

CENTRIFUGAL PUMPS - OPERATION & MAINTENANCE

“Centrifugal Pumps - Operation & Maintenance”

Schedule

Date	Venue	Fees (Face-to-Face)
13 - 17 Jul 2026	London - UK	USD 3495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

Centrifugal pumps are widely used across industries due to their efficiency in transferring liquids and slurries. This course provides in-depth knowledge of the operation, maintenance, and troubleshooting of centrifugal pumps, focusing on best practices to maximize performance and minimize downtime. Participants will learn the principles of centrifugal pump operation, common issues, and effective strategies for maintenance and repair.

Through theoretical lessons combined with practical exercises, this course prepares professionals to optimize the life cycle of centrifugal pumps, reduce the risk of failure, and maintain operational efficiency. The course is designed for those seeking to develop expertise in ensuring the reliability and efficiency of centrifugal pump systems in various industrial applications.

Objectives

By the end of this course, participants will be able to:

- Understand the principles of centrifugal pump operation and performance
- Identify common faults and maintenance requirements for centrifugal pumps
- Develop and implement a proactive maintenance strategy for centrifugal pumps
- Troubleshoot and repair centrifugal pump issues effectively
- Enhance the reliability and efficiency of centrifugal pump systems

Why Attend

- Gain hands-on knowledge of centrifugal pump operation and maintenance
- Learn effective troubleshooting techniques to prevent costly downtime
- Optimize the performance and lifespan of centrifugal pumps in your organization
- Equip yourself with the skills to improve operational reliability and efficiency
- Understand best practices in maintenance to reduce costs and enhance safety

Target Audience

This program is designed for:

- Maintenance engineers and technicians responsible for pump operation and upkeep
- Reliability engineers focused on ensuring the operational efficiency of rotating equipment
- Plant operators and supervisors working with centrifugal pump systems
- Mechanical engineers interested in optimizing pump performance and lifespan
- Technical professionals seeking expertise in centrifugal pump maintenance and troubleshooting

Individual Benefits

Key competencies that will be developed include:

- In-depth understanding of centrifugal pump operation and maintenance
- Skills in troubleshooting and diagnosing common centrifugal pump issues
- Proficiency in implementing effective maintenance programs to reduce downtime
- Ability to design and optimize preventive maintenance strategies for centrifugal pumps
- Enhanced capacity to ensure pump performance and longevity in various applications

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- The ability to develop and implement effective maintenance schedules for centrifugal pumps
- Expertise in troubleshooting and preventing pump failures, leading to reduced operational disruptions
- Improved equipment reliability and efficiency, resulting in cost savings and higher productivity
- A proactive approach to centrifugal pump maintenance, ensuring enhanced performance and safety
- A deeper understanding of centrifugal pump systems, helping to optimize plant operations

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings - Detailed overview of centrifugal pump operation, performance, and maintenance strategies
- Case Studies - Real-world examples of centrifugal pump failures, maintenance, and troubleshooting
- Workshops - Practical exercises focusing on centrifugal pump diagnostics, repairs, and preventive measures
- Peer Exchange - Group discussions on best practices and common challenges in centrifugal pump maintenance
- Tools - Maintenance checklists, troubleshooting guides, and equipment manuals for centrifugal pumps

MAWA EVENTS

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Course Outline

Detailed 5-Day Course Outline

Training Hours: 7:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Introduction to Centrifugal Pump Principles and Components

- Module 1: Fundamentals of Centrifugal Pumps (07:30 – 09:30)
 - Basic principles of centrifugal pump operation
 - Key components of centrifugal pumps and their functions
 - Types of centrifugal pumps and their applications
- Module 2: Pump Performance and Efficiency (09:45 – 11:15)
 - Understanding pump curves and performance metrics
 - How to measure pump efficiency and troubleshoot performance issues
 - Factors affecting pump performance, including fluid properties and system design
- Module 3: Maintenance Basics (11:30 – 01:00)
 - Introduction to maintenance strategies for centrifugal pumps
 - Understanding preventive maintenance and its importance
 - Developing a maintenance checklist for centrifugal pumps

Day 2: Pump Troubleshooting and Diagnosis

- Module 4: Identifying Common Pump Issues (07:30 – 09:30)
 - Common centrifugal pump failures and their causes
 - How to diagnose mechanical issues, such as seal failures, bearing wear, and cavitation
 - Hands-on troubleshooting techniques
- Module 5: Understanding Vibration Analysis for Pumps (09:45 – 11:15)
 - Using vibration analysis to detect pump faults
 - Interpreting vibration data to identify mechanical problems
 - How to reduce vibration-related issues in centrifugal pumps
- Module 6: Workshop: Troubleshooting Common Pump Problems (11:30 – 01:00)
 - Group exercises on diagnosing and fixing common centrifugal pump issues
 - Hands-on troubleshooting of pumps using real-world case studies
 - Peer discussion on best practices and lessons learned

Day 3: Pump Maintenance and Performance Optimization

- Module 7: Preventive and Predictive Maintenance Strategies (07:30 – 09:30)
 - Developing a proactive maintenance program for centrifugal pumps
 - Predictive maintenance techniques and their role in pump reliability
 - Tools and technologies for optimizing pump performance
- Module 8: Pump Seal and Bearing Maintenance (09:45 – 11:15)
 - Maintenance and replacement of pump seals and bearings
 - Troubleshooting and preventing seal and bearing failures
 - Best practices for lubrication and maintenance
- Module 9: Workshop: Implementing Preventive Maintenance Plans (11:30 – 01:00)
 - Designing and implementing a preventive maintenance schedule for centrifugal pumps
 - Group exercise on optimizing pump performance through regular maintenance
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Peer review and feedback on maintenance strategies

Day 4: Advanced Maintenance Techniques

- Module 10: Pump Alignment and Shaft Maintenance (07:30 – 09:30)
- Importance of proper pump alignment for optimal performance
- Techniques for aligning pump shafts and preventing misalignment issues
- Hands-on training in alignment tools and techniques
- Module 11: Troubleshooting and Repairing Pump Cavitation (09:45 – 11:15)
- Understanding cavitation and its impact on pump performance
- How to diagnose and repair cavitation damage
- Preventive measures to avoid cavitation in centrifugal pumps
- Module 12: Workshop: Advanced Troubleshooting and Repair Techniques (11:30 – 01:00)
- Practical exercises on advanced troubleshooting and repairs for centrifugal pumps
- Peer discussion and problem-solving of complex pump issues
- Hands-on repairs and adjustments

Day 5: Final Assessment and Certification

- Module 13: Review and Q&A (07:30 – 09:30)
- Recap of key concepts covered throughout the course
- Open session for participant questions and clarifications
- Module 14: Final Group Exercise: Developing a Maintenance Strategy (09:45 – 11:15)
- Group exercise to design a comprehensive centrifugal pump maintenance strategy
- Peer review and feedback on the proposed strategies
- Module 15: Certification and Closing Remarks (11:30 – 01:00)
- Distribution of certificates of completion
- Final remarks and next steps for implementing learned strategies in your organization

Certification

Participants will receive a Certificate of Completion in Centrifugal Pump Operation & Maintenance, validating their expertise in centrifugal pump performance optimization, troubleshooting, and maintenance practices.

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