



WE125: Reverse Osmosis Technology and Maintenance

Training Description & Objective:

Process industry professionals now recognize the value that a reverse osmosis unit adds to a water system, in terms of both product quality and reduction in the recurring costs associated with membrane systems. It is surprising how poorly many reverse osmosis systems are designed and operated. Any potential operational cost savings are thrown away by excessive cleaning and replacement.

This intensive training course will give you an excellent knowledge of operation principles, layout requirements, Design, performance calculation, associated components and maintenance practices for reverse osmosis (RO) plants.

Training Designed for:

This course is intended for Utility engineers, environmental engineers, consulting engineers, technologists, technicians, chemists, Design engineers and operating personnel or anyone requiring a working level knowledge of the theory and practice of reverse osmosis plants.

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.”

Content, location and duration 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:

FIVE DAYS:

❖ Reverse Osmosis Operation and Maintenance (ROOM)

- Reverse Osmosis Overview
- Water Contamination Overview
- Osmosis & Reverse Osmosis include: Osmotic pressure, Applied pressure, NDP, water flux and salt flux
- Membranes include: seawater brackish water membrane, Hollow fiber membrane and spiral wound membrane
- Membrane Elements include: Envelopes, feed- Permeate water spacer and flow path
- Application build simulated element
- Reverse Osmosis unit operation include: POU, Single – Double pass, Recovery rate, Water flux and NDP
- Pre-treatment process
- Energy Recovery Device
- Chemical Cleaning
- Reverse Osmosis unit Maintenance

❖ Reverse Osmosis Monitoring and Troubleshooting (ROMT)

- Introduction on site-stream needed to proper monitoring such as ORP, SDI and conductivity

- Hand-held/bench instruments needed to proper monitoring such as ORP, SDI, silica, Ph and conductivity.
- Daily Monitoring such as Free & Total chlorine, Normalized Permeate Flow (NPF), Normalized Salt Passage (NSP) and Normalized Pressure Drop (NPD).
- How to use Monitoring Software for weekly trending include Start up data, Daily data and Performance trends.
- Workshop1: Monitoring & Performance (Profiling of RO data program)
- Workshop 2: Evaluating Profiling & Probing data.
- Workshop 3: Evaluating Performance
- ❖ **Optimal Design of RO System**
 - RO Membrane Parameter calculation
 - Feed Water Analysis
 - How to Read a complete water analysis report
 - Using software programs to evaluate feed waters
 - Workshop: Determine if a feed water analysis is complete and can relied on
 - Analysis that must be performed on-site
 - Evaluating Scaling Potential
 - Evaluating Non-Living fouling potential
 - Evaluating Living fouling potential
 - Good Design means low fouling
 - Lower fouling RO/NF unit design
 - Workshops for RO design
 - Summary & Conclusion
- ❖ SWRO Intake system
- ❖ RO DAF System
- ❖ RO DMF System
- ❖ RO Micro-Cartridge Filter
- ❖ RO Membrane Area
- ❖ RO Post Treatment System
- ❖ Case Studies
- ❖ 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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