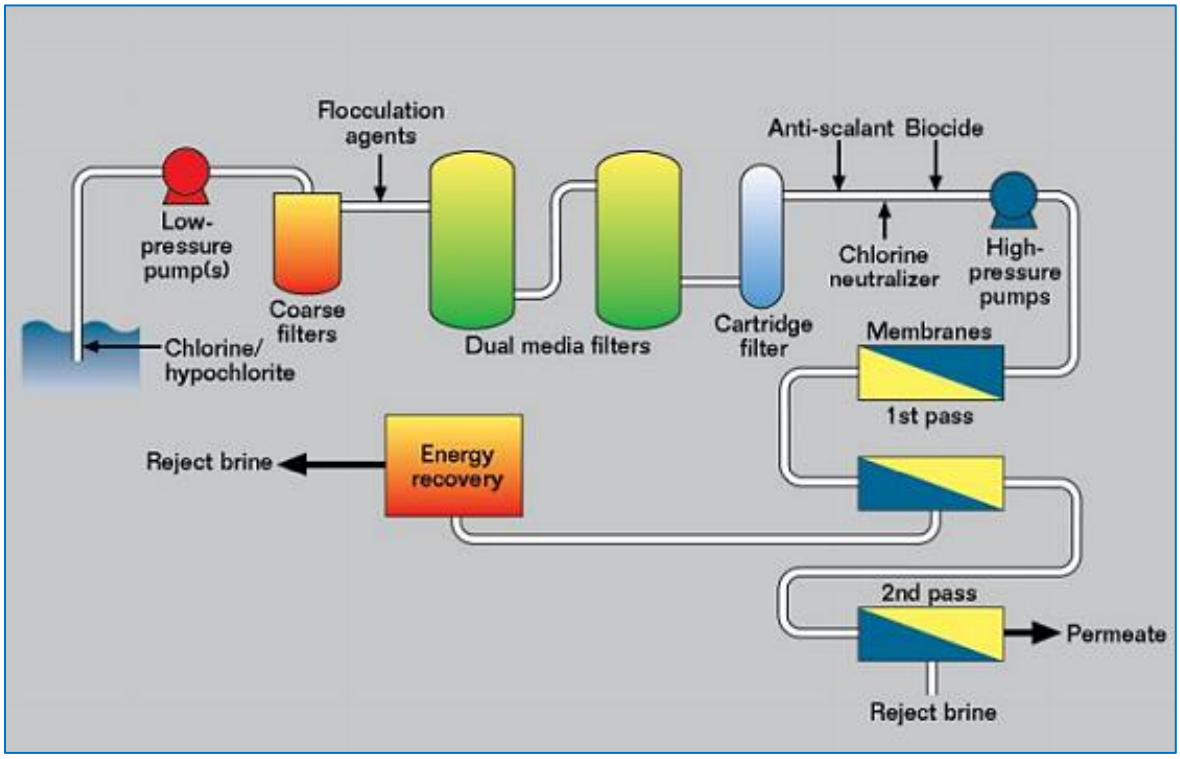
Tel No:+97126654546 | Fax No:+97126654182 | Email: training@cmc-me.com | www.cmc-me.com



WE123:
Water Desalination by Reverse Osmosis Technology

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Training Description:

Our planet's water reserves are becoming more and more of a scarce resource. Water use for a series of domestic and industrial applications is governed by regulatory compliance requirements and numerous Health & Safety and Environmental (HSE) considerations. At the same time, disposal rules are also becoming increasingly stringent and pose demanding requirements which often require and dictate water treatment. On the other hand, water is priceless and irreplaceable. Every single drop needs to be managed carefully and sustainably.

Drinking water reserves are being depleted faster than the respective replacement and/or regeneration. This is another critical sector that needs careful management and raises once more the need for treatment. Reverse Osmosis (RO) Desalination provides answers to all the above challenges. The areas covered in this training course is the use of RO desalination in drinking water production, dialysis water production, landfill leachates treatment, production of ultrapure water in the pharmaceutical industry, polishing of water used in the cosmetics and detergents manufacturing industry, etc.

Training Objectives:

By the end of the training, participants will be able to:

- ✓ Understand the global water scarcity problem
- ✓ Develop their skills in assessing water quality
- ✓ Learn how to choose the proper water treatment technique
- ✓ Understand the principles of Reverse Osmosis
- ✓ Apply decision rules on the management of RO water

Personal Benefits:

- ✓ Develop their skills in effectively assessing the fitness-for-purpose of water for different uses
- ✓ Enhance their knowledge in relation to the composition of water
- ✓ Understand the meaning and significance of the physical, chemical and microbiological properties of water, and especially RO water
- ✓ Improve their troubleshooting ability and self-confidence during on-site inspections
- ✓ Understand the principles behind membrane treatment processes

Organisational Benefits:

- ✓ Acquiring expertise in the overall assessment of the water quality in different applications
- ✓ Developing the ability to decide on the water treatment techniques to be used
- ✓ Understanding the benefits and limitations arising from the use of RO desalination
- ✓ Enhancing the ability to combine RO desalination with other water treatment techniques
- ✓ Developing awareness on water quality monitoring programmes involving RO water
- ✓ Learning how to deal with problems arising from the improper use of RO water

Training Designed for:

This course is intended for Hygiene Inspectors, Chemical and Environmental Engineers, Process Engineers and Process Chemists working in RO plants, Drinking-Water Quality Regulators and Water Quality Consultants.

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Training Requirement:

"Hand's on practical sessions, equipment and software will be applied during the course if required and as per the client's request."

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- GLOBAL WATER CONSUMPTION FACTS
  - Global demand and supply figures – The Water Cycle
  - Water uses in different sectors
  - Water scarcity and quality issues
  - The need for Water Treatment
  - Technologies used in Water Treatment

DAY TWO:

- WATER TREATMENT TECHNIQUES
  - Membrane techniques in water treatment
  - Reverse Osmosis (RO) desalination and its applications
  - Source water quality considerations & risks
  - Source water options and intake configurations
  - Design of RO Desalination Plants – Process Flow Diagram

DAY THREE:

- BASIC DEFINITIONS IN RO DESALINATION
  - RO Membrane types
  - Pore size, Rejection, flux, osmotic pressure, salt passage, concentration polarisation
  - Front and back permeate
  - Biofouling and scale deposition
  - The Silt Density Index (SDI)

DAY FOUR:

- OPERATION AND MAINTENANCE OF RO PLANTS
  - Pretreatment: Membrane/granular media filtration, gravity filters
  - Reverse Osmosis Section: High-pressure pumps, RO trains/configurations, Energy Recovery
  - Concentrate Disposal: Open Sea/On-shore Discharges
  - Post Treatment: Ion Exchange Resins, Remineralization Beds, pH Adjustment, and Disinfection
  - Product Water Storage - Maintenance Considerations

DAY FIVE:

- DOWNSTREAM MONITORING CONSIDERATIONS
  - Quality control of desalinated water
  - Interactions of RO water with distribution system

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- Control of Biofouling
- Scale Deposition Effect – The LSI & CCPP Indices
- Handling consumers complaints and enquiries
- Drinking Water Regulations and the role of RO Desalination

❖ Course Conclusion
❖ POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:
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