

€ TRAINING

Fundamentals of Mechanical Technology





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Introduction:

This training program provides comprehensive instruction on leveraging fluid mechanics principles to optimize the design and operation of hydraulic systems. By the end of the program, attendees will be equipped with the knowledge and skills necessary to design efficient and reliable hydraulic systems for various industrial applications.

Program Objectives:

At the end of this program, participants will be able to:

- Perform NDE Non-Destructive Examination for static and rotating equipment.
- Select proper materials for static and rotating equipment.
- Understand the principle of operation and design for this equipment.
- Protect the equipment from corrosion.
- Identify different mode failures of static and rotating equipment.

Targeted Audience:

- Technical & Non-technical personnel in the chemical, petrochemical, oil & mechanical industries with a need to understand and discuss fundamental mechanical engineering issues.
- Maintenance and project engineers, production engineers, trainee mechanical engineers, and plant operators.

Program Outlines:

Unit 1:

Introduction to Mechanical Technology

- Overview of mechanical engineering principles.
- Introduction to various mechanical systems and components.
- Understanding the importance of mechanical technology in different industries.
- Basic concepts of mechanical design and analysis.
- Historical background and evolution of mechanical technology.

Unit 2:

Mechanics and Materials

- Fundamentals of statics and dynamics.
- Properties of engineering materials such as metals, polymers, and ceramics.
- Stress, strain, and deformation analysis.
- Mechanical behavior of materials under different loading conditions.
- Introduction to material testing techniques.

Unit 3:

Machine Elements and Mechanisms

- Study of machine components such as gears, bearings, shafts, and couplings.
- Analysis of mechanical power transmission systems.
- Introduction to mechanical linkages and mechanisms.
- Understanding the principles of motion control and transmission.
- Application of machine elements in various mechanical systems.

Unit 4:

Thermodynamics and Heat Transfer

- Basics of thermodynamics and heat transfer principles.
- Understanding energy conversion processes in mechanical systems.
- Study of heat transfer mechanisms such as conduction, convection, and radiation.
- Analysis of thermal systems and heat exchangers.
- Application of thermodynamics and heat transfer in engineering design.

Unit 5:

Fluid Mechanics and Hydraulic Systems

- Fundamentals of fluid mechanics and fluid properties.



- Analysis of fluid flow behavior in pipes, channels, and ducts.
- Introduction to hydraulic systems and components.
- Study of hydraulic principles such as Pascal's law and Bernoulli's equation.
- Application of fluid mechanics in the design and operation of hydraulic systems.