MERCURY

Distillation-Column Operation, Control, and Troubleshooting

27 - 31 Jul 2026
London (UK)

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Ref.: 16339_1016448 **Date:** 27 - 31 Jul 2026 **Location:** London (UK) **Fees:** 5800 **Euro**

Introduction:

This Distillation-Column Operation, Control, and Troubleshooting course provides participants with the essential knowledge and practical skills necessary to operate and manage distillation columns efficiently. It focuses on understanding column dynamics, control strategies, and identifying common operational issues. Participants will learn methods to enhance separation efficiency, optimize energy consumption, and maintain product quality.

The Distillation-Column Operation, Control, and Troubleshooting program covers troubleshooting techniques to resolve process deviations quickly. It emphasizes real-world applications in the petrochemical, chemical, and refining industries. By combining theory with practical insights, learners will gain confidence in handling complex distillation systems. It ensures participants make informed operational decisions, improve plant performance, and reduce downtime.

Targeted Groups:

This Distillation-Column Operation, Control, and Troubleshooting training targets professionals seeking specialized knowledge and skills:

- Chemical engineers operating distillation units.
- Process engineers in petrochemical plants.
- Maintenance supervisors in chemical facilities.
- Production managers oversee separation processes.
- Instrumentation engineers handling control systems.
- Quality control specialists are monitoring the purity of the product.
- Technical consultants supporting industrial operations.
- Engineering graduates aiming for plant operations roles.
- Operators are responsible for column safety and efficiency.

Course Objectives:

Participants will achieve the following objectives by completing the Distillation-Column Operation, Control, and Troubleshooting course:

- Understand the fundamentals of distillation column design.
- Identify key operational parameters affecting performance.
- Apply process control techniques to maintain stability.
- Analyze deviations and diagnose column malfunctions.
- Optimize energy consumption for cost efficiency.
- Improve separation efficiency for high-quality output.
- Implement safety measures and compliance standards.
- Develop troubleshooting strategies for common issues.
- Use instrumentation data for informed decision-making.
- Enhance overall plant productivity and reliability.

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Targeted Competencies:

Participants will gain the following competencies during the Distillation Column Operation, Control, and Troubleshooting program:

- Mastery of column operation principles.
- Proficiency in control system adjustments.
- Ability to monitor performance indicators effectively.
- Skill in diagnosing and solving operational problems.
- Competence in applying safety and compliance protocols.
- Capability to optimize processes for efficiency.
- Confidence in using data for operational decisions.
- Knowledge of energy-saving techniques.
- Expertise in troubleshooting methods.
- Understanding of process integration in industrial settings.

Studying Scenarios:

In this Distillation Column Operation, Control, and Troubleshooting training, participants will develop their skills through the analysis of the following scenarios:

- Column under feed composition variation.
- Reboiler temperature fluctuations are affecting separation.
- Condenser pressure deviation impacts product purity.
- Tray flooding due to operational overload.
- Reflux ratio misadjustment is causing inefficiency.
- Instrumentation failure affecting control loops.
- Column startup and shutdown challenges.
- Energy optimization in continuous operation.
- Diagnosing product quality deviation.
- Safety incident response and corrective actions.

Course Content:

Unit 1: Fundamentals of Distillation Columns:

- Types of distillation columns and configurations.
- Principles of vapor-liquid equilibrium.
- Understanding column internal components.
- Mass and energy balance in column operations.
- Role of trays and packing in separation efficiency.
- Column design parameters and their impact.
- Common process variables affecting operation.

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Unit 2: Column Operation Techniques:

- Feed and product flow rate adjustments.
- Controlling reflux and boil-up ratios.
- Temperature and pressure profile management.
- Maintaining consistent separation performance.
- Startup and shutdown procedures.
- Handling feed composition changes.
- Maintaining column stability under load variation.

Unit 3: Process Control of Distillation Columns:

- Fundamentals of process control strategies.
- Use of PID controllers for column regulation.
- Level, pressure, and temperature control loops.
- Advanced control techniques for complex columns.
- Monitoring and interpreting process data.
- Troubleshooting control-related issues.
- Integrating automation for operational efficiency.

Unit 4: Troubleshooting and Problem-Solving:

- Identifying common column operational issues.
- Diagnosing flooding, weeping, and foaming.
- Resolving product quality deviations.
- Detecting and handling equipment malfunctions.
- Adjusting operational parameters for stability.
- Case studies of industrial troubleshooting.
- Implementing corrective and preventive actions.

Unit 5: Optimization and Best Practices:

- Energy efficiency and cost-saving strategies.
- Enhancing separation performance.
- Best practices for safe column operation.
- Maintaining consistent product quality.
- Process monitoring and performance improvement.
- Integrating sustainability measures.
- Preparing reports and documentation for operations.

Final Insights & Key Takeaways:

Participants will gain confidence in operating and controlling distillation columns. They will be able to diagnose and troubleshoot operational issues quickly. The course empowers professionals to optimize efficiency and product quality. Learners will leave equipped with practical, industry-ready skills for immediate application.

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Registration form on the :
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