

COURSE OVERVIEW TE0252
Water Treatment and Reverse Osmosis Units

Course Title

Water Treatment and Reverse Osmosis Units

Course Date/Venue

December 15-19, 2024/The Beluga Meeting Room,
 The H Dubai Hotel, Sheikh Zayed Road - Trade
 Centre, Dubai, UAE

Course Reference

TE0252

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

This course is designed to provide participants with a detailed and up-to-date overview of Water Treatment and Reverse Osmosis Units. It covers the importance of water treatment in the industry including the fundamental concepts and processes of water treatment; the fundamentals, basic principles and role of reverse osmosis in water treatment; the types of water used in the petroleum industry and the common contaminants; the global and regional standards for water quality and safety and environmental considerations to ensure safety in water treatment processes; the types, selection criteria and maintenance of reverse osmosis membranes; the system components and design principles of RO systems; and the necessity and methods for pre-treatment processes.



During this interactive course, participants will learn the operating RO systems; the common operational problems and advanced oxidation processes; the comparison of ultrafiltration and nanofiltration with RO systems; the ion exchange techniques in water softening and purification; the emerging technologies in water treatment and water reuse and recycling; the system maintenance and longevity for maintaining RO system; the energy efficiency in water treatment and quality control and monitoring; the cost management, sustainability practices and integrating RO system in process operation; and the wastewater management and the latest industry regulations and compliance strategies.



Course Objectives

Upon the successful completion of this course, each participant will be able to: -

- Apply and gain a good working knowledge on water treatment and reverse osmosis units
- Discuss the importance of water treatment in the industry including the fundamental concepts and processes of water treatment
- Explain the fundamentals, basic principles and role of reverse osmosis in water treatment
- Identify the types of water used in the petroleum industry and common contaminants
- Discuss global and regional standards for water quality as well as safety and environmental considerations to ensure safety in water treatment processes
- Identify the types, selection criteria and maintenance of reverse osmosis membranes
- Recognize the system components and design principles of RO systems as well as the necessity and methods for pre-treatment processes
- Determine operating RO systems covering parameters, monitoring and control
- Identify and resolve common operational problems and apply proper techniques and application of advanced oxidation processes
- Compare ultrafiltration and nanofiltration with no systems and carryout ion exchange techniques in water softening and purification
- Discuss the emerging technologies in water treatment and apply water reuse and recycling
- Implement system maintenance and longevity for maintaining RO System, energy efficiency in water treatment and quality control and monitoring
- Employ cost management, sustainability practices and integrating RO systems in process operation
- Carryout wastewater management in industry and discuss the latest industry regulations and compliance strategies

Exclusive Smart Training Kit - H-STK®



*Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend


This course provides an overview for all significant aspects and considerations of water treatment and reverse osmosis units for managers, chemical or process engineers, environmental and public health officials, maintenance and service providers.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -


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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology’s courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units (CEUs)** in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant’s involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant’s CEU and PDH Transcript of Records upon request.

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council for Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. Emam Bakr, BSc, NEBOSH-PSM, is a NEBOSH Approved Instructor and a Senior Corrosion Engineer with over 25 years of industrial experience within the Petroleum, Oil & Gas industries. His wide expertise widely covers in the areas of Oily Water Treatment Technology, Water Desalination, Waste Water Treatment Operation & Process, Oil Refinery & Petrochemical Industry Wastewater Treatment, Boiler Feed Water Treatment, Corrosion Management & Monitoring and Water Injection Treatment, Pipes & Pipeline Control, Troubleshooting & Repair, Pipeline Integrity, Pipeline Operation & Maintenance, Water Network Operations, Water Distribution Techniques, Water Pipe Networks, Oil & Water, Corrosion & Corrosion Protection, NEBOSH Certificate in Process Safety Management, Advanced Internal Corrosion in Pipelines, Basic of Corrosion, CIP level 1 & 2, API 570 Piping Inspection, API 510 Pressure Vessel Inspection, API 653 Storage Tank Inspection, API Lead Auditor, API 580 Risk Base Inspection, Startup & Commissioning, Corrosion Control by Cathodic Protection, Corrosion Control & Corrosion Monitoring, Metallurgy & Metallurgical Processes, Material Selection, Corrosion Monitoring Prevention & Control, Corrosion Prevention & Control, Corrosion Management in Production/Processing Operations, Corrosion Prevention in Oil and Gas Industry, Corrosion Inhibitor, Corrosion Technology & Inspection, Corrosion Control in Gas, Oil & Water, Corrosion & Corrosion Protection, Corrosion Prevention, Corrosion Assessment, Condition Monitoring & Assessment, Pipeline Corrosion Inspection, Pipeline Design & Construction, Pipeline Engineering, Pipeline Integrity, Pipeline Operations & Maintenance. His wide range of industrial experience also covers Cathodic Protection, Offshore Structure & Facilities, Onshore Facilities & Storage Tanks, Corrosion Management & Monitoring and Water Injection Treatment. Further, he is also well-versed in, HAZOP and HAZID, HAZMAT, Hazard & Risk Assessment, Emergency Response Procedures Behavioural Based Safety (BBS), Confined Space Entry, Fall Protection, Emergency Response, H₂S, Advanced Process Safety Management, Liquefaction of Natural Gases (LONG), Water Desalination, Boiler Feed Water Treatment, Absorption & Striping, Acid Gas Removal, Gas Conditioning & Processes, Steam Boiler and Hazardous Waste Management.

During his career life, Mr. Emam has gained his practical and field experience through his various significant positions and dedication as the **General Manager Assistant, Corrosion & Material Team Leader, Pipeline Engineer, Integrity Engineer, Chemical Engineer and Senior Instructor/Consultant** from various international companies such as Gulf of Suez Petroleum Company, Gupco Ras Shukeir Oil Fields and Kafer Eldour Spinning Company.

Mr. Emam has a **Bachelor's** degrees in **Chemical Engineering**. He is a **Senior Internal Corrosion Technologist** of the **National Association of Corrosion Engineers (NACE-USA)**, a **Certified CSWIP Plant Inspector Level 1 through (TWI)**, **Certified API 570 Piping Inspector, Certified API 510 Pressure vessels inspection, Certified API 580 Risk Base Inspection, Certified API 653 Above Ground Storage Tank Inspection, a Certified NEBOSH Process Safety Management** and has further delivered numerous courses, trainings, seminars and conferences internationally.

Course Fee

US\$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Sunday, 15th of December 2024

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0900	<i>Overview of Water Treatment: Understanding its Importance in the Industry</i>
0900 – 0930	<i>Basic Principles of Water Treatment: Covering Fundamental Concepts & Processes</i>
0930 – 0945	Break
0945 – 1100	<i>Fundamentals of Reverse Osmosis: Basic Principles & Its Role in Water Treatment</i>
1100 – 1230	<i>Water Sources & Contaminants: Types of Water Used in the Petroleum Industry & Common Contaminants</i>
1230 – 1245	Break
1245 – 1320	<i>Regulatory Standards for Water Quality: Discussing Global & Regional Standards</i>
1320 – 1420	<i>Safety & Environmental Considerations: Ensuring Safety in Water Treatment Processes</i>
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2: Monday, 16th of December 2024

0730 – 0830	Reverse Osmosis Membranes: Types, Selection Criteria & Maintenance
0830 – 0930	Design of RO Systems: Understanding System Components & Design Principles
0930 – 0945	Break
0945 – 1100	Pre-Treatment Processes: Necessity & Methods for Pre-Treating Water
1100 – 1230	Operating RO Systems: Parameters, Monitoring & Control
1230 – 1245	Break
1245 – 1320	Troubleshooting Common Issues: Identifying & Resolving Common Operational Problems
1320 – 1420	Case Studies: Reviewing Real-World Applications in the Petroleum Industry
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3: Tuesday, 17th of December 2024

0730 – 0830	Advanced Oxidation Processes: Techniques & Applications
0830 – 0930	Ultrafiltration & Nanofiltration: Comparing with RO Systems
0930 – 0945	Break
0945 – 1100	Ion Exchange Techniques: Application in Water Softening & Purification
1100 – 1230	Emerging Technologies in Water Treatment: Innovations & Future Trends
1230 – 1245	Break
1245 – 1320	Water Reuse & Recycling: Methods & Benefits in the Process Sector
1320 – 1420	Interactive Workshop: Practical Exercises & Problem-Solving Scenarios
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4: Wednesday, 18th of December 2024

0730 – 0930	System Maintenance & Longevity: Best Practices for Maintaining RO Systems
0930 – 0945	Break
0945 – 1100	Energy Efficiency in Water Treatment: Strategies to Reduce Energy Consumption
1100 – 1230	Quality Control & Monitoring: Advanced Methods for Ensuring Water Quality
1230 – 1245	Break
1245 – 1320	Cost Management: Balancing Cost-Effectiveness with Efficiency
1320 – 1420	Sustainability Practices: Environmental Sustainability in Water Treatment
1420 – 1430	Recap
1430	Lunch & End of Day Four

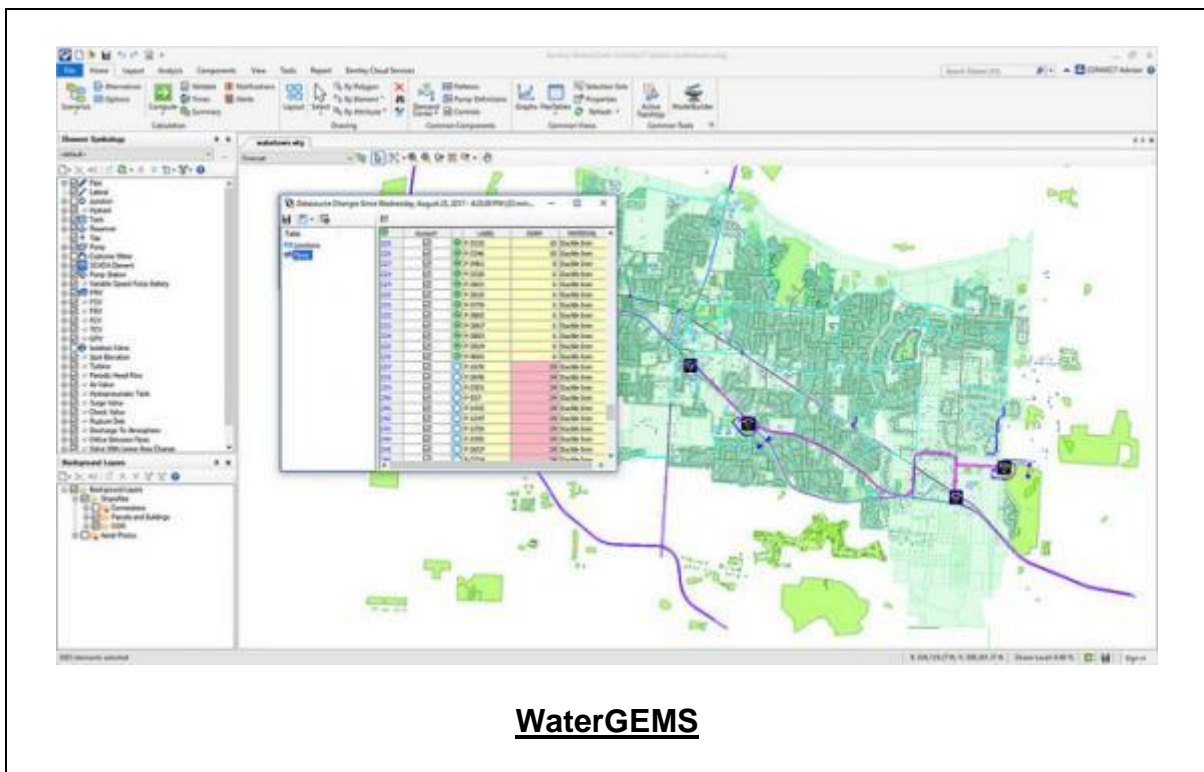
Day 5: Thursday, 19th of December 2024

0730 – 0830	Group Discussion: Sharing Experiences & Strategies Among Participants
0830 – 0930	Integrating RO Systems in Process Operations: Best Practices & Challenges
0930 – 0945	Break
0945 – 1100	Wastewater Management in Industry: Techniques & Importance

1100 – 1230	Compliance & Regulation Update: Latest Industry Regulations & Compliance Strategies
1230 - 1245	Break
1245 – 1345	Future of Water Treatment: Emerging Trends & Future Outlook
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the latest revision of “WaterGEMS” simulator.



Course Coordinator

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