

Mohamad Amin Saad

**Expert Process Design,
Operation & Performance
Consultant & O&M Trainer**

*Water Pretreatment & Desalination
Membrane Technologies (RO/UF)*



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 MASAR360 (@masarconsulting)

 MASAR-Technologies-Inc

Career Focus ▾

- ❖ Membrane & pretreatment system technology application, process design, membrane desalination plant startup, commissioning, testing, operation and performance monitoring, evaluation, optimization, trouble-shooting, and developing and utilizing innovative and customized plant performance technology and software solutions for seawater, brackish desalination & industrial wastewater treatment and purification technologies using membrane technology processes (RO, NF, UF, MF) and others.
- ❖ Applied and pilot research, product development & optimization, feasibility assessment, evaluation and techno-commercial development of new, innovative, patentable and promising membrane and non-membrane technologies, products and process applications, especially for sea water desalination and water reuse utilizing renewable energy resources, to continually minimize energy and chemicals consumption, drive to more environmental friendliness and minimize the total cost of water production for various applications and industries. This includes performing comprehensive technical and market commercial diligence, feasibility and cost studies especially for new startups, innovative and promising technologies, processes and products and investable enterprises, especially for seawater desalination and energy production and optimization.
- ❖ Actively seeking strategic partnership with a progressive and innovative water desalination technology company, IWPP, desalination plant control & instrumentation company or water technology focused venture capitalist/investor to promote, market and acquire/sub-license (*exclusively or semi-exclusively*) our real-time, early-warning and universally-applicable analytical **SMART™** technology and **MASAR®** expert software solutions for monitoring, evaluating, troubleshooting and optimizing the operational efficiency and true performance characteristics, as well membrane fouling and scaling detection, measurement and effective management for membrane-based water desalination, filtration and purification plants utilizing RO, NF, UF and MF processes. Interested parties please email me at smart@masar.com for a copy of Business Case.

Experience ▼

- ❖ A recognized international expert and independent consultant with 35 years of professional, plant design, consulting, membrane desalination pretreatment and membrane system evaluation, monitoring, troubleshooting, optimization, membrane fouling early detection (*including on-site membrane autopsies and profiling*), monitoring and effective management.
- ❖ Developing, applying and marketing an innovative and unique **Silent Membrane Alarm in Real Time (SMART™)** technology & **Membrane Alarm System and Automated Reporter (MASAR®)** software systems) for real-time system operational efficiency, performance and cost-effectiveness monitoring, evaluation, and optimization, and early detection, monitoring and management of membrane fouling systems.
- ❖ Experienced in fast-track technical and business development project management, RO/UF process and engineering design review applying international standards and best industry practice, performing and verifying engineering calculations & mass balances, reviewing P&IDs, equipment and material selection, quality control, and monitoring plant construction progress and commissioning activities, attending Factory Acceptance Tests (FATs), and supervising Site Acceptance Tests (SATs).
- ❖ Worked on several high-profile projects for prominent international and multi-national companies and clients including Independent Water & Power Project (IWPP) developers, regional governmental and private water and electricity utility authorities & organizations and global technology research conglomerates.
- ❖ Conducting advanced, specialized and practical technology training, as well as designing and supervising comprehensive and long-term training programs for water desalination plant's engineers, supervisors & operators, as well as industry professionals of various backgrounds, needs and levels of experience.
- ❖ Experienced in business & market development and commercialization of new and innovative products, systems, processes and technologies involving RO & UF membrane desalination and pretreatment technologies worldwide.
- ❖ Developing experience in designing and supporting regulatory permitting of new and special water desalination projects in California, working with Federal, state and county agencies to ensure full compliance with established and applicable environmental regulations, guidelines and procedures.
- ❖ Proven ability to combine technical, business & commercial responsibilities, consultants and government & private business client networking and close coordination, as well as utilizing existing and available internal and external resources for leading business development effort and delivery of desalination and water treatment projects, in multi-national, diverse, high-pressure environments. US, European and Middle Eastern markets are of prime interest.
- ❖ Served as lead technical English-Arabic documentation translator, training interpreter and inter-cultural liaison and consultant. Projects successfully executed include training 3 groups of Middle East oil & gas industry engineers and operators, sponsored by a major US pipeline construction and maintenance equipment company in Europe, and participating in a landmark software machine translation, testing, population and localization by a prominent American educational and academic institute.

Career Accomplishments



1996 – Present

MASAR Technologies, Inc., Tucson, Arizona - USA
Founder, President & Principal Consultant & Trainer

- Technical consulting and business development in the area of membrane technology applications for drinking/potable and industrial water desalination & purification. Expertise includes project and proposal development, process design, performance evaluation, start-up, optimization & trouble-shooting of membrane system operations.
- ✓ Projects completed successfully in the Arabian Gulf include one-year expert consulting and training services at one of the world's largest and longest running SWRO plants in the UAE (170,000 m³/day), owned by a international major IWPP developer suffering from chronic iron and organic fouling and resulting in upgrading the operational efficiency, resolving the fouling situation and performance optimization and developing effective membrane cleaning regimes. Other projects include trouble shooting of 160,000 m³/day Al-Buraidah Brackish RO Desalination Plant for the Ministry of Water & Electricity, Al-Qassim Region, Saudi Arabia, the 91,000 m³/day Al Jubail Seawater RO Desalination Plant for the Saline Water Conversion Corp. (SWCC), Saudi Arabia, as well as
- ✓ evaluating, optimizing and upgrading the six Riyadh RO Brackish Plants in Saudi Arabia, totaling 206,000 m³/day in capacity for the Riyadh Water & Sewage Authority.
- Developing, testing and marketing innovative technologies and software applications such as the first real-time **SMART™** membrane system performance and fouling detection & measurement technology, developed exclusively as the basis for the **MASAR®** software systems for reliable, real-time, and early-warning monitoring of plant performance and detection of fouling/scaling development in water desalination membrane systems.
 - ✓ The innovative system has been independently examined and validated by E. I. DuPont's PERMASEP® PRODUCTS, USA, which subsequently issued a Formal letter of approval and recommendation for its use in RO plants as an early warning if membrane fouling is occurring (*copy available on the web site*). It has also been tested at more than 25 strategic membrane desalination plants in the Middle East, USA, Malta and Australia. Custom **MASAR®** software systems were licensed to and/or installed at SWCC's and ARAMCO's SWRO & BRO plants in Saudi Arabia and at a South Australia Water Corp.
- Expert technical consulting on the technical feasibility and empirical trials of an innovative sea-to-fuel membrane desalination projects with a major global internet and solutions provider.
- Conducting independent technical and commercial feasibility and evaluation studies, patent and process design reviews, costing analysis and applicability, chartering future outlook and planning realistic road maps of promising new water desalination and membrane technologies and products for prospective end users and investors.

- Designing and conducting advanced *Membrane Desalination Technologies in Practice, Fouling & Plant Operation & Maintenance* training workshops and courses for plant operators, engineers and supervisors. Trained over 700 professionals in conjunction with IDA Congresses on Desalination and Water Re-use since 2002, with the European Desalination Society's (EDS) EuroMed & Desalination and the Environment Conferences, with the annual Saudi Water & Power Forum and the Middle East Desalination Research Center (MEDRC). Specialized training courses were also designed and conducted for various public and private water and power authorities and organizations, project developers worldwide.



ACWA Power International

2008 – 2013

Riyadh-Jeddah, Saudi Arabia & Barka, Oman

Sr. Manager, Desalination Technologies & Training, ACWA Power International

- ✓ As Operations Manager (February 2010 - August 2012) reporting to the Board of BOWAREGE, an ACWA Power project company in Saudi Arabia, owner of the world's largest and most innovative mobile seawater desalination plants, helped within 30 months turn around the project into successful and stabilized operation, availability, performance and commercial viability, effectively resulting in doubling the company's operational revenues and bringing it into profitability, which earned it industry and world credibility and recognition as the recipient of the 2011 Saudi Water & Power Forum's Award for Innovation.
- ✓ As Technical/Engineering Director and Commissioning Manager for a new, fast-track and very challenging SWRO Project (IWP), led the effort of overseeing and coordinating the engineering and design & documentation review and approval process on behalf of the owner for a 45,000 m³/day RO desalination plant owned and operated by a project company in Oman. Responsibilities included:
 - ✓ Strict enforcement and guidance of international and industrial safety standards.
 - ✓ Supervision of internal team reviews of all aspects of plant design, application of best engineering and industry standards and overall technical consulting and oversight.
 - ✓ Close management, monitoring of and coordination with EPC contractor.
 - ✓ Interface with client and client's Engineer in order to deliver the project safely, on schedule and on budget.
 - ✓ Establishment and management of project's document control system from the initial Limited Notice To Proceed (LNTP) to post-COD approval and delivery of As-Built Drawings by the EPC and compilation of the Construction Punch List.
 - ✓ Led and coordinated all plant's commissioning activities related to compliance with engineering design, SATs, Acceptance Tests and certifications, as well as monitoring activities by client's Engineer on site.
 - ✓ Provided leading pre-bid project technical consulting and advisory services over one year that played a key role in establishing credibility with the prospective client and eventually winning the project on a non-bid, direct negotiation basis.

- ✓ As Training Consultant & Project Director (November 2008- January 2010), led the effort to setup the first in-house fresh engineers training program, as well as setting up the *Higher Institute for Water & Power Technologies* in Saudi Arabia, the world's only diploma-certified water desalination and power generation polytechnic institute to train Saudi high school graduates as plant operators and maintenance technicians. The institute has now been operational since 2010 with over 800 trainees.



BIOSPHERE2® PROJECT-DECISION INVESTMENTS

1993-1996

Oracle, Arizona-USA

Director of Technical Marketing

- Development, optimization and marketing of innovative environmental applied research, technologies and products, such as indoor air purification system (Airtron®) and management of commercial testing and healthcare laboratory information systems (LIMS). Also led the effort of monitoring, upgrading, optimizing and trouble-shooting Biosphere2®'s water and wastewater treatment & CO₂ abatement systems, as well as designing, implementing and monitoring the Biosphere2® environmental waste management compliance plan.



AQUA-CHEM, INC.

1991-1993

Milwaukee, Wisconsin - U.S.

Development Manager, Membranes

- Key leadership in introduction, development and marketing of RO membrane process technology as a new strategic business direction for the company to integrate with other established technologies in order to maximize the company's technical and commercial competitive position in the industry.
- Pursued opportunities for large-scale commercial applications of membrane processes in the U.S., South America, Europe and the Middle East, especially in non-traditional and difficult areas such as industrial wastewater treatment and Zero-Liquid Discharge (ZLD) applications.



E.I. DUPONT CO. - PERMASEP® PRODUCTS

1983-1990

Saudi Arabia, UAE - Middle East, Europe & USA

Senior Technical Marketing Specialist

- Providing technical and marketing leadership in applying hollow fine-fiber and spiral membrane technology in water desalination and industrial treatment systems.
- Provided detailed process design reviews, designing and conducting pilot research studies and field trials of new products and existing product optimization, plant startup assistance and performance monitoring and evaluation of strategic RO systems employing polyamide HFF membranes in the Middle East, which constituted

about 70% of DuPont's RO membrane business worldwide. Major customers included government agencies, oil companies and the process industry.

- Spearheaded the technology marketing effort to establish new markets in highly competitive and challenging environments utilizing strategic business partnerships with international licensees, consultants and end users.
- Played a vital role in establishing and supporting marketing strategies to maintain DuPont's leading market presence, establish new markets and increase market share through a diverse network of international licensees, especially in the Middle East, Indian Sub-continent, Mediterranean and Europe.

Educational Background ▼

- B.S./M.Sc. Chemical Eng.–Georgia Institute of Technology, Atlanta, Georgia, USA.
- B.S. Chemistry – American University in Cairo, Egypt.

Personal Skills ▼

- Exceptional problem-solver, multi-tasker, organizational & negotiator.
- Multi-cultural diversity, client focus, prioritization and attention to detail.
- Highly innovative, Self-motivated, success-driven and results-oriented.
- Self-starter and hands-on project manager, with ability to work well under pressure, tight deadlines and changing environments.
- Technical and business proposal writing, presentations & coordination.
- Well-versed in computer software & tools (MSOffice, PowerPoint, Excel, Access, Adobe Acrobat, Visual Basic, HTML/Java web & graphic design).
- US citizen - near-native speaker of American English and native Arabic speaker in several regional dialects with vast bilingual technical, literary and communications skills.

Personal Interests ▼

- Photography, poetry & calligraphy artwork.
- International travel, political history & current world affairs.

Professional Associations & Collaborations ▼

1. International Desalination Association (IDA), USA.
2. European Desalination Society (EDS), Italy.
3. Middle East Desalination Research Center (MEDRC), Sultanate of Oman.
4. Water Desalination & Reuse Center, King Abdullah Univ. of Science & Technology (KAUST), Kingdom of Saudi Arabia.
5. Arab Science & Technology Foundation (ASTF), United Arab Emirates.

Professional Publications ▼

1. Saad, M.A., "The SMART Solution to Membrane Fouling Detection, Monitoring & Management", presented at and published in the proceedings of the *IDA World Congress on Desalination & Water Reuse*, San Diego, California, USA, Aug.-Sept. 2015, IDA, Massachusetts, USA.
2. Saad, M.A., "Overview & Trends of Membrane Desalination Technology & Privatization in MENA Region", presented at and published in the proceedings of the *IDA Conference on Desalination & Sustainability*, Casablanca, Morocco, March 2012, IDA, Massachusetts, USA.
3. Saad, M.A., Nada, N., Bajunaid, A., Smaili, A. K., Blazevski, M., Senior, D., Hagmayer, G., "Performance History of UF Membrane Pre-Treatment of Floating Barges' Red Sea RO Desalination", presented at and published in the proceedings of the *IDA World Congress on Desalination & Water Reuse*, Perth, Australia, September 2011, IDA, Massachusetts, USA.
4. Saad, M.A., Bajunaid, A., "Barge-Mounted Desalination Solution: From Emergency Domestic Supply to Disaster Relief", presented at and published in the proceedings of the *IDA Conference on Desalination Industry Action for Good*, Portofino, Italy, May 2011, IDA, Massachusetts, USA.
5. Saad, M.A., "Evaluating Pretreatment SDI Versus Real-time Membrane Fouling Monitor as SWRO Fouling Indicators", submitted for presentation at and publication in the proceedings of the *IDA World Congress on Desalination & Water Reuse*, Dubai, United Arab Emirates, October 2009, IDA, Massachusetts, USA.
6. Saad, M.A., "Real-Time Monitoring of Membrane Fouling", *Waste & Energy Thailand*, March-April 2008, TechnoBiz Communications Ltd., Bangkok, Thailand.
7. Saad, M.A., "Quenching a Thirst for Desalinated Water Technology, *An Overview of The IDA World Congress on Desalination & Water Reuse, Mas Palomas, Canary Islands, Spain*", *Water & Wastewater International Journal*, Vol. 22, Issue 6, December-January 2007, PennWell, Oklahoma, USA.
8. Saad, M.A., "Word of the Expert: Water Privatization in the Arab World – *Issues & Solutions*", *Arab Water World Journal*, Part 1: January 2007, Vol. XXXI No. 1, 96; Part 2: February 2007, Vol. XXXI No. 2, 96, Chatila Publishing House, Lebanon.
9. Saad, M.A., "Event Review: Jeddah Water & Power Forum 2006 – *Opportunities & Solutions*", *Arab Water World Journal*, February 2007, Vol. XXXI No. 2, 80, Chatila Publishing House, Beirut, Lebanon.
10. Saad, M.A., "Pushing The Limits: Optimizing Membrane Plants Via Correlating Fouling with Critical Flux", presented at and published in the proceedings of the *International Desalination Association's Congress on Desalination & Water Re-use*, Singapore, September 2005, IDA, Massachusetts, USA.
11. Saad, M.A., "Membrane Desalination for the Arab World – *Overview & Outlook*", presented at the *First Forum on Water Desalination and Purification Technology Outlook for the Arab World* held by the Arab Science & Technology Foundation, Marrakech, Morocco, May 29-30, 2004. *Arab Water World Journal*, January-February 2005, Vol. XXIX No. 1, 29, Chatila Publishing House, Beirut, Lebanon.
12. Saad, M.A., "Early Discovery of RO Membrane Fouling and Real-Time Monitoring of Plant Performance for Optimizing Cost of Water", presented at and published in the

- proceedings of *EuroMed 2004 Conference on Desalination in Southern Mediterranean Countries*, Marrakech, Morocco, May 30-June 2, 2004. *Desalination* 165 (183-191), February 2004, Elsevier Science Publishers, Amsterdam, The Hague.
13. Saad, M.A., "Manufacturer's Case Study: Smart Software Optimizes Membrane Plants" –*International Desalination & Water Reuse Quarterly*, August/Sept. 2003, Vol. 13/2, pp. 45-49, Faversham House Group Ltd., UK.
 14. Saad, M.A., "Fresh Water for All: Status, Impact & Future Of Desalination In The Middle East & Mediterranean Countries", *Arab Water World Journal*, July-August 2003, Vol. XXVII No. 4, 65, Chatila Publishing House, Beirut, Lebanon.
 15. Saad, M.A., "Desalination for a Better Future: The Technologies & The Innovations", *Arab Water World Journal*, May/June 2002, Vol. XXVI No. 3, 33-35, Chatila Publishing House, Beirut, Lebanon.
 16. Saad, M.A., "New Innovations in the Global Desalination Market", *Water Conditioning and Purification Magazine*, 1997, 60-64, Publicom, Inc., Tucson, Arizona, USA.
 17. Saad, M.A., Joseph Richardson, "Real-time Membrane Fouling Monitoring – A Case History", *proceedings of the World of Water Conference*, Las Vegas, Nevada, USA, December 10-12, 2001. Also excerpted in *Industrial WaterWorld Journal*, Case Studies, January 2002, PennWell, Oklahoma, USA.
 18. Saad, M.A., "Waters from Another World", *International Desalination Association News*, Volume 8, Issue 11-12, Nov./Dec. 1999, IDA, Massachusetts, USA.
 19. Saad, M.A., "Optimize Water Cost by Early Prediction of Membrane System Fouling Trends", *proceedings of the International Desalination Association's 1999 World Congress on Desalination and Water-Reuse*, August 30-September 2, 1999, San Diego, California, USA, IDA, Massachusetts, USA.
 20. Saad, M.A., "Biofouling Prevention in RO Polymeric Membrane Systems", *proceedings of NWSIA's 1992 Biennial Conference on Desalting and Recycling*, August 1992, Newport Beach, California. Also published in *Desalination*, 88 (1992) 85-105, Elsevier Science Publishers, Amsterdam, The Netherlands. Reprinted for *Water Quality Association* credit in *Water Conditioning & Purification Magazine*, 36 (1995) 58-68, Publicom, Inc., Tucson, Arizona, USA.
 21. Saad, M.A., "Pretreatment Requirements for Industrial Wastewater RO/Evaporator Systems in Zero Liquid Discharge Applications", *proceedings of Watertech '91 Conference*, San Jose, California, November 1991. Also published in *Industrial Water Treatment*, 24 (1992) 18-28, and abstract published in *UltraPure Water*, Nov. 1991, Tall Oakes Publishing, Colorado, USA.
 22. Saad, M.A., M. Al-Arrayedh, B. Erickson, H. Yoshioka, "Reverse Osmosis Desalination Plant, Ras Abu Jarjur, State of Bahrain - Two Years Operational Experience for the 46,000 m³/day RO Plant", *proceedings of the International Desalination Association's World Congress on Desalination and Water Reuse*, Cannes, France, 1987, IDA, Massachusetts, USA. Also published in *Desalination*, 65 (1987) 197-230, Elsevier Science Publishers, Amsterdam, The Netherlands.
 23. Saad, M.A., "Permassep[®] RO Plant Operating and Performance Experience in the Middle East", *proceedings of the Fourth Arab Water Technology Conference*, Dubai, UAE, October 1986.