MERCURY

Oil Refinery & Petrochemical Industry Wastewater Treatment Course

10 – 14 January 2027
Cairo (Egypt)



Dubai - UAE: +971 4 450 5697
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Ref: 9144_297952 **Date:** 10 – 14 January 2027 **Location:** Cairo (Egypt) **Fees:** 4000 Euro

Introduction:

Petroleum refining and petrochemical industries unavoidably generate large volumes of wastewater. As environmental regulations for wastewater disposal become stricter and freshwater resources become increasingly limited, the industry requires more efficient management and reuse of this wastewater. Therefore, every oil refinery and petrochemical company must explore and resolve wastewater treatment.

This oil refinery and petrochemical wastewater treatment course will identify how to get to the core of this issue using a thorough analysis of the development status of wastewater treatment methods, including flotation, coagulation, biological treatment, membrane separation technology, combined technology and advanced oxidation process that ultimately results in maximization of petroleum refining and petrochemical industries profitability and meeting with the strict environmental regulations.

In this oil refinery and petrochemical wastewater treatment training, participants will learn several configurations and techniques for Wastewater Treatment Plants WWTP in oil refining and petrochemical industries.

Understanding Oil Refinery and Petrochemical Wastewater Treatment:

The oil refinery and petrochemical wastewater treatment course offers comprehensive training on managing wastewater in the oil, gas, and petrochemical industries. Participants learn about the unique challenges of treating industrial wastewater and explore practical solutions and advanced treatment processes.

This course is essential for professionals seeking to enhance their knowledge of wastewater treatment in refinery and petrochemical settings, focusing on safety, compliance, and environmental sustainability. With this specialized training, you will gain practical insights and skills to optimize wastewater treatment systems.

Targeted Groups:

- Refinery and Petrochemical Plant Managers.
- Process engineers and technologists are involved in wastewater treatment facilities.
- Maintenance Engineers.
- Plant Engineers.
- Operations Personnel, including Shift Supervisors.
- All Professionals involved in wastewater treatment facilities.
- Other Engineers who would like to have a further understanding of wastewater treatment technology.
- Anyone who wishes to update himself on the methods used in this critical field.

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Course Objectives:

At the end of this oil refinery and petrochemical wastewater treatment course, the participants will be able to:

- Learn the purpose, principles of operation, and limitations of the different wastewater treatment technologies in oil refining and petrochemical industries.
- Understand how to establish high wastewater recovery for reuse onsite, reduce freshwater intake, and meet strict regulatory requirements.
- Understand the advanced, cost-effective technologies for reducing waste volume and obtaining Zero Liquid Discharge ZLD.
- Learn how to reduce wastewater treatment facilities' energy consumption and operational costs and optimize treatment conditions.
- Learn industry-standard targets for wastewater before discharge or reuse.
- Identify the impact of pollution on the environment.
- Modify treatment facilities' operating conditions according to the properties of incoming polluted wastewater.
- Improve the operability and reliability of equipment.

Targeted Competencies:

At the end of this oil refinery and petrochemical wastewater treatment course, the participant's competencies will:

- Typical sources and contaminants of wastewater produced from oil refining and petrochemical industries.
- Refinery and Petrochemical Wastewater Treatment Plants WWTP impacts and benefits.
- Conventional refinery and petrochemical wastewater treatment plants.
- Current development status of wastewater treatment technologies.
- The latest on wastewater recycling/reuse for oil refining and petrochemical industries ZLD is.

Course Content:

Unit 1: Refinery and Petrochemical Plant Overview:

- Raw Materials.
- Product and Processes.
- Refinery Configuration.

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Unit 2: Water and Wastewater Management:

- Refinery Water Overview.
- Overall Refinery Water Balance.
- Sources of Water.
- Water Leaving the Refinery.
- Raw Water Treatment.
- Process Water.
- Best Practices for Managing Refinery and Petrochemical Plant WWTP.

Unit 3: The Composition of Wastewater:

- Aquatic Biology.
- Six Important Elements.
- Biochemical Oxygen Demand.
- Chemical Oxygen Demand COD.
- COD and BOD5 Equivalence for Hydrocarbons.
- Hydrocarbons HC in Water.

Unit 4: Effluent Treatment:

- Unit Processes in Wastewater Treatment.
- Process Wastewater Pretreatment.
- Desalter Effluent Treatment.
- Desalter Oil / Water Separation.
- Desalter Effluent VOC Control.
- Particle Settling.
- Ideal Sedimentation.
- First Stage: Separation Oil / Water Separators, API Separators, CPI.
- Oil Skimming Device.

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Unit 5: Biological Treatment:

- Coagulation / Flocculation.
- Dissolved Air Flotation DAF.
- Induced Air Flotation IAF.
- Equalization System.
- Secondary Treatment / Biological Treatment.
- Activated Sludge.
- Sludge Volume Index.
- Activated Sludge Troubles and Remedial Actions.
- Aerators.
- Biological Treatment Options.
- Activated Sludge Treatment with Powdered Activated Carbon.

Unit 6: Biological Treatment Options:

- Oxidation Ditch.
- Aerated Lagoons.
- Powdered Activated Carbon Treatment.
- Sequencing Batch Reactor SBR.
- Membrane Bioreactor Technology.
- Attached Growth Processes.
- Biological Classification Gravity Clarifiers.
- Sand Filtration.
- Activated Carbon.
- Chemical Oxidation.

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Unit 7: Sludge Treatment:

- Sewage Sludge Quantity and Characteristics.
- Sludge Pumping Systems.
- Thickening / Dewatering of Sludge.
- Dimensioning of a Static Thickener.
- Dewatering.
- Treatment of Sludges.
- API Separator - Bottom Sludge.
- Bioremediation.
- DGF/IGF Float and Sludge.
- Waste Biological Sludge.
- Sludge Stabilization.
- Simultaneous Aerobic Stabilization.
- Mesophilic Anaerobic Digestion.
- Aerobic Digestion.
- Sludge Disposal and Agricultural Utilization.

Unit 8: Recycle and Reuse Issues:

- Reuse of Non-contaminated Stormwater.
- Fire-Water.
- Cooling Tower Makeup Water.
- Utility Water.
- Boiler Feedwater Makeup.
- Technologies for Upgrade of Refinery Wastewater.
- Essential Media / Sand Filtration.
- Microfiltration or Ultrafiltration.
- Microfiltration or Ultrafiltration, with Reverse Osmosis.
- Microfiltration or Ultrafiltration, with Nanofiltration.
- Ion Exchange.
- Technology Summary.

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Unit 9: Refinery Wastewater Reuse:

- Reuse of Municipal Wastewater.
- Media Filtration.
- Microfiltration or Ultrafiltration.
- Microfiltration or Ultrafiltration, plus Reverse Osmosis.
- Zero Liquid Discharge.

Conclusion:

This oil refinery and petrochemical industry wastewater treatment course has provided a comprehensive understanding of the petrochemical, oil, and gas challenges. Participants have gained valuable insights into the importance of wastewater treatment in maintaining environmental sustainability and regulatory compliance.

By exploring the intricacies of industrial wastewater treatment processes, including advanced techniques and solutions, participants are now equipped with the knowledge and skills to manage and optimize wastewater treatment systems effectively.

This oil refinery and petrochemical wastewater treatment training is a vital resource for professionals seeking wastewater treatment certification. It empowers them to enhance safety, efficiency, and environmental stewardship within the oil refinery and petrochemical industry.