



WE043: Water Desalination Plant Technology



Training Description:

During the last 30 years' desalination of seawater and brackish water has become an irreplaceable Pivot of the fresh water supply to the population, industry and agriculture in many countries.

At the turn of the millennium the installed capacity in seawater desalination exceeded an amount of 25,000,000 m³ per day - theoretically an equivalent to the water demand of 150 million human beings, assuming a consumption of 150 liters per day.

Since the renewable water sources of most the countries concerned are almost exploited, the expected population and industrial growth will lead inevitably to water scarcity. Desalination of seawater is an efficient and effective option to meet the demand. According to the assessment of the experts new seawater desalination plants with a capacity of about 50 million cubic meter potable water per day will be erected during the next decade. Such a task does not only require enormous efforts in financing but also well-trained specialists for the design, erection and operation of these plants. Approximately 10,000 managers, operators and workers will be needed for plants in the future.

Recent experience has shown clearly that the availability of a desalination plants whose complexity is comparable to that of a power station or a chemical plant is closely related to the qualification of the operating staff. Low availability means reduced water production and increased water production cost.

Failures and downtimes in desalination plants can often be explained by a lack of proper understanding of the thermo- and hydrodynamic processes in and around the plant which leads to misjudgment and misoperation.

Training Objectives:

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

- ✓ Provide fundamental information on the planning and engineering of brackish and seawater desalination projects for municipal water supply
- ✓ Provide fundamental information on the types of desalination and Desalination Technologies
- ✓ Provide fundamental information on the Source of Water Quality
- ✓ Focus on reverse osmosis (RO) desalination, which at present is the most widely used technology for the production of freshwater from saline water sources

Training Designed for:

This course is intended for all fresh graduates and new employees

Training Program:

DAY ONE:

- ❖ Pre-Test
- ❖ Introduction to the Course and Ice Breaking
- ❖ Introduction & Source Water Quality Characterization:
 - Global water availability & problems
 - Terminology
 - Overview of desalination technologies
 - Source water quality & constituents





- Minerals (brackish & seawater)

DAY TWO:

- ❖ Review for Previous Day
- ❖ Thermal Desalination:
 - Overview
 - Multistage Flash Distillation (MFS)
 - Multiple Effect Distillation (MED)
 - Vapor Compression (VC)

DAY THREE:

- ❖ Review for Previous Days
- ❖ Membrane Distillation:
 - Overview
 - Electrodialysis (ED)
 - Historical information
 - Technology illustration
 - Examples Membrane Distillation
 - Test on the day Modle to be done

DAY FOUR:

- ❖ Review for Previous Days
- ❖ Reverse Osmosis (RO):
 - RO membrane structures & materials (general overview)
 - RO membranes modules
 - RO system – general description
 - Membrane desalination plant components
 - RO membrane Separation
 - RO membrane fouling
 - Types of membrane fouling
 - Organic fouling
 - Microbial fouling
 - Colloidal fouling
 - Particulate fouling
 - Microbial (Biological) Fouling
 - Desalination Plant Operations, Maintenance and Trouble shooting
- ❖ Test on the Day Modle to be Done

DAY FIVE:

- ❖ Review for Previous Days
- ❖ Planning Considerations:
 - Plant service, capacity & design
 - Intake type & location
 - Open intakes
 - Subsurface intakes
 - Product water quality





- Plant discharge
- Desalination project cost estimation
- ❖ Course Conclusion
- ❖ POST-TEST and EVALUATION

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”.

Please note that the above topics can be amended as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

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, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

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

Training Fees:

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 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session

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

Aisha Relativo: aisha@cmc-me.com

Tel.: +971 2 665 3945 or +971 2 643 6653 | Mob.: +971 52 2954615

Training & Career Development Department

