

MASAR Intensive & Practical Training Course on

PRACTICAL UF-SWRO PLANT OPERATION OPTIMIZATION AND FOULING MANAGEMENT

Course Overview

The MASAR course offers independent, practical and comprehensive perspectives on various aspects of the technology applications based on over 32 years of hands-on and plant experience worldwide, mostly in the UAE, Saudi Arabia, Bahrain, Kuwait, Oman, Malta and the United States. The courses presentations, problem-solving guidelines and discussions reflect this enormous and unique combination of technical expertise, practical experience and on-site training of plant and business managers, engineers, supervisors, operators and technicians since 1983.

Technologies Covered

The course's discussions will focus on fresh, practical and proven methodologies, techniques and approaches that address major technical issues related to the operation, maintenance, monitoring and performance of seawater desalination plants utilizing UF and RO membrane processes. It will train participants on how to effectively manage membrane fouling via innovative real-time and early detection, monitoring and resolution before the plant starts to suffer irreversibly or undergo massive and unscheduled cleaning cycles, maintenance shutdowns, membrane replacements and losses in productivity, quality and overall cost effectiveness of desalinated water.

Course Format

The course's format combines formal presentations and group interactive discussions and experience-sharing to encourage proactive participation via questions, input and feedback, and maximize trainee benefits.

The last session of the day will include hands-on demonstrations of a fouled membrane autopsy, fouling inspection and identification. The day concludes with a period of open discussions among attendees and one-on-one questioning & brief consultation.

What Will You Learn & Gain?

- **KNOWLEDGE & FOCUS:** Learn how to continuously and effectively monitor, evaluate and optimize your membrane desalination plant operation, performance and O&M costs with new tools and simple diagnostic techniques to maintain your plant at the highest and most optimum level and minimize its O&M costs on a daily basis.
- **TECHNOLOGY & TECHNIQUES:** Gain an intimate look on how to use new, innovative and data-proven system monitoring and evaluation innovations and methodologies, and how to apply them at your plant.

- **INNOVATION & TOOLS:** Explore how to detect and measure any developing fouling in your UF/SWRO system in real-time and very early, usually when your plant is still seemingly producing the required, design or guaranteed flow and quality, and before any irreversible or catastrophic failures occur.
- **EXPERIENCE & PRACTICE:** Attain practical experience from exploring membrane desalination and filtration plant case histories involving hands-on investigations, in-depth analyses and problem-resolution ending in major plant performance improvements and cost savings in energy & chemicals consumption and maintenance.
- **REFERENCE & INTERACTION:** Learn how to use the attained knowledge, technology and tools to better protect your plant and your organization's investment while developing and strengthening your own personal and professional career.
- **PARTICIPATION & INTERACTION:** Interact with group discussions, experience-sharing, problem-solving and one-on-one consultations to maximize your efficiency and productivity.



Who Should Attend?

This practical and intensive training course is especially designed for membrane-based water desalination and purification plant superintendents, engineers, operators, and maintenance technicians with varied levels of field experiences, technical background and field training. Recommended level of experience is 1-5 years direct involvement in day-to-day plant operations. What you learn from the MASAR Course experience will not be anything you could be taught by your standard classroom, academic or on-line training courses. Over 500 desalination industry professionals have been trained by MASAR courses and workshops led by Eng. Saad since 2002, and hundreds more as part of his job functions at various companies such as DuPont, ACWA Power and its project companies.

Course Instructor

The MASAR course will be conducted by Eng. Mohamad Amin Saad, President and Principal Consultant & Trainer of MASAR Technologies, Inc., with head offices in the United States. Eng. Saad, one of the water desalination industry's leading and most recognized and experienced experts and trainers, has extensive field, technical and business expertise and

field training experience in the water desalination and membrane technology industry totaling over 35 years, especially in designing, monitoring, optimizing and trouble-shooting tens of key brackish, seawater and industrial wastewater RO, UF and other membrane plants around the globe, especially in Bahrain, Kuwait, Oman, Saudi Arabia, United Arab Emirates, Malta and the United States.



MASAR Course Instructor & Coordinator



Eng. Saad with Saudi trainees



Presenting a course certificate

MASAR Course Reviews & Evaluations

Following are trainee comments & evaluation results from past MASAR courses/workshops:

1. "The overall presentation was so clear and beneficial", Ahmed A. T., Oman.
2. "The program was very effective, relevant, and well designed", Ifran A., India.
3. "The instructor has high knowledge of fouling to help me troubleshoot my plant", Ali. A., SWCC, KSA.
4. "The course was interesting and a lot of technical and practical information was gained. I want the course offered every year.", Mohammad A. Z., MARAFIQ, KSA.
5. "The course content, topics and instructor were excellent", Majeed A. H., EWA, Bahrain.
6. " Enjoyed the ability to discuss individual concerns with Eng. Saad", Chee L. F., Australia.
7. " Relevant subjects and examples pertaining to my current work", Koh H. Y.Y, Singapore.

Sample Evaluation Statistics

Based on 3 IDA Congress workshops (Bahamas, Singapore & Dubai, UAE, and 6 MASAR courses (Bahrain, Oman, Saudi Arabia, UAE & USA).

Percentage of evaluation responders/total no. of attendees: 81.9%	185/226
Category	Avg. Score
Training highly, reasonably or fairly met its stated objectives & my training needs	90%
Presentation quality	85%
Quality & usefulness of technical material	81%
Experience & knowledge of Instructor	87%
I would recommend or attend a future training workshop/course	90%
Overall value, relevancy & cost benefit of workshop/course	87%









MASAR Course CD-ROM

MASAR SPECIALIZED COURSE AGENDA

PRACTICAL UF-SWRO PLANT OPERATION OPTIMIZATION AND FOULING MANAGEMENT

Instructor: **Eng. Mohamad Amin Saad**

WELCOME, INTRODUCTIONS & AGENDA/CD REVIEW	0830–0845
I. PRACTICAL PLANT OPERATION OPTIMIZATION - I	0845–1030
<ul style="list-style-type: none"> ❖ Optimization Considerations & Criteria <ul style="list-style-type: none"> • Achieving maximum attainable conversion • Minimizing chemical & energy consumptions • Managing membrane additions, replacements & rejuvenation • Optimizing RO membrane cleanings 	
 <i>SESSION BREAK</i> 	1030–1045
II. PRACTICAL PLANT OPERATION OPTIMIZATION - II	1045–1145
<ul style="list-style-type: none"> ❖ UF Integration, control philosophy & criteria <ul style="list-style-type: none"> • Optimizing design & operational integrity with RO • Optimizing UF maintenance cleans 	
 <i>LUNCH BREAK</i> 	1145–1300

III. MEMBRANE PLANT FOULING MANAGEMENT	1300–1500
<ul style="list-style-type: none">❖ Membrane fouling potential, types & sources❖ Identification of classic types of fouling:<ul style="list-style-type: none">• Biological fouling• Organic & TEP fouling• Colloidal fouling❖ Performance evaluation & monitoring<ul style="list-style-type: none">• Trending - ASTM Standard normalization• Real-time fouling detection, measurement• UF/MF Permeability Monitor & SWRO/NF Fouling Monitor• SMART[™] technology & MASAR[®] software solution demonstration<ul style="list-style-type: none">➤ Fouling & non-fouling UF-SWRO plant case studies	
 <i>SESSION BREAK</i> 	1500–1515
IV. PLANT & MEMBRANE DIAGNOSTIC DEMONSTRATIONS	1515–1630
<ul style="list-style-type: none">❖ Seven golden troubleshooting rules - seven signs of trouble❖ Seven practical diagnostic techniques❖ Membrane autopsy & fouling inspection demonstration	
IV. OPEN DISCUSSION, FEEDBACK & QUESTIONS	1630–1700
V. CERTIFICATE AWARDS & CONCLUSION	1700