

# HEAT EXCHANGER: OPERATION & MAINTENANCE TECHNIQUES



## OUR ACCREDITATION & PARTNERS



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## OVERALL DESCRIPTION:

In the high-stakes world of process industries, the operational integrity of your plant's assets is not just a technical detail—it's a critical business imperative. Heat exchangers, as the circulatory system of countless processes, directly impact everything from production efficiency and energy consumption to safety and regulatory compliance. This course moves beyond theoretical concepts to a strategic, humanized approach. We'll equip your team with the proactive knowledge and practical techniques needed to not only troubleshoot failures but to prevent them altogether, unlocking peak performance and minimizing costly unplanned downtime.

## Course Objectives:

**Upon completion of this course, participants will have the knowledge and skills to:**

- **Diagnose & Troubleshoot:** Accurately identify and address common heat exchanger problems such as fouling, corrosion, and vibration.
- **Implement Proactive Strategies:** Develop and apply comprehensive preventive and predictive maintenance programs to enhance asset longevity and reliability.
- **Optimize Performance:** Monitor key operational parameters to ensure heat exchangers are performing at their designed efficiency.
- **Master Maintenance Techniques:** Apply best practices for inspection, cleaning (chemical and mechanical), and repair to restore and maintain operational health.
- **Enhance Safety & Compliance:** Recognize and mitigate potential safety risks associated with heat exchanger failure.

## Course Outline:

- **Fundamental Principles & Types:** A practical overview of shell-and-tube, plate, and other common heat exchanger designs, focusing on their operational characteristics and failure modes.

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## Course Outline:

- **Operational Monitoring & Performance Analysis:** Hands-on methods for monitoring key indicators like temperature, pressure drop, and flow rates to detect early signs of distress.
- **Fouling, Corrosion, and Integrity Management:** In-depth analysis of these core challenges, covering their causes, impact on performance, and mitigation techniques.
- **Proactive Maintenance & Inspection:** Building a robust maintenance schedule that includes visual, NDT (Non-Destructive Testing), and performance-based inspections.
- **Cleaning Methodologies:** Practical session on selecting and implementing effective cleaning methods for various types of fouling.
- **Repairs, Refurbishment, and Shutdown Planning:** Best practices for planning and executing maintenance tasks during turnarounds to minimize downtime and ensure asset reliability.

## WHO SHOULD ATTEND?

This course is designed for professionals who are directly responsible for the health and performance of heat exchangers. This includes, but is not limited to: Maintenance and Reliability Engineers, Plant Operators and Technicians, Mechanical Supervisors, Asset and Operations Managers, and Process Engineers who require a deeper understanding of the practical aspects of heat exchanger management.

## Course Methodology:

We utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This training course will be conducted as a highly interactive workshop session. A variety of training methodologies will be used Before and during the course whenever applicable. Some of these methods are gamification, online pre-post test, role plays, self-assessment instruments, group exercises & case studies.