MERCURY

Practical Centrifugal Pump & Valve Technology Training Course

14 – 18 February 2027
Kuala Lumpur (Malaysia)



Dubai - UAE: +971 4 450 5697
Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

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Ref: 6025_300515 **Date:** 14 – 18 February 2027 **Location:** Kuala Lumpur (Malaysia) **Fees:** 4900 Euro

Introduction

This centrifugal pump and valve technology course serves as a comprehensive introduction to the world of pumps and valves, targeting industry professionals who wish to deepen their knowledge of centrifugal pump and valve systems.

Participants in the centrifugal pump and valve technology course will encounter an extensive range of topics, such as the functionalities of centrifugal and positive-displacement pumps, the intricacies of packing, mechanical seals, sealing systems, bearings, couplings, and more.

Both isolation and control valves will be covered, providing attendees in the centrifugal pump and valve technology course with a clear understanding of their applications, advantages, and the operational duties they are best suited for.

Fundamental concepts such as centrifugal pump control and the benefits of centrifugal pumps in various industry sectors, including oil and gas, will be at the core of the content of the centrifugal pump and valve technology course. Additionally, operation, troubleshooting, and maintenance will be tackled in detail to ensure a robust comprehension of best practices in centrifugal pump maintenance and centrifugal pump repair training.

Enhancing Centrifugal Pump Reliability in the Oil and Gas Industry

With a particular focus on centrifugal pump oil and gas applications, this comprehensive centrifugal pump training course underscores the advantages of centrifugal pumps and offers practical insights into their maintenance.

Attendees in the centrifugal pump and valve technology course will dive into the essentials of ensuring centrifugal pump reliability and efficacy within the demanding oil and gas sector. Through immersive training on pumps and valves, including hands-on centrifugal pump repair training, participants will master the skills essential for optimizing the lifespan and performance of these critical components in one of the world's most pivotal industries.

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Targeted Groups

- Supervisors.
- Team Leaders.
- Technicians.
- Individuals aim to update themselves on pump and valve technology, evaluate the appropriateness of different types of pumps and valves for their specific requirements, and master the operation and maintenance of these systems to enhance their organization's efficiency.

Course Objectives

By the conclusion of this centrifugal pump and valve technology course, participants will have developed the ability to:

- Comprehend the different types of pumps and their associated terminology, focusing on centrifugal pump basics and centrifugal process pumps.
- Grasp the nuances of centrifugal and positive displacement pumps, along with an in-depth understanding of packing, mechanical seals, sealing systems, bearings, and couplings.
- Recognize the various factors that influence the performance of valves, especially the centrifugal pump control valve and the suction valve in the centrifugal pump.
- Select the appropriate valve for a specific application and perform accurate calculations for valve sizing.
- Execute effective troubleshooting in systems that incorporate valves.
- Formulate a suitable maintenance strategy for diverse valve types.

Targeted Competencies

By the end of this centrifugal pump and valve technology course, the target competencies will be able to:

- Enhance the operation and maintenance of various pump types.
- Empower participants with the ability to conduct failure analyses on pumps to prevent recurring issues.
- Provide capabilities to better manage maintenance budgets by preventing unforeseen equipment failures in operation.

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Course Content

Unit 1: Pumping Systems

- Introduction.
- Pump types and terminology.
- Pump performance centrifugal and positive displacement.
- Understand head.
- Understand the types of heads: Friction, pressure, static, and velocity.
- Learn about friction in valves, piping, and fittings.
- Calculate the actual head in a system.
- Cavitation in pumps and valves.
- Net Positive Suction Head NPSH.
- Vapor and gas cavitation.
- Flash vs. cavitation.

Unit 2: Pump Types

- Positive displacement pumps.
- Reciprocating pumps.
- Reciprocating pump valves.
- What rotary pumps are, how do they scroll, and what are the gear types?
- What are failure mechanisms, and how are identification and monitoring?

Unit 3: Centrifugal Pumps

- Centrifugal pump theory.
- Pump components.
- Matching pumps with drivers.
- Performance analysis.
- Failure mechanisms.
- Identification and monitoring.

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Unit 4: Achieving Pump Reliability

- Sealing systems.
- Learn about conventional packing glands, mechanical seals, and flush plans.
- Seal failure mechanisms.
- How do you maintain and repair mechanical seals?
- Understand what bearings and failure modes are and how to extend life lubrication.
- Plain bearings.
- Anti-friction bearings.
- Couplings and alignment.
- Couplings.
- Alignment and balancing.
- Foundations and bedplates.

Unit 5: Valve Technology

- Types of valves globe, gate, ball, plug, and check.
- Flow characteristics.
- Flow-through valves.
- Valve flow characteristics.
- Valve technology is linear, quick opening, and equal.

Unit 6: Valve Sizing

- Calculate the correct Cv value.
- Select valve size using valve coefficient.
- Calculations for correct valve selection.

Unit 7: Sealing Performance

- Leakage classifications.
- Sealing mechanisms.
- Valve stem seals.

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Unit 8: Valves Troubleshooting and Maintenance

- High-pressure drop.
- Pressure recovery characteristics.
- Flow choking.
- High velocities.
- Water hammer.
- What causes a water hammer?
- Solutions for water hammer.
- Troubleshoot the control and isolation valves.
- Review of common faults.
- Develop a preventive maintenance plan.