MeTec
EMPWER YOUR TECHNICAL SKILLS

PROCESS REACTORS:
OPERATION, TROUBLESHOOTING, START-UP & SHUTDOWN OPTIMIZATION

OUR ACCREDITATION & PARTNERS

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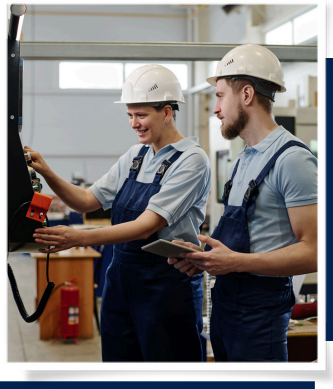

OVERALL DESCRIPTION:

The heart of many industrial processes lies within its reactors. Yet, the true value of these complex systems isn't unlocked through mere operation, but through **mastery**. This course is a strategic investment in the people who manage these critical assets. It's designed to transform your team from operators to experts, capable of navigating the full lifecycle of a reactor with confidence—from precision start-ups to optimized operations and seamless shutdowns. By focusing on practical skills and proactive troubleshooting, we'll help you secure a future of minimized risk, maximized uptime, and sustainable profitability.

Course Objectives:

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

- **Implement** best-in-class operational practices to ensure maximum reactor efficiency and stability.
- **Diagnose** and resolve common and complex reactor process issues using a systematic troubleshooting framework.
- **Execute** safe and optimized start-up and shutdown procedures to minimize risks and reduce transition times.
- **Analyze** process data to proactively identify potential problems and prevent operational failures.
- **Apply** advanced control strategies to maintain optimal reaction conditions and product quality.

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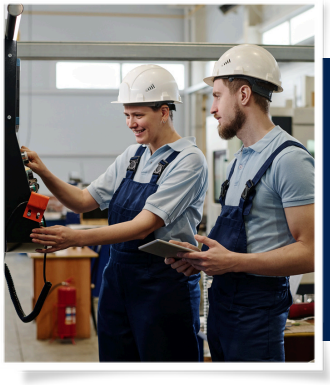

Course Outline:

- **Foundational Principles & Reactor Dynamics**
  - Classification and Practical Application of Reactor Types
  - Essential Principles of Reaction Kinetics and Thermodynamics
  - Key Reactor Components and Their Functions
- **Standard Operation & Control Strategies**
  - Establishing Optimal Operating Windows
  - Advanced Control Techniques for Temperature, Pressure, and Flow
  - Maintaining Material and Energy Balances
  - Ensuring Product Quality and Consistency
- **Systematic Troubleshooting Methodologies**
  - Root Cause Analysis (RCA) for Operational Failures
  - Identifying Common Issues: Fouling, Catalyst Deactivation, and Runaway Reactions
  - Diagnostic Tools and Techniques
  - Case Studies and Practical Problem-Solving Exercises
- **Optimized Start-Up & Shutdown Procedures**
  - Pre-Start-Up Safety Checks and Commissioning
  - Controlled Ramp-Up Procedures
  - Safe and Efficient Shutdown Protocols
  - Emergency Shutdown Scenarios and Response Planning
- **Safety, Risk Management & Case Studies**
  - Understanding and Mitigating Operational Hazards
  - Risk Assessment and Management in Reactor Operations
  - Review of Industry Incidents and Lessons Learned
  - Interactive Workshops and Simulations

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WHO SHOULD ATTEND?

This course is specifically designed for a wide range of professionals who are directly involved in the management and operation of process reactors, including:

- Process Engineers
- Operations and Production Managers
- Plant Operators and Technicians
- Maintenance Engineers
- Safety Professionals
- Technical Supervisors

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.