MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

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HEAT EXCHANGERS - TYPES & APPLICATIONS, DESIGN, OPERATION & MAINTENANCE

""Maximizing Thermal Efficiency and Reliability Across Industrial Heat Transfer Systems""

Schedule

Date	Venue	Fees (Face-to-Face)
11 – 12 Nov 2026	Doha – Qatar	USD 1995 per delegate

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

Introduction

Heat exchangers are vital components in energy, chemical, manufacturing, and HVAC systems—responsible for efficient thermal energy transfer across processes. Proper design, selection, and maintenance of heat exchangers can significantly improve system performance, reduce energy consumption, and minimize downtime.

This intensive 2-day course provides a comprehensive overview of heat exchanger technologies, including their types, selection criteria, operating principles, and maintenance best practices. Participants will gain practical insight into performance optimization, fouling control, thermal design, and troubleshooting, helping ensure long-term equipment reliability and safety.

Objectives

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

- Identify different types of heat exchangers and their applications
- Understand heat transfer mechanisms and design considerations
- Operate and monitor heat exchangers for performance and safety
- Detect and mitigate common problems such as fouling, leakage, and vibration
- Apply inspection, cleaning, and maintenance practices to extend exchanger life

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Why Attend

- Enhance system energy efficiency and process reliability
- Learn how to select the right heat exchanger for specific operational conditions
- Reduce maintenance costs and unplanned equipment failures
- Gain hands-on knowledge of fouling prevention and cleaning procedures
- Support sustainable operations through improved thermal management

Target Audience

This program is designed for:

- Process, Mechanical, and Maintenance Engineers
- Project and Plant Engineers
- Utility and Energy System Managers
- Technicians involved in operations or maintenance of heat exchangers
- Anyone responsible for optimizing thermal systems or mechanical equipment

Individual Benefits

Key competencies that will be developed include:

- Knowledge of shell-and-tube, plate, finned, and spiral heat exchangers
- Thermal and hydraulic design fundamentals
- Operational parameters affecting heat transfer efficiency
- Troubleshooting techniques for fouling, scaling, and mechanical damage
- Maintenance planning and inspection techniques

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Increased thermal efficiency and system reliability
- Reduced energy losses and operating costs
- Improved predictive and preventive maintenance strategies
- Enhanced compliance with safety and environmental standards
- Better decision-making in equipment selection and lifecycle management

Instructional Methodology

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

- Strategy Briefings – Types, principles, and design parameters
- Case Studies – Heat exchanger failures and performance issues
- Workshops – Heat duty calculations, fouling analysis, and maintenance planning
- Peer Exchange – Experience sharing on common troubleshooting issues
- Tools – Inspection checklists, design worksheets, and maintenance logs

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Course Outline

DETAILED 2-DAY COURSE OUTLINE

Training Hours: 07:30 AM – 03:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Heat Exchanger Types, Design, and Performance

- Module 1: Fundamentals of Heat Exchangers (07:30 – 09:30) • Heat transfer modes and system classifications • Applications across process industries
- Module 2: Types and Selection Criteria (09:45 – 11:15) • Shell-and-tube, plate, spiral, finned-tube, and air-cooled exchangers • Selection based on flow, temperature, pressure, and space constraints
- Module 3: Thermal and Hydraulic Design (11:30 – 01:00) • Heat duty, LMTD, effectiveness, and pressure drop considerations • Material selection and corrosion factors
- Module 4: Workshop – Exchanger Sizing and Duty Calculation (02:00 – 03:30) • Hands-on practice with basic thermal design problems

Day 2: Operation, Troubleshooting and Maintenance

- Module 5: Operating Conditions and Monitoring (07:30 – 09:30) • Startup and shutdown procedures • Process control variables and performance indicators
- Module 6: Fouling, Scaling, and Leakage Management (09:45 – 11:15) • Common fouling types: biological, chemical, and particulate • Leak detection and gasket issues
- Module 7: Inspection, Cleaning, and Maintenance Planning (11:30 – 01:00) • Clean-in-place (CIP), mechanical cleaning, and visual inspections • Inspection intervals and documentation best practices
- Module 8: Workshop – Case-Based Troubleshooting (02:00 – 03:30) • Troubleshooting scenarios and preventive recommendations

Certification

Participants will receive a Certificate of Completion in Heat Exchangers – Types & Applications, Design, Operation & Maintenance, validating their expertise in thermal system optimization and mechanical maintenance practices.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

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