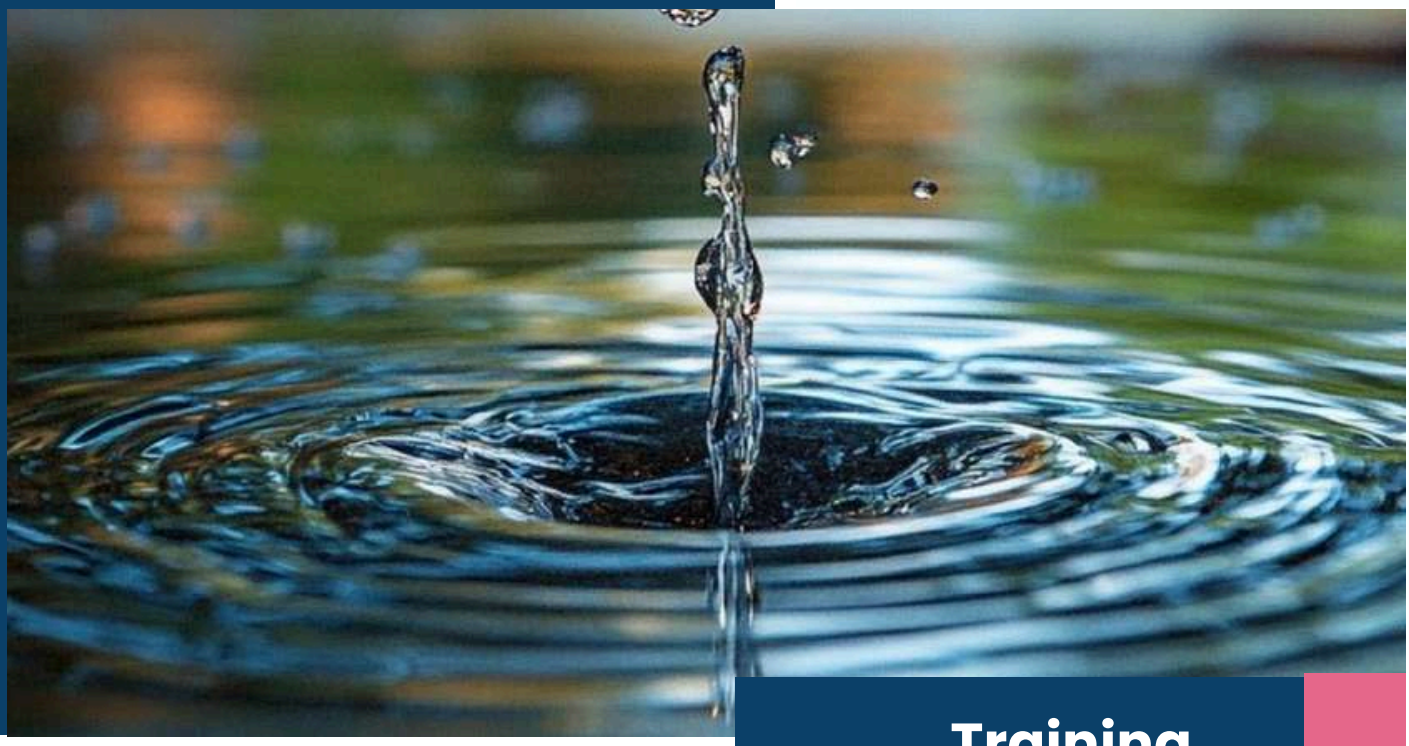
Water & Wastewater Treatment: Design, Operation & Process Calculations

MEERIM VISIONARY TRAINING (FZE)
INSPIRING AMBITION AND SUCCESS



Why to Invest in this Training?

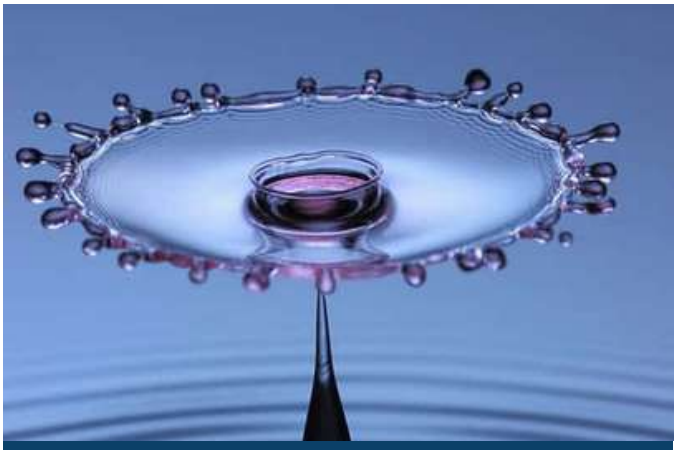
Water and wastewater treatment are no longer just utility functions—they are **mission-critical systems in oilfields, construction, and infrastructure projects**.

By upskilling your engineering teams in design methodology and technical calculation, you reduce project errors, increase plant performance, and meet the region's environmental compliance standards more confidently and cost-effectively.

Training Program

5 DAYS

Online/Onsite



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Introduction:

This course provides comprehensive technical knowledge on the treatment of water and wastewater, with a focus on the design parameters, operational strategies, and key calculations involved. Attendees will gain hands-on experience in designing essential components such as sedimentation tanks, biological reactors, disinfection systems, and more, with a deep dive into the chemistry, hydraulics, and system integration aspects.

Target Audience:

- Mechanical, Chemical, and Environmental Engineers
- Plant Designers and Project Engineers
- Water Treatment Plant Operators and Supervisors
- HSE and Compliance Officers
- Technical Consultants working on EPC or O&M contracts

Training Methodology:

The 5-day course is presented through a mixture of lectures, tutorials, and worked examples. Soft course material is provided for delegates during and after the course. Active participation from the delegates is strongly encouraged, particularly during the work examples to consolidate learning. All delegates will receive a Certificate of Attendance upon completion of this course. During the program will be applied

- Pre-Assessment & Post-Assessment Questioners'
- Daily Evaluation Feedback
- Final Evaluation Feedback after the Training Completion
- Final Summary Report
- Training Attendance Certificate

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Training Objectives:

- Understand physical, chemical, and biological principles of water and wastewater treatment.
- Design treatment units including clarifiers, filters, activated sludge systems, and disinfection units.
- Perform essential calculations (e.g., flow rates, retention times, chemical dosing, loading rates).
- Evaluate system performance and identify optimization opportunities.
- Interpret process diagrams, P&IDs, and design specifications.

Organizational Benefits:

- Improved design accuracy and cost-efficiency in treatment facilities
- Better operational decision-making and process reliability
- Reduction in regulatory non-compliance risks
- Increased capability to handle tendering and commissioning scopes

Personal Benefits:

- Strong technical foundation in modern treatment technologies
- Enhanced skillset in engineering calculations for process units
- Improved confidence in designing or troubleshooting treatment plants
- Readiness to contribute to complex EPC or O&M projects

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Training Modules:

Day 1: Fundamentals of Water & Wastewater Treatment

- Introduction to Water Chemistry and Contaminants
- Overview of Municipal vs Industrial Systems
- Regulatory Standards (UAE, WHO, USEPA)
- Flow balancing, screening, and grit removal

Day 2: Physical & Chemical Treatment Processes

- Sedimentation and Flotation Design
- Coagulation & Flocculation (Jar Test Methodology)
- Chemical Dosing Calculations (Alum, Polymers, pH control)
- Filtration Techniques (Media, Pressure, Membrane Basics)

Day 3: Biological Treatment Technologies

- Activated Sludge System Design
- MBBR, SBR, and Extended Aeration Units
- Design Calculations: F/M Ratio, MLSS, SRT, Oxygen Demand
- Sludge Handling and Dewatering

Day 4: Disinfection, Advanced Treatment & Reuse

- Chlorination, Ozonation, UV Disinfection: Design & Dosing
- Reverse Osmosis, UF, and Tertiary Filtration
- Effluent Reuse Criteria and Case Study (Grey Water Use in UAE)
- Plant Control Systems (SCADA, PLCs in WTPs)

Day 5: System Design Integration & Troubleshooting

- Process Flow Diagrams (PFDs) and P&ID Review
- Plant Layout & Equipment Sizing Exercises
- Case Studies on Plant Failures and Upgrades
- Final Design Project & Knowledge Evaluation

TALK TO US

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info@mvtuae.com

www.@mvtuae.com

+971 50 6525 976

Rolex Tower Level 9B Office B46-067,
Sheikh Zayed Road, Dubai, UAE.