishra, Kumar & Kumar Publishers Pvt. Ltd
4. **Mechanical Engineering Science:**
R.K Rajput, Laxmi Publications Pvt. Ltd.
5. **A Course in Workshop Technology**
B. S. Raghuwanshi,”, Dhanpat Rai & Sons, New Delhi

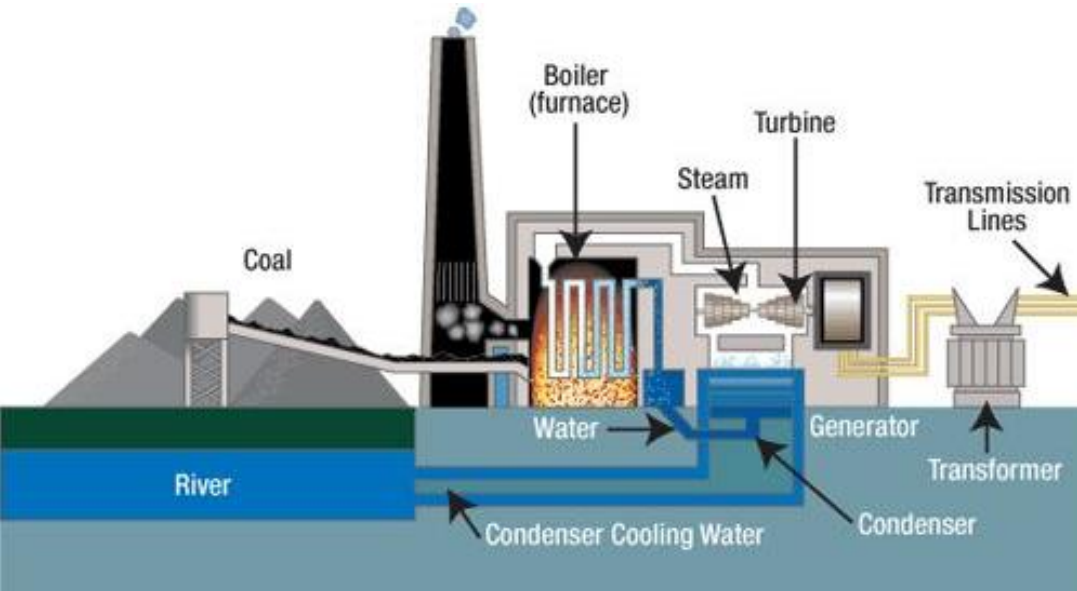


OVERVIEW OF TOPICS COVERED



Chapter 1

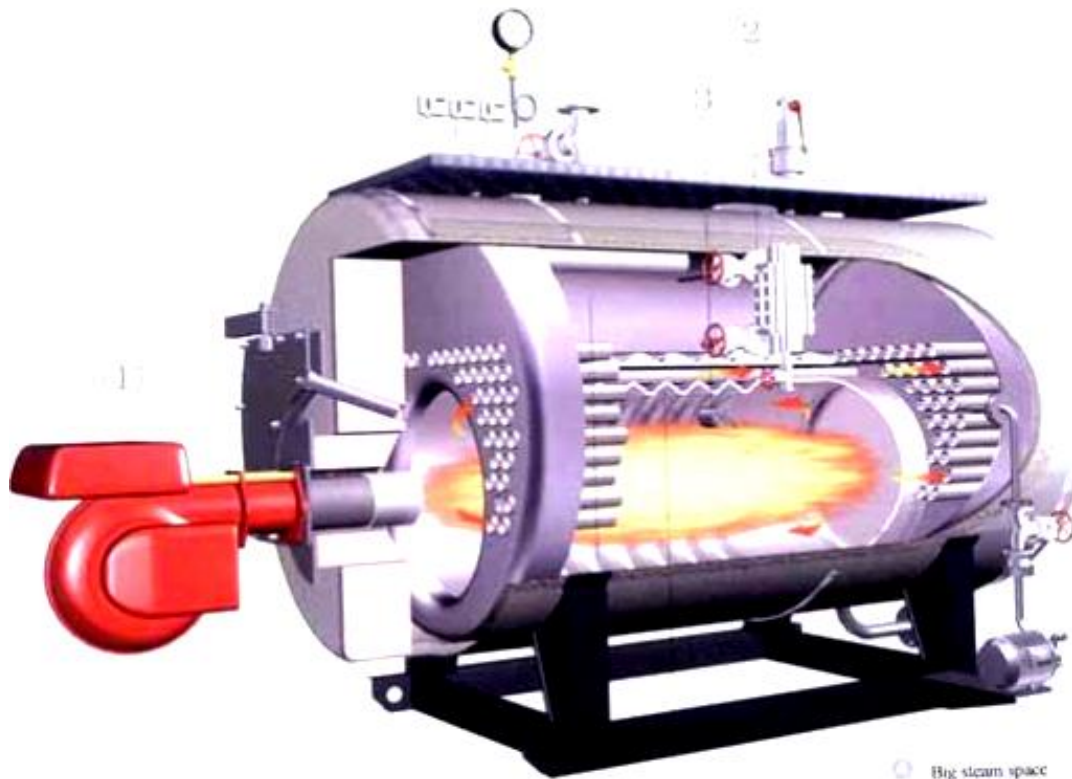
Properties of Steam



Steam Power Plant

- ❑ **Formation of Steam**
- ❑ **Some important properties**

Steam Boilers



☐ Classification

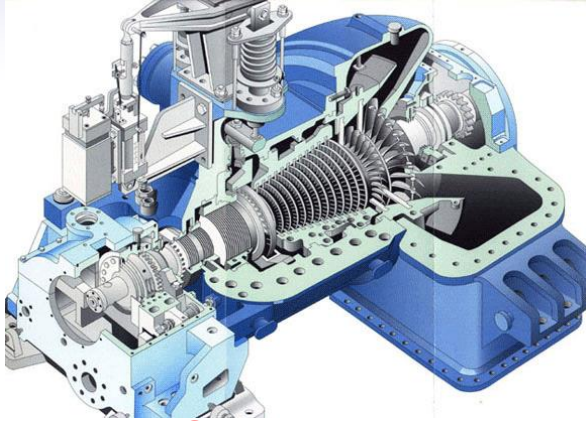
- Fire Tube Boiler
- Water Tube Boiler

☐ Mountings &

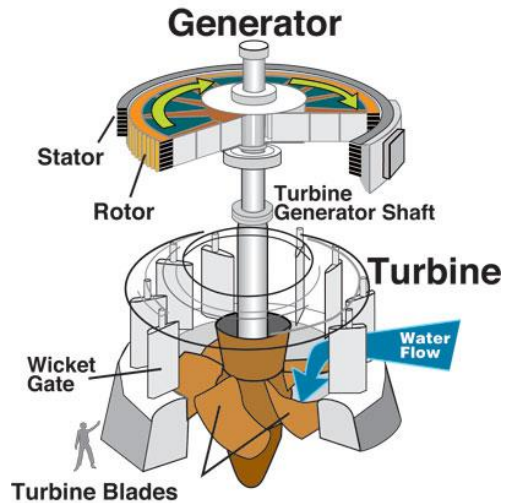
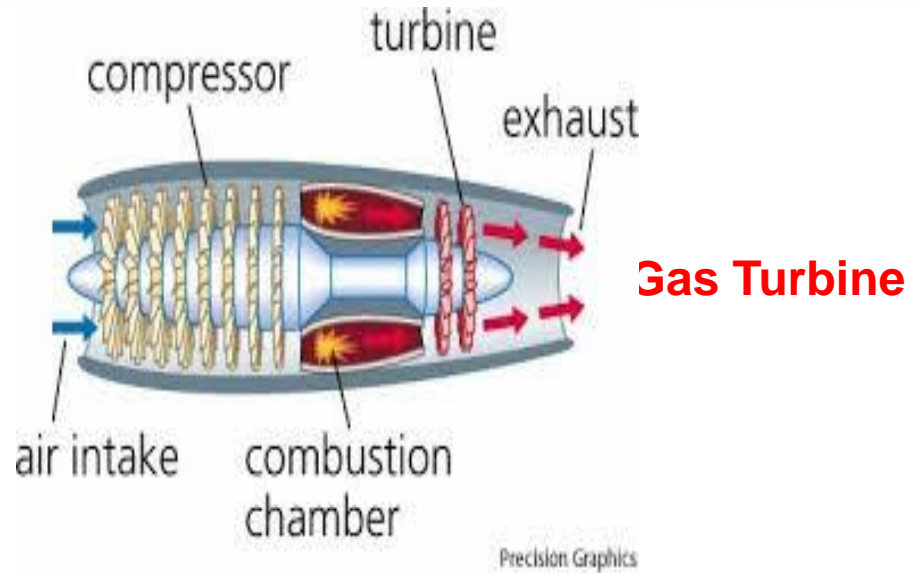
☐ Accessories

Chapter 2

Prime Movers



Steam Turbine

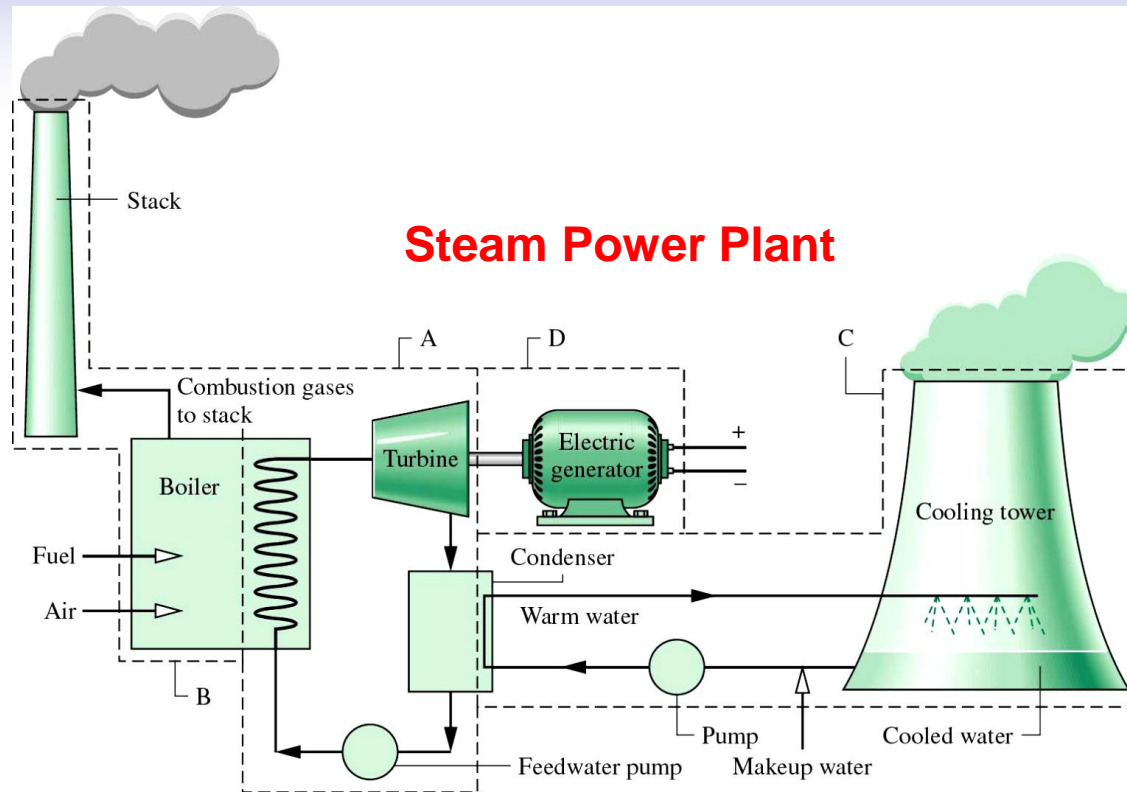


Water Turbine

- ☐ What is a prime mover?
- ☐ How does it generate power output?
- ☐ What are the various types of prime movers?

Chapter 3

Power Plants



- ☐ What is a power plant?
- ☐ What are the various types of power plants?
- ☐ How does it operate?

Chapter 4

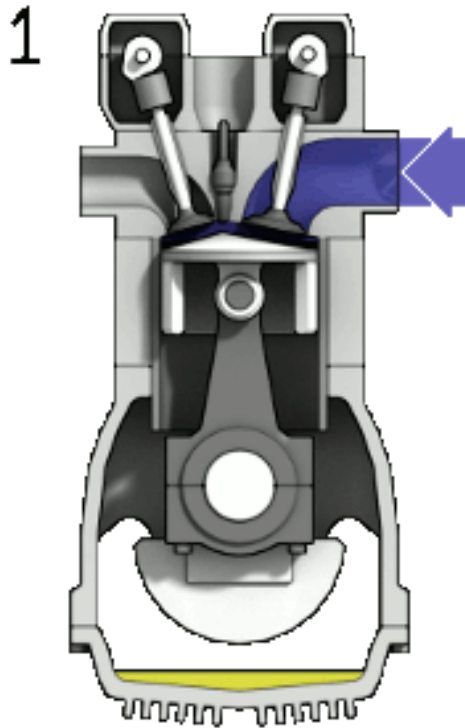
Refrigeration



- ☐ Principle of Refrigeration
- ☐ VCR System
- ☐ Refrigerants

Chapter 5

Internal Combustion Engines



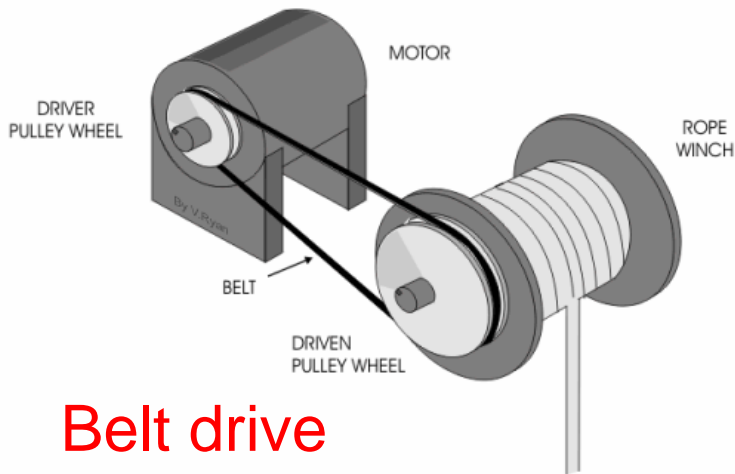
❑ IC Engine Parts

❑ 4 Stroke Engines: **Petrol & Diesel**

❑ 2 Stroke Engines: **Petrol & Diesel**

Chapter 6

Power Transmission



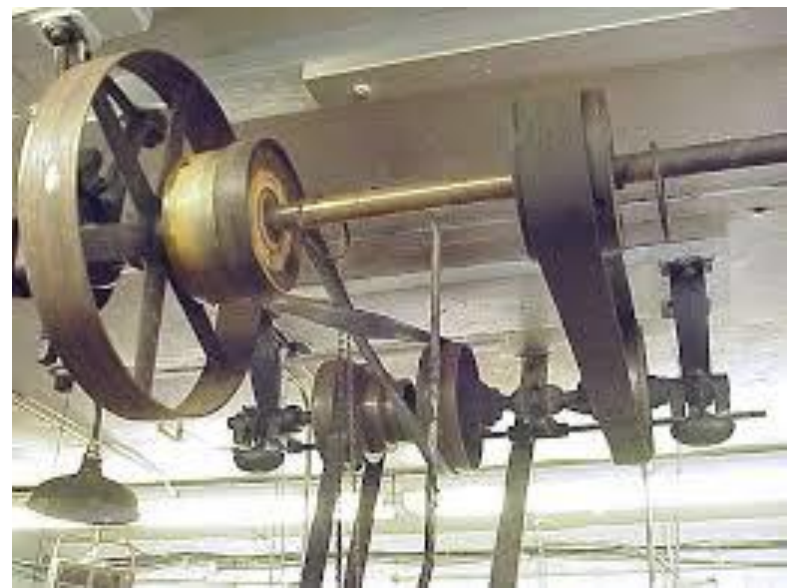
Belt drive



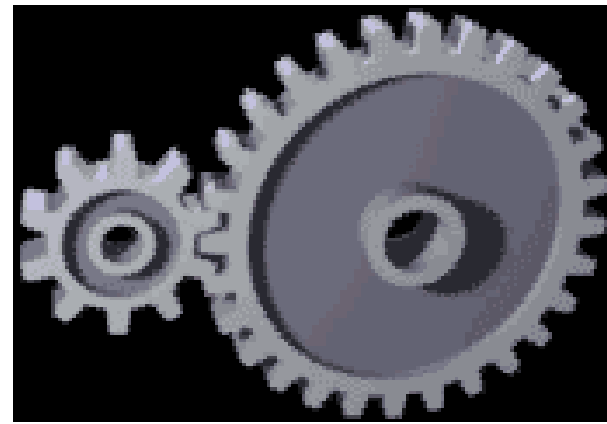
Rope drive

- ❑ Power Transmission Elements
- ❑ Pulleys
- ❑ Belt Drive
- ❑ Gear Drive
- ❑ Gear Trains

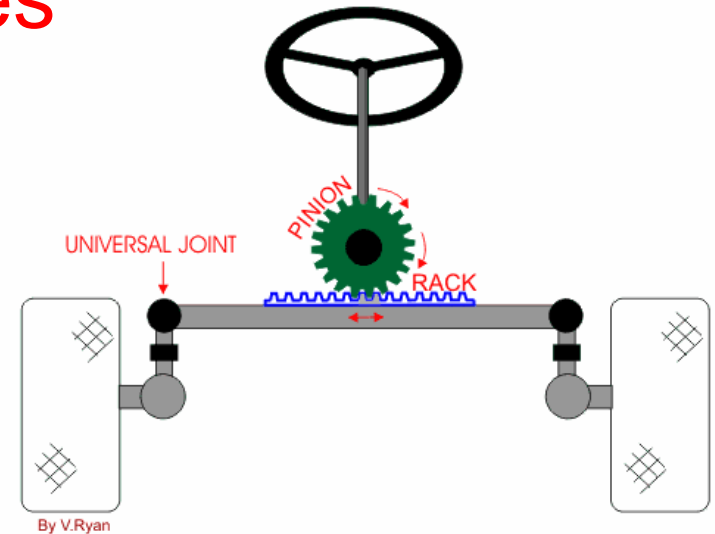
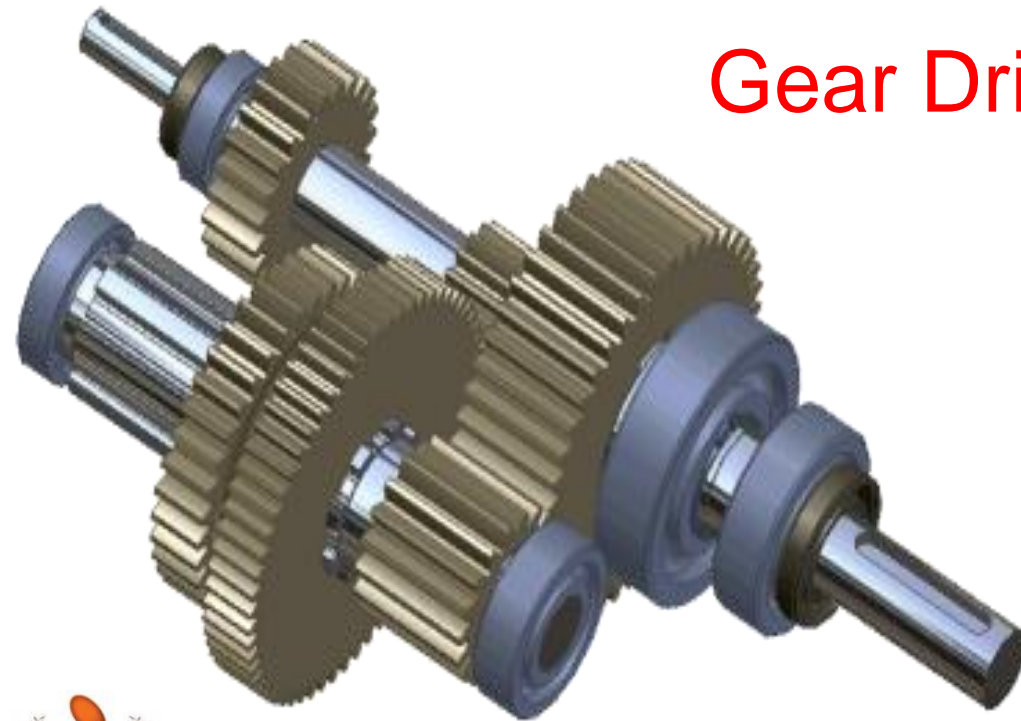




Belt Drives

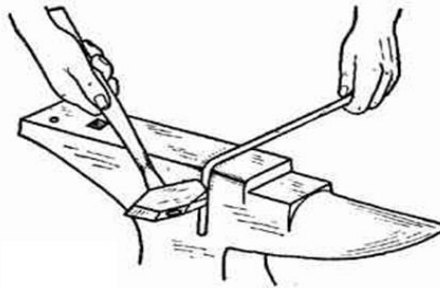


Gear Drives



Chapter 7

Smithing & Forging



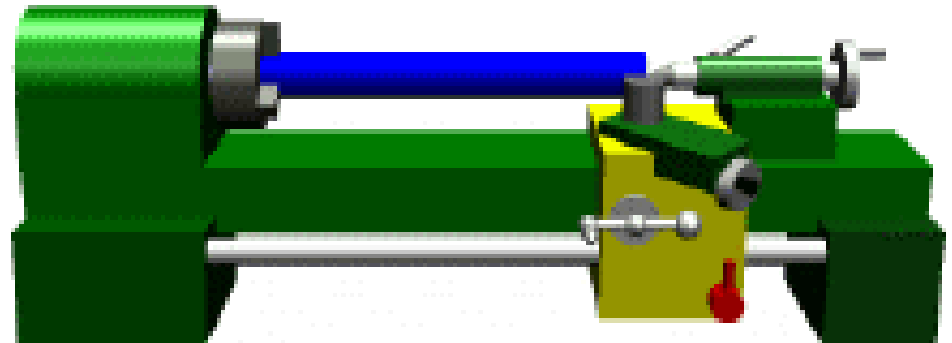
Chapter 8

Machine Tools

LATHE Machine

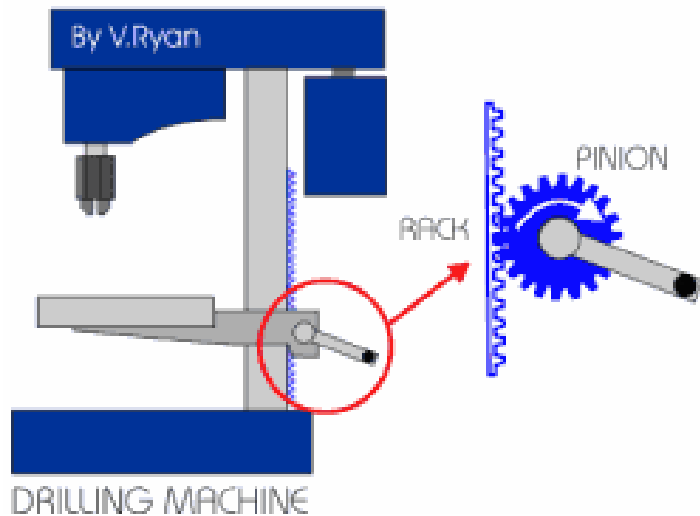


- ❑ Classification
- ❑ Lathe Operations



DRILLING MACHINE

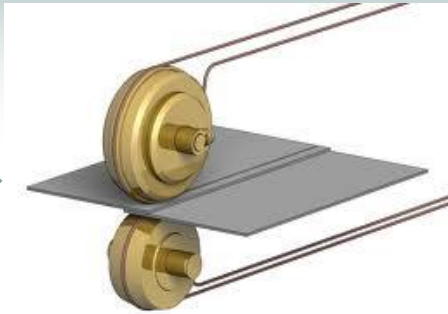
- ❑ Classification
- ❑ Radial Drilling Machine
- ❑ Drilling Operations



Chapter 9

Welding

Resistance Welding



Arc Welding



Gas Welding

