XCELERATE TRAINING INSTITUTE

your learning & development partner

MECHANICAL ENGINEERING

Mechanical Equipment Design, Testing, Installation, Inspection and Maintenance Training Course

DURATION	LANGUAGE	FORMAT
5 days	**English**	**Classroom / Online**

Upcoming dates

Dates	Venue	Format	Fee
22 – 26 Feb 2027	Live online	Online (live)	**€1,200**
2 – 6 Aug 2027	Live online	Online (live)	**€1,200**
6 – 10 Sep 2027	Dubai	Classroom	**€4,800**

Register or ask a question

Online: x8ti.com/course/mechanical-equipment-design-testing-installation-ins…

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Mechanical Equipment Design, Testing, Installation, Inspection and Maintenance Training Course

Introduction

Course Overview

Mechanical equipment is extremely important, and proper maintenance of these plays a critical role in determining organizational success. If not maintained well, they can cause serious injuries, including open wounds, amputations and fractures. Pressure vessels, pumps, fans, blowers and compressors are called mechanical equipment.

A pressure vessel handles fluids at a pressure not equal to the ambient temperature. A pump moves fluids through mechanical action. Furthermore, fans, blowers and compressors involve movement of gas through different mechanisms. Fans move huge amounts of gas with a low increase in pressure, blowers move gases with a moderate increase in pressure and compressors raise gases to a higher level of pressure.

This Xcelerate Training Institute course will empower you with a detailed understanding of mechanical equipment. Through this course, you will gain adequate knowledge and experience to work with any or all mechanical equipment when required in any function or role.

Thus, the knowledge and information gained through this course will make you capable of handling any role or responsibility related to mechanical equipment. This will invite greater and better opportunities for career growth and progression.

Learning Objectives

- detailed understanding and knowledge of mechanical equipment
- adequate information, confidence and experience to handle any issue or problem related to mechanical equipment during operations
- the ability to up skill to successfully oversee end-to-end seamless operations at plants
- greater understanding of inspection schedules and activities and maintenance requirements to be able to contribute to better and more efficient mechanical equipment and lesser repair costs
- the required experience and knowledge to train other professionals on best practices of handling mechanical equipment, to ensure that the life of equipment or safety of employees is not compromised
- the skill and experience to foresee a challenge about the safety of mechanical equipment and take timely action to avoid hazards and organizational losses
- the required understanding and knowledge of international standards for safety and operational adherence
- the understanding and awareness to choose the right equipment design as per the desired operations, thereby contributing to better operations and organizational growth
- the overall skill set and capabilities to work in dynamic roles requiring handling or management of mechanical equipment of any type

Training Methodology

Training courses at Xcelerate Training Institute are designed with scope for customization, wherever necessary. Before each training, the content is closely reviewed and changes are made, if necessary, to suit the relevant audience. Lectures are conducted by trained, experienced professionals from relevant domains.

To encourage trainee participation, the trainer assigns group projects and tasks. Role-plays and case study discussions encourage trainees to interact with each other.

Benefits for Your Organization

- Seamless operations involving different mechanical equipment by experienced, trained professionals
- Regular equipment inspection and maintenance to aid longevity and prevent wear and tear
- Reduced purchase and repair costs because of better-maintained equipment
- Effective prediction of challenges and risks before they occur, with timely action to prevent business losses
- Increased operational efficiency because of better machines working at optimal levels
- Organizational growth and development because of reduced costs, greater operational efficiency, lower risks and increased credibility
- Adherence to expected standards and benchmarks of safety and operational compliance
- Frequent and continuous training of personnel working with these machines to ensure that they take care of the machines and do not compromise on safety
- Appropriate selection of equipment as per the desired operations

Benefits for You

- Comprehensive understanding and knowledge of mechanical equipment
- Greater knowledge and information to choose the correct equipment type and design as per the intended operations
- Enhanced capabilities and experience to handle end-to-end operations involving the use of any type of mechanical equipment
- Increased strategic skills to thoroughly inspect machines to ensure optimal working conditions and predict challenges, thereby addressing risks and preventing organizational loss
- Increased potential to contribute to organizational growth through better machine maintenance, reduced costs, increased safety, etc.
- Greater confidence and knowledge to train other professionals on best practices when working with mechanical equipment
- Increased awareness and understanding of expected compliance standards to ensure compliance
- Increased ability and experience to promote machine longevity, thereby ensuring seamless, successful operations
- Enhanced capabilities and knowledge to undertake any higher responsibility involving mechanical equipment, thereby fostering quicker career progression

Target Audience

- Engineers and other operators working directly with mechanical equipment

- Managers responsible for overseeing end-to-end operations involving mechanical equipment
- Senior management, who is responsible for making critical decisions about machines, operations, etc.
- Compliance and safety officers responsible for quality adherence at required safety benchmarks
- Vendors and suppliers of mechanical equipment
- Any other professional interested in knowing more about mechanical equipment

Course Outline

Types of Pressure Vessels

- Single-wall
- Multi-wall
- Cladded
- Over-lay
- High thick

Components of Pressure Vessels

- Shell
- Dished end
- Nozzle
- Man ways
- Lugs
- Support

Design Considerations for Pressure Vessels

- Codes
- Requirement understanding
- Opening mechanism

Pressure Vessel Operational Requirements and Processes

- Operating pressure
- Fluid conditions
- External loads
- Transient conditions
- Functional requirements

Safety Tips for Pressure Vessel Operation

- Maximize awareness
- Follow safety procedures
- Install protective devices
- Replace when necessary
- Install safety equipment

Pressure Vessel Inspection/Maintenance

- Shut-down inspection

- Non-destructive examination
- Metallurgical examination
- Analysis and evaluation
- Repair and modification
- Replacement

Pump Design Considerations

- Rated pressure
- Rated speed
- Design displacement
- Flow versus pressure curve
- Temperature rating
- Case drain pressure
- Inlet and outlet line size
- Case drain line size
- Recommended inlet pressure
- Number of pump pistons
- Power requirements
- Maximum fluid viscosity
- Seals
- Filtration requirements
- Weight
- Shaft type
- Rotation direction
- Mounting
- Relief valve

Mechanical Pump Types and their Operation

- Positive displacement
- Impulse
- Velocity
- Gravity
- Steam
- Valve-less

Parameters Regularly Monitored for Centrifugal Pump Maintenance

- Suction pressure
- Discharge pressure
- Flow
- Pump speed
- Pump efficiency
- Power

Fan/Blower Components and their Operation

- Impeller
- Blade
- Shroud
- Hub
- Housing
- Inlet
- Outlet
- Guide vanes

Control of Fan/Blower Airflow

- Speed change by pulley change
- Dampers
- Inlet guide vanes
- Variable pitch fans
- Variable speed drives
- Multiple speed drive
- Disc throttle
- Operating fans in parallel
- Operating fans in series

Air Compressor Maintenance

- Check for oil and air leaks
- Check pump oil level
- Change pump oil
- Check air filter element
- Inspect belts

Fan/Blower Maintenance

- Brake horsepower
- Fan capacity
- Fan rating
- Outlet velocity
- Static efficiency
- Static pressure
- Tip speed
- Total pressure

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Registration Form

Mechanical Equipment Design, Testing, Installation, Inspection and Maintenance Training Course

Preferred dates: ..... Venue or online: .....

Duration: 5 days Language: .....

Please complete and email this form to us, or register online. We confirm your place and send the invoice within one working day.

Delegate information

Full name (Mr / Ms / Dr / Eng): .....

Position: ..... Telephone / mobile: .....

Official email: ..... Personal email: .....

Company information

Company name: .....

Address: .....

City / country: ..... VAT / tax number: .....

Person responsible for training & development

Full name (Mr / Ms / Dr / Eng): .....

Position: ..... Telephone / mobile: .....

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Payment

☐ Please invoice me ☐ Please invoice my company

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