

PROCESS PLANT OPTIMIZATION, REVAMPING AND DEBOTTLENECKING

“Enhance Plant Performance, Minimize Bottlenecks, and Maximize Throughput Through Smart Optimization Strategies.”

Schedule

Venue (InHouse)	Fees
At Your Organization Premises	Ask For The Quotation

Introduction

In the competitive world of process industries, maintaining and improving plant efficiency is a constant challenge. As plants age, performance deteriorates, leading to lower productivity, higher operating costs, and reduced profitability. To remain competitive, organizations must continuously identify opportunities for optimization, revamping, and debottlenecking.

The Process Plant Optimization, Revamping and Debottlenecking course provides a comprehensive understanding of how to assess existing process facilities, identify capacity constraints, and implement cost-effective improvement strategies. It combines engineering analysis, practical tools, and proven methodologies to enhance process performance without the need for major capital investments. Participants will learn how to analyze process data, evaluate plant bottlenecks, apply optimization techniques, and design revamp projects that extend the life and profitability of existing plants. Real-world case studies from the oil, gas, petrochemical, and chemical industries will illustrate how small changes can lead to significant operational and financial gains.

Objectives

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

- Understand the fundamental principles of process plant optimization.
- Identify and evaluate process constraints and bottlenecks.
- Apply techniques for energy, yield, and throughput optimization.
- Plan and execute revamp and debottlenecking projects safely and efficiently.
- Use process simulation and modeling tools for performance improvement.
- Estimate costs and evaluate the economics of optimization projects.
- Develop implementation plans with minimal plant downtime.
- Integrate optimization efforts with sustainability and safety goals.

Why Attend

This course is essential for engineers and managers who are responsible for improving the performance of existing facilities. It provides the skills and techniques required to identify low-cost, high-impact solutions that can increase plant capacity, enhance reliability, and reduce energy consumption.

By attending, participants will learn how to transform plant limitations into opportunities for growth and efficiency. The course bridges the gap between theory and practice, giving professionals the confidence to initiate, justify, and manage optimization and revamping projects successfully.

Target Audience

This course is designed for technical professionals working in process industries such as oil and gas, refining, petrochemicals, and chemicals, including:

- Process Engineers and Plant Engineers
- Operations and Production Managers
- Maintenance and Reliability Engineers
- Project Engineers and Technical Supervisors
- Energy and Optimization Specialists
- Plant Designers and Consultants
- Technical Auditors and Performance Analysts

Individual Benefits

- Gain practical knowledge of optimization and debottlenecking principles.
- Learn how to identify and prioritize performance improvement opportunities.
- Develop the ability to use simulation and modeling tools effectively.
- Enhance analytical and problem-solving skills in real plant scenarios.
- Build confidence in managing revamp and upgrade projects.
- Strengthen career prospects in plant operation, design, and management.

Organizational Benefits

- Increase production capacity without large capital investment.
- Improve plant energy efficiency and reduce operational costs.
- Enhance equipment utilization and process reliability.
- Optimize plant safety and environmental performance.
- Extend plant life through strategic revamping.
- Develop in-house expertise in continuous improvement techniques.

Instructional Methodology

The course uses a highly interactive and practical approach to learning, combining technical lectures with hands-on exercises, group work, and industry case studies. Key features include:

- Instructor-led presentations with visual aids
- Real-life case studies from oil, gas, and chemical plants
- Hands-on problem-solving and optimization simulations
- Group workshops and technical discussions
- Videos and process flow analysis sessions
- Continuous feedback and Q&A sessions

MAWA EVENTS

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Course Outline

Module 1: Introduction to Process Plant Optimization

- Definition and scope of optimization, revamping, and debottlenecking
- Importance of continuous improvement in process industries
- Overview of plant performance indicators and KPIs

Module 2: Process Performance Assessment

- Data collection and performance monitoring
- Identification of process limitations and bottlenecks
- Root cause analysis and performance gap evaluation
- Benchmarking and performance comparison

Module 3: Fundamentals of Optimization Techniques

- Optimization objectives and methodologies
- Material and energy balance review
- Process integration and heat recovery techniques
- Process modeling and simulation tools (HYSYS, Aspen Plus, etc.)

Module 4: Debottlenecking Strategies

- Identifying bottlenecks in process, equipment, and utilities
- Methods to increase capacity and throughput
- Equipment modifications and control strategy improvements
- Case studies of successful debottlenecking projects

Module 5: Revamping Existing Facilities

- Revamp project identification and prioritization
- Scope definition and project feasibility studies
- Cost estimation and project justification
- Managing revamp implementation and plant shutdowns

Module 6: Process Equipment Optimization

- Optimization of heat exchangers, compressors, pumps, and reactors
- Piping and control system improvements
- Energy conservation and waste minimization techniques
- Safety and reliability considerations in equipment upgrades

Module 7: Economic and Risk Evaluation

- Cost-benefit and ROI analysis of optimization projects
- Managing technical and operational risks
- Financial evaluation of debottlenecking initiatives
- Decision-making tools for revamp investments

Module 8: Advanced Optimization Tools and Digital Integration

- Role of advanced process control (APC) and digital twins
- Real-time optimization (RTO) systems
- Process data analytics and AI-driven optimization
- Integration of automation and control for performance enhancement

Module 9: Environmental and Safety Considerations

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Environmental regulations and sustainability goals

- HAZOP and risk management in revamp projects
- Process safety in modification and expansion works
- Implementing energy-efficient and eco-friendly designs

Module 10: Case Studies and Practical Workshop

- Review of real-life optimization and revamping projects
- Step-by-step debottlenecking analysis exercise
- Group discussions and performance improvement simulations
- Lessons learned and best practices from global operations

Certification

Upon successful completion, participants will receive a Certificate in Process Plant Optimization, Revamping and Debottlenecking, recognizing their advanced understanding of process improvement and plant performance management.

This certification signifies professional competence in identifying, planning, and executing optimization projects that maximize capacity, reduce costs, and extend the operational life of process plants while maintaining safety and environmental compliance.

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.

<p>In-House / Customized Training</p> <p>Interested in running this course for your team?</p> <p>Please contact us:</p>	<p>TEL:</p> <p>+601116373203</p>	<p>EMAIL:</p> <p>info@mawaevents.net</p>
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