

€ TRAINING

Process Plant Optimization and Energy
Conservation





Process Plant Optimization and Energy Conservation

Introduction:

The Process Plant Optimization and Energy Conservation training program equips participants with strategies to improve efficiency and reduce energy consumption in industrial processes. Through theoretical learning and practical exercises, participants learn advanced techniques such as pinch technology and heat integration to drive operational excellence and sustainability in process plants.

Program Objectives:

At the end of this program, the participants will be able to:

- Understand what plant optimization and energy conservation is all about - the drivers, the potential benefits, and how to realize them.
- Enhance the business focus and to make more contributions to sustainable plant profitability.
- Learn how to identify the most attractive opportunities for energy savings.
- Gain managerial tools to effectively optimize plant operations.
- Learn practical and effective methods and tools to perform technical and economic evaluations of the alternatives.
- Understand the elements of plant optimization.
- Maximize plant availability, reliability, and productivity.
- Minimize the operational costs.

Targeted Audience:

- Process Plant Supervisors.
- Plant Engineers and Operators.
- Production and Operation Engineers.
- Maintenance Engineers and Technicians.
- Engineering and Technical personnel involved in improving process plant, petrochemical plant, and refinery profitability and energy efficiency.

Program Outlines:

Unit 1:

Process Plant Operation, Integrity, and Reliability:

- Process Plant Optimization and Energy Conservation - Overview.
- Asset Integrity Management AIM and Optimization - Integrating operation, inspection, maintenance effort.
- Plant Integrity and Reliability - Cornerstone of Plant Optimization and Energy Management.
- Operation and Maintenance Impacts on Plant Integrity and Reliability.
- Equipment condition monitoring and assessment.
- Establishment of Operating Windows OW - Maximize throughput within the limits defined by mechanical-structural integrity over the expected life of the asset components.
- Effective management of change MOC program - On-going link between engineering, operations, and maintenance.
- Process Plant Economics.

Unit 2:

Process Plant Optimization:

- Process Control Basics and Elements of Process Plant Optimization.
- Components Required To Optimize An Industrial Process, including understanding the process or a mathematical model, and process variables that can be manipulated and controlled.
- Application Of Simulation Technology To Plant Optimization And Control, focusing on Plant Optimization Models.
- The Basics Of Heat Integration, covering Pinch technology, heat exchanger train optimization, and optimization procedures.
- Application Of Simulation Technology To Plant Optimization And Control, emphasizing Plant Optimization Models.

Unit 3:

Industrial Energy Management - Energy Efficiency:

- Energy Use and Optimization in Process industries.
- Industrial Energy Management Techniques and System Standards.
- Industry Program for Energy Conservation.

- Best Practices in Process Plant Energy Management.
- Developing Customized Energy Management Program.
- The obstacle that Faces Energy Management Programs.
- Examples of energy management programs and standards CIPEC, UNIDO.
- Incentives for an energy assessment and energy retrofit projects.

Unit 4:

Energy Conservation Opportunities:

- Implementing an Energy Management Program.
- Benchmarking Energy Intensity and Usage.
- Technology Options - New energy-efficient technologies.
- Energy Conservation Checklist.
- Plant processes, Mechanical Systems and Electric Power.
- Technical and Economic Evaluation of Potential Opportunities.

Unit 5:

The Implications of Plant Optimization Activities:

- Relating Energy Efficiency To Business Outcomes.
- Impact of optimization activities and technological modifications to the plant.
- Plant integrity and safety.
- Technology licenses.
- Financing agreements.
- Impact on Human Resources - The human factor.