Industrial Water and Wastewater Treatment Technologies Training Course

OGT-1094 · 5 days · 15 CPD hours · English

OVERVIEW

Industrial water and wastewater treatment is an essential part of sustainable industrial operations, environmental protection, regulatory compliance and operational efficiency. Oil and gas facilities, manufacturing plants, refineries, petrochemical industries and other industrial organisations generate wastewater containing hydrocarbons, suspended solids, organic matter, dissolved contaminants, chemicals and other pollutants that require appropriate treatment before discharge, reuse or disposal. Effective wastewater treatment helps organisations minimise environmental risks, improve resource efficiency and maintain reliable industrial operations.

The Industrial Water and Wastewater Treatment Technologies Training Course offered by Oil & Gas Training Institute is designed to develop the technical knowledge and practical competencies required to understand, operate, evaluate and improve industrial water and wastewater treatment systems. Within the Water Treatment and Management for Oil & Gas category, this programme explores the principles, technologies, processes and operational practices involved in treating industrial water and managing wastewater streams across complex facilities.

The course examines a broad range of treatment technologies, including physical separation, chemical treatment, biological treatment, filtration, membrane systems, advanced oxidation, disinfection and sludge handling. Participants will explore how these technologies work individually and as integrated treatment systems, considering their effectiveness in removing contaminants, improving effluent quality and supporting water reuse initiatives. The programme also introduces the operational factors influencing treatment performance, such as wastewater characteristics, hydraulic loading, chemical dosing, process monitoring, equipment efficiency and maintenance requirements.

Industrial wastewater management requires a comprehensive understanding of treatment objectives, process selection, environmental obligations and operational limitations. Professionals must be able to evaluate wastewater composition, identify suitable treatment methods, interpret performance data and investigate treatment inefficiencies. This course develops these capabilities through a practical approach that connects technical knowledge with real-world industrial applications, including wastewater treatment challenges commonly encountered in oil and gas operations.

Participants will gain insights into effluent treatment systems, biological treatment processes, sludge management techniques, water reuse strategies and discharge standards. They will examine how treatment facilities can be optimised to reduce operational costs, improve environmental performance, minimise waste generation and support responsible water resource management. The programme also addresses the relationship between treatment technologies, plant reliability, process safety, environmental risk management and regulatory compliance.

Delivered by Oil & Gas Training Institute, this professional training programme combines technical principles with operational decision-making and practical problem-solving. It enables participants to develop a stronger

understanding of industrial wastewater treatment technologies and their applications, helping them contribute to more efficient, reliable and environmentally responsible water management practices within their organisations.

OBJECTIVES

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

- Explain the principles of industrial water and wastewater treatment and their importance in oil and gas and other industrial operations.
- Identify major wastewater sources, contaminants, wastewater characteristics and treatment requirements across industrial facilities.
- Interpret key wastewater quality parameters, including pH, turbidity, suspended solids, BOD, COD, oil and grease and other relevant indicators.
- Evaluate physical, chemical and biological treatment technologies for different industrial wastewater applications.
- Analyse the operating principles, performance limitations and process requirements of effluent treatment systems.
- Assess biological treatment methods, including activated sludge, aeration, biological reactors and associated process controls.
- Examine sludge handling, thickening, dewatering, stabilisation and disposal or recovery options.
- Evaluate membrane filtration, advanced treatment and disinfection technologies for improving effluent quality and water reuse.
- Identify operational problems, investigate treatment performance issues and recommend corrective actions.
- Develop approaches for improving treatment efficiency, managing environmental risks and achieving compliance with applicable discharge standards.

TRAINING METHODOLOGY

The Industrial Water and Wastewater Treatment Technologies Training Course uses a practical, interactive and technically focused training methodology to develop professional understanding and workplace application.

- **Interactive Presentations and Technical Discussions:** Instructor-led sessions introduce wastewater treatment principles, treatment technologies, process configurations, water quality parameters and industrial wastewater management practices. Participants discuss operational challenges and treatment requirements relevant to their professional environments.

- **Technical Workshops:** Participants explore wastewater treatment process stages, evaluate treatment equipment, interpret water quality data and examine the selection of suitable treatment technologies for different wastewater characteristics.

- **Real-World Case Studies:** Industrial case studies examine wastewater treatment challenges in oil and gas facilities, refineries, petrochemical plants and other industrial operations. Participants analyse treatment failures, process inefficiencies, environmental concerns and potential improvement strategies.

- **Scenario-Based Learning:** Participants work through realistic wastewater treatment scenarios involving fluctuating wastewater composition, poor effluent quality, biological process instability, chemical dosing problems, equipment failures and compliance challenges.

- **Process Analysis Exercises:** Practical exercises focus on interpreting treatment performance indicators, evaluating process flow arrangements, identifying bottlenecks and understanding the interactions between treatment stages.

- **Collaborative Group Activities:** Participants share industry experiences, discuss treatment approaches and work collaboratively to develop solutions to common industrial wastewater management problems.

- **Problem-Solving and Improvement Planning:** Participants develop practical recommendations for improving wastewater treatment efficiency, water reuse potential, sludge management, monitoring practices and environmental performance.

ORGANISATIONAL IMPACT

The Industrial Water and Wastewater Treatment Technologies Training Course can support organisations in improving wastewater management practices, operational efficiency, environmental performance and long-term water sustainability.

- **Improved Treatment Efficiency:** Participants develop the technical understanding required to evaluate wastewater treatment processes, identify inefficiencies and support improvements in treatment performance, process stability and effluent quality.

- **Stronger Environmental Compliance:** Improved understanding of wastewater discharge requirements, environmental monitoring, treatment controls and applicable discharge standards helps organisations strengthen compliance management and reduce environmental risks.

- **Reduced Operational Costs:** Better treatment technology selection, chemical dosing optimisation, process control and maintenance planning can contribute to lower operating costs, reduced waste generation and improved resource utilisation.

- **Enhanced Water Reuse and Resource Efficiency:** Organisations can identify opportunities to recover, recycle and reuse treated wastewater for suitable industrial applications, helping reduce freshwater consumption and improve water resource management.

- **Improved Risk Management:** Knowledge of wastewater contaminants, treatment limitations, sludge management and environmental hazards supports more effective operational risk identification and mitigation.

- **Better Equipment Reliability:** Understanding treatment equipment, process interactions, fouling mechanisms, corrosion concerns and maintenance requirements can help organisations improve equipment performance and reduce avoidable disruptions.

- **Strengthened Technical Decision-Making:** Trained professionals can contribute more effectively to treatment technology assessments, process upgrades, operational troubleshooting and wastewater management planning.

- **Improved Team Collaboration:** The programme strengthens technical communication between operations, environmental, maintenance, engineering, process and water management teams.

- **Greater Operational Sustainability:** Effective wastewater treatment and reuse practices support resource conservation, responsible industrial development and environmental sustainability objectives.

- **Enhanced Organisational Capability:** Developing wastewater treatment competencies enables organisations to build technical expertise, strengthen internal problem-solving capacity and improve the management of industrial water systems.

PERSONAL IMPACT

Attending the Industrial Water and Wastewater Treatment Technologies Training Course can help participants strengthen their technical expertise, professional confidence and ability to manage wastewater treatment responsibilities effectively.

- **Enhanced Technical Knowledge:** Participants gain a deeper understanding of industrial wastewater treatment technologies, treatment processes, equipment and water quality management principles.

- **Improved Analytical Skills:** The course develops the ability to interpret wastewater analysis results, evaluate treatment efficiency and assess process performance using relevant technical indicators.

- **Better Problem-Solving Capabilities:** Participants learn to investigate wastewater treatment problems, identify potential causes of process inefficiencies and recommend practical corrective actions.

- **Greater Confidence in Operational Responsibilities:** A better understanding of treatment systems enables professionals to make informed decisions when monitoring, managing and improving wastewater treatment processes.

- **Improved Environmental Awareness:** Participants develop greater awareness of environmental protection, wastewater discharge requirements, pollution prevention and responsible waste management.

- **Practical Knowledge of Water Reuse:** Participants learn how treated wastewater can be evaluated for reuse, helping them contribute to water conservation and sustainable industrial practices.

- **Enhanced Professional Competence:** Knowledge of biological treatment, effluent treatment, sludge handling, filtration and advanced treatment technologies strengthens participants' technical capabilities.

- **Career Development Opportunities:** The course supports professional growth for individuals working in water treatment, environmental management, industrial operations, engineering, process management and oil and gas facilities.

- **Stronger Technical Communication:** Participants improve their ability to discuss wastewater treatment performance, operational concerns, treatment requirements and improvement strategies with colleagues and stakeholders.

WHO SHOULD ATTEND

The Industrial Water and Wastewater Treatment Technologies Training Course is suitable for professionals involved in industrial water management, wastewater treatment, environmental compliance, plant operations, process engineering and water sustainability.

- **Water and Wastewater Treatment Engineers:** Engineers responsible for designing, evaluating, operating or improving industrial wastewater treatment systems.

- **Environmental Engineers and Environmental Specialists:** Professionals involved in pollution prevention, environmental monitoring, wastewater discharge management and environmental compliance.

- **Process Engineers:** Engineers responsible for process optimisation, treatment system performance, process troubleshooting and industrial plant efficiency.

- **Plant and Operations Managers:** Managers overseeing industrial operations, wastewater treatment facilities, production processes and operational performance.

- **Wastewater Treatment Plant Operators and Supervisors:** Personnel involved in monitoring, operating, maintaining and troubleshooting wastewater treatment systems.

- **Oil and Gas Engineers and Operations Professionals:** Professionals working in upstream, midstream and downstream operations who manage industrial water streams, produced water, process wastewater and treatment facilities.

- **Chemical Engineers and Production Chemists:** Specialists involved in chemical treatment, process chemistry, water quality analysis, chemical dosing and contaminant removal.

- **Maintenance Engineers and Technical Supervisors:** Professionals responsible for maintaining wastewater treatment equipment, pumps, filters, aeration systems, separation units and treatment infrastructure.

- **Environmental Compliance and HSE Professionals:** Specialists involved in environmental risk management, discharge monitoring, pollution control and wastewater-related regulatory responsibilities.

- **Water Resource and Sustainability Professionals:** Individuals responsible for water conservation, water reuse, resource efficiency and industrial sustainability initiatives.

- **Technical Consultants and Project Professionals:** Consultants, contractors, project engineers and specialists involved in wastewater treatment technology selection, plant upgrades, process assessments and industrial water management projects.

- **Industrial Facility Managers and Utility Managers:** Professionals responsible for managing water systems, utilities, treatment facilities and wastewater-related infrastructure across industrial sites.

COURSE OUTLINE

Fundamentals of Industrial Water and Wastewater Treatment

- Introduction to Industrial Water Management and Wastewater Treatment
- Industrial Wastewater Sources and Characteristics in Oil and Gas and Other Industries
- Wastewater Composition, Contaminants and Environmental Implications
- Key Water Quality Parameters: pH, Turbidity, BOD, COD, TSS, Oil and Grease
- Wastewater Sampling, Laboratory Analysis and Process Monitoring Fundamentals
- Wastewater Treatment Objectives, Process Flow Diagrams and Treatment System Configuration

Physical and Chemical Wastewater Treatment Technologies

- Principles of Physical Wastewater Treatment and Contaminant Separation
- Screening, Grit Removal, Sedimentation and Primary Clarification
- Oil-Water Separation Systems and Industrial Hydrocarbon Removal
- Coagulation, Flocculation and Chemical Precipitation Processes
- Filtration Technologies: Sand Filters, Multimedia Filters and Other Industrial Filtration Systems
- Chemical Dosing, pH Adjustment, Treatment Optimisation and Practical Process Evaluation

Biological Wastewater Treatment and Process Control

- Fundamentals of Biological Wastewater Treatment and Microbial Activity
- Activated Sludge Processes, Aeration Systems and Biological Process Configuration
- Biological Nutrient Removal: Nitrogen and Phosphorus Management
- Anaerobic Treatment, Aerobic Treatment and Alternative Biological Technologies
- Biological Treatment Monitoring: DO, MLSS, MLVSS, F/M Ratio and Sludge Age

- Troubleshooting Biological Treatment Problems: Foaming, Bulking, Poor Settling and Process Instability

Advanced Treatment, Sludge Handling and Water Reuse

- Membrane Treatment Technologies: UF, NF, RO and Their Industrial Applications
- Advanced Oxidation Processes and Advanced Effluent Treatment Techniques
- Disinfection Technologies: Chlorination, UV Treatment and Other Methods
- Sludge Handling, Thickening, Dewatering, Stabilisation and Disposal
- Industrial Water Reuse, Reclamation and Recycling Strategies
- Treatment Technology Selection, Performance Limitations and Integrated Treatment System Evaluation

Wastewater Management, Discharge Standards and Treatment Optimisation

- Industrial Wastewater Discharge Standards and Environmental Compliance Requirements
- Effluent Monitoring, Reporting, Sampling Frequency and Performance Assessment
- Wastewater Treatment Troubleshooting, Root Cause Analysis and Corrective Actions
- Operational Efficiency, Chemical Consumption, Energy Management and Cost Optimisation
- Industrial Wastewater Case Studies: Treatment Failures, Process Improvements and Water Reuse Applications
- Developing Wastewater Treatment Improvement Plans, Operational Strategies and Sustainable Water Management Approaches

SCHEDULED DATES

Dates	Venue	Format	Fee
11 - 15 Jan 2027	Abu Dhabi, United Arab Emirates	In person	On request
11 - 15 Jan 2027	Abuja, Nigeria	In person	On request
11 - 15 Jan 2027	Accra, Ghana	In person	On request
11 - 15 Jan 2027	Addis Ababa, Ethiopia	In person	On request

Dates	Venue	Format	Fee
11 - 15 Jan 2027	Al Ain, United Arab Emirates	In person	On request
11 - 15 Jan 2027	Al Khobar, Saudi Arabia	In person	On request
11 - 15 Jan 2027	Alberta, Canada	In person	On request
11 - 15 Jan 2027	AlUla, Saudi Arabia	In person	On request
11 - 15 Jan 2027	Amman, Jordan	In person	On request
11 - 15 Jan 2027	Amsterdam, The Netherlands	In person	On request
11 - 15 Jan 2027	Athens, Greece	In person	On request
11 - 15 Jan 2027	Baku, Azerbaijan	In person	On request
11 - 15 Jan 2027	Barcelona, Spain	In person	On request
11 - 15 Jan 2027	Berlin, Germany	In person	On request
11 - 15 Jan 2027	Boston, USA	In person	On request
11 - 15 Jan 2027	Brussels, Belgium	In person	On request
11 - 15 Jan 2027	Budapest, Hungary	In person	On request
11 - 15 Jan 2027	Cairo, Egypt	In person	On request
11 - 15 Jan 2027	Cape Town, South Africa	In person	On request
11 - 15 Jan 2027	Casablanca, Morocco	In person	On request
11 - 15 Jan 2027	Dammam, Saudi Arabia	In person	On request
11 - 15 Jan 2027	Dhahran, Saudi Arabia	In person	On request
11 - 15 Jan 2027	Doha, Qatar	In person	On request
11 - 15 Jan 2027	Dubai, United Arab Emirates	In person	On request
11 - 15 Jan 2027	Edinburgh, United Kingdom	In person	On request
11 - 15 Jan 2027	Edmonton, Canada	In person	On request
11 - 15 Jan 2027	Frankfurt, Germany	In person	On request
11 - 15 Jan 2027	Geneva, Switzerland	In person	On request
11 - 15 Jan 2027	Houston, USA	In person	On request
11 - 15 Jan 2027	Istanbul, Turkey	In person	On request

Dates	Venue	Format	Fee
11 - 15 Jan 2027	Jakarta, Indonesia	In person	On request
11 - 15 Jan 2027	Jeddah, Saudi Arabia	In person	On request
11 - 15 Jan 2027	Jubail, Saudi Arabia	In person	On request
11 - 15 Jan 2027	Khamis Mushait, Saudi Arabia	In person	On request
11 - 15 Jan 2027	Kigali, Rwanda	In person	On request
11 - 15 Jan 2027	Kuala Lumpur, Malaysia	In person	On request
11 - 15 Jan 2027	Lisbon, Portugal	In person	On request
11 - 15 Jan 2027	Liverpool, United Kingdom	In person	On request
11 - 15 Jan 2027	London, United Kingdom	In person	On request
11 - 15 Jan 2027	Los Angeles, USA	In person	On request
11 - 15 Jan 2027	Luanda, Angola	In person	On request
11 - 15 Jan 2027	Madrid, Spain	In person	On request
11 - 15 Jan 2027	Manama, Bahrain	In person	On request
11 - 15 Jan 2027	Marbella, Spain	In person	On request
11 - 15 Jan 2027	Marrakech, Morocco	In person	On request
11 - 15 Jan 2027	Miami, USA	In person	On request
11 - 15 Jan 2027	Milan, Italy	In person	On request
11 - 15 Jan 2027	Munich, Germany	In person	On request
11 - 15 Jan 2027	Muscat, Oman	In person	On request
11 - 15 Jan 2027	Nairobi, Kenya	In person	On request
11 - 15 Jan 2027	New York, USA	In person	On request
11 - 15 Jan 2027	Nice, France	In person	On request
11 - 15 Jan 2027	Oslo, Norway	In person	On request
11 - 15 Jan 2027	Paris, France	In person	On request
11 - 15 Jan 2027	Port Louis, Mauritius	In person	On request
11 - 15 Jan 2027	Prague, Czech Republic	In person	On request

Dates	Venue	Format	Fee
11 - 15 Jan 2027	Pretoria, South Africa	In person	On request
11 - 15 Jan 2027	Riyadh, Saudi Arabia	In person	On request
11 - 15 Jan 2027	Rome, Italy	In person	On request
11 - 15 Jan 2027	Sarajevo, Bosnia and Herzegovina	In person	On request
11 - 15 Jan 2027	Sharm El Sheikh, Egypt	In person	On request
11 - 15 Jan 2027	Singapore, Singapore	In person	On request
11 - 15 Jan 2027	Stockholm, Sweden	In person	On request
11 - 15 Jan 2027	Tokyo, Japan	In person	On request
11 - 15 Jan 2027	Toronto, Canada	In person	On request
11 - 15 Jan 2027	Tromso, Norway	In person	On request
11 - 15 Jan 2027	Vienna, Austria	In person	On request
11 - 15 Jan 2027	Zagreb, Croatia	In person	On request
11 - 15 Jan 2027	Zurich, Switzerland	In person	On request
11 - 15 Jan 2027	Online, Virtual	Online	On request

CERTIFICATE