



Business Information
In A Global Context

Desalination O&M 2011

Lifecycle optimisation: strategies to capitalise on the expected surge
in O&M responsibility and unit profitability

24-25 January 2011 | Millennium Hotel, Abu Dhabi, UAE

Up to
10.5 CPD

Hear from our unparalleled faculty:

SALINE WATER CONVERSION COMPANY
EGYPTIAN ELECTRICITY HOLDING COMPANY
GALASA
EVIDES
AZALIYA
EMIRATES POWER COMPANY
SAWACO
BAHRAIN MINISTRY OF ELECTRICITY
AND WATER
ILF CONSULTING
KWR WATER
MASDAR INSTITUTE OF SCIENCE
& TECHNOLOGY
UAE FEDERAL ELECTRICITY AND WATER
AUTHORITY

Significantly improve the success of your Desalination O&M programme by:

- Developing robust, scalable and flexible O&M procedures to easily integrate with constant innovation in desalination technology
- Dramatically improving the operational performance of MSF/MED thermal desalination units, while reducing O&M costs
- Best practices for monitoring and optimising chemical dosing systems to reduce fouling and enhance operations
- Interpreting and utilizing actual plant performance for operational cost-effectiveness: experiences at Al-Jubail Desalination Plant
- Ensuring process optimisation and minimising downtime through effective diagnostics of equipment and instrument failure
- Focusing on reliability and sustainability: moving from capital costs to lifecycle costs

Day One Chaired by:

Sjack Van Agtmaal, Manager Water Processes, EVIDES

Plus, a Case Study on:

Operational Experience of Bajo Almanzora Plant from Spain

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Water supply is critical in the Gulf Region and with this comes big business opportunities. Although new projects have dominated the headlines in recent years, those of us in the industry realize that it is now time to focus our attention on O&M in order to deliver more water at lower costs with cutting edge asset management strategies. As desalination plants age, we need to evaluate and ultimately invest in new technologies, in order to minimise downtime and to extend the lifecycle of these plants. We need to build on innovative O&M successes to increase reliability and improve profit margins. Most of all, we absolutely need to be proactive and not reactive when maintaining our plants and we need to solve the challenges of component obsolescence and chemical optimisation – and that is just the beginning.

In light of this increased but welcome pressure, C5 is proud to present the inaugural **Desalination O&M 2011** conference, developed by O&M professionals for O&M professionals and the only conference dealing specifically with our challenges and where key O&M experts from EMEA will share their experience and insights to help you manoeuvre through 2011 and beyond. Come to hear specially tailored case studies on:

- How to develop a complete asset management programme comprising all elements necessary for long term plant operations
- Increasing investment in training people to develop and operate desalination technology
- Understanding the fouling potential of sea water in the Gulf Region and determining how this impacts on pre-treatment design
- Best practice methods of monitoring and optimising chemical dosing systems
- The multiple pros and cons of co-current versus counter current operation of AWC
- Enhancing the part load operation performance of Multi Stage Flash (MSF) desalination plants

Don't miss our unique session on:
Effective Utilisation of MSF Desalination Plant Design Capacity
by **Mohammad Ahsan**, Senior Engineer, SWCC

You simply cannot afford to miss the ONE conference your peers, colleagues—and competitors—will be attending alongside the heavyweights of the water industry. Join us at our inaugural **Desalination O&M 2011** conference for an unparalleled learning and networking opportunity.

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Desalination O&M 2011 is a must for anyone involved in O&M of Desalination plants in the EMEA including:

- Engineers
- Operation Managers
- Plant Managers
- Water Agency Managers
- Academics
- Consultants
- Government Officials
- Scientists
- Water and Wastewater Utility Officials

FACULTY AT A GLANCE

Mohammad Ahsan
Senior Desalination Engineer
SALINE WATER CONVERSION
COMPANY (SWCC)

Chip Harris
Chief Technology Officer
AQUALYNG HOLDING AS

Mohamed Ismail
EGYPTIAN ELECTRICITY HOLDING
COMPANY

Emile Cornelissen
Senior Scientific Researcher
KWR WATER

Agustin Beledo
Plant Manager, GALASA

Nizar Kammourie
General Manager, SAWACO

Evginey Muralev
Deputy Director for Science, MAEC

Sjack Van Agtmaal
Manager Water Processes, EVIDES

Corrado Sommariva
Senior Consultant, ILF CONSULTING

N.B Krisnan
Head of Operations of Power
and Desalination Plants
EMIRATES POWER COMPANY

Hassan Fath
Professor of Practice, MASDAR
INSTITUTE OF SCIENCE & TECHNOLOGY

Stefan Ryber
Managing Director, AQUA-CONSULT FZE

Ahmed Hashim
Manager, Addur SWRO Desalination
Plant, MINISTRY OF ELECTRICITY
AND WATER, KINGDOM OF BAHRAIN

Parmod Budhiraja
Engineer and Chemical Treatment
Specialist, UAE FEDERAL
ELECTRICITY AND WATER AUTHORITY

Frederic Fleury
Commercial Director, AZALIYA



DAY ONE – MONDAY, 24TH JANUARY

08:30 Registration and Coffee

09:00 **Chair's Introductory Remarks**

Sjack van Agtmaal
Manager Water Processes
EVIDES

09:10 **Desalination Asset Management: A Complete Picture**

Chip Harris
Chief Technology Officer
AQUALYNG HOLDING AS

The life cycle of most mechanical and I&C systems is of continuous interest to those who manage both large and small scale systems, but what of the management of "soft" assets for these systems, such as the operations personnel, data tracking and system performance? These are also assets which have a system "life cycle" value, in terms of information, training and experience.

A complete "asset management" program should contain all elements necessary for the long term operation of the facility, inclusive of hard and soft asset management. This presentation will address such items as:

- Physical asset management systems
 - asset tracking using new technology
 - maintenance tracking and personnel interfaces
 - inventory control for asset management
- Personnel asset management systems
 - what training and information updates are available?
 - what technical expertise is present for grading and advancement?
 - how do we enhance and store core knowledge?
 - leading the way with core value management
- Co-ordination of asset management systems
 - what is the interface between personnel and IT?
 - using external resources for asset management
 - agreeing services agreements and asset care with O&M providers

10:00 **How to Organise OPEX Savings in a RO Plant**

Frederic Fleury
Commercial Director
AZALIYA

The optimisation of Operation Costs (OPEX) of a RO desalination plant is a key target on which Azaliya is mastering the process. This presentation will give a detailed comprehension of the process and a strict methodology and organisation covering all OPEX aspects, which can lead to significant savings as shown using the example of the Sur Desalination Plant.

10:40 Morning Refreshments

11:10 **Structuring Efficient O&M Regimes in Private RO Plants**

Nizar Kammourie
General Manager
SAWACO

- Building on O&M capabilities as a prime element in securing privately financed desalination schemes
- Sawaco case study: what is the best practice in building efficient O&M teams?
- What is the O&M role in extending lifetime of desalination plants?
- Using O&M as an important tool in building the water production around customers' needs
- Integration of QA/QC procedures into the routines of O&M
- Developing and adapting O&M procedures in line with new advances in desalination technologies
- Conclusions and recommendations of our research to date

11:50 **Areas of Improving MSF/MED Thermal Desalination Units' Operational Performance and O&M Costs**

Hassan Fath
Professor of Practice
MASDAR INSTITUTE OF SCIENCE & TECHNOLOGY

- What are the main factors affecting MSF /Multi Effect Desalination (MED) operational performance?
- How does partial brine extraction and brine/vapour reheat affect plant performance?
- Can we develop a more cost effective pretreatment for higher top brine temperature (TBT) than nano filtration (NF)?
- How can we enhance MSF flash chamber & MED evaporator effectiveness?
- What is on-line MED tubes and MSF/MED demister on-line cleaning?
- What are the desalination R&D activities at Masdar Institute of Science & Technology?
- How do these R&D activities leads to reduction in plant O&M costs (OPEX)?

12:30 Lunch

13:45 **Ensuring Optimisation of the Chemicals in the Distillers for Seawater Intake and Pretreatment to Reduce Plant Downtime**

Mohamed Ismail
EGYPTIAN ELECTRICITY HOLDING COMPANY

- What important aspects of seawater pretreatment (filtration and chlorination) should be taken into consideration
- Best practice methods of monitoring and optimising chemical dosing systems
- What systems are in place to enhance the part load operation performance of MSF desalination plants?
- To what extent does an online cleaning system reduce demister fouling in MSF?
- Improving the chemical cleaning & brine heater condensate process

14:30 **Using Air/Water Cleaning to Control Reverse Osmosis Membrane Fouling**

Emile Cornelissen
Senior Scientific Researcher
KWR WATER

This presentation will give an overview of the development of air/water cleaning (AWC) in spiral wound membrane (SWM) elements

- What are the effects of fouling on SWM operation (biofouling, particulate fouling)?
- What methods are used to control biofouling with AWC in SWM elements?
- What methods are used to control particulate fouling with AWC in SWM elements?
- To what extent does the influence of permeation on AWC control fouling in SWM elements?
- Exploring the various pros and cons of co-current versus counter current operation of AWC
- Visualisation of AWC in spacer filled channels
- Optimisation of AWC in SWM elements (e.g. AWC frequency)

15:10 Afternoon Refreshments

15:30 **Prevention of Biofouling in Industrial RO Systems: Large Scale Operational Experiences in The Netherlands**

Sjack van Agtmaal
Manager Water Processes
EVIDES

Evides is the main water utility operator for both the municipality and the industry in Rotterdam. Evides owns and operates a number of large scale industrial plants producing demineralized water for refineries and the petrochemical industry. At a number of their plants Evides has tested different biofouling prevention techniques and control methods during normal operation of the plant.

This groundbreaking presentation will present the results of some of these methods, which have been so successful that they are now implemented in the normal operation of the plants. The operations of the plants will be discussed in detail and ongoing research in biofouling control will be elaborated.

16:10 **Effective Utilisation of MSF Desalination Plant Design Capacity**

Mohammad Ahsan
Senior Engineer
SWCC

- Using the residual available capacity for operational economy of dual purpose MSF type seawater desalination plants
- What base design has been tried and tested?
- Get the latest on warranty period operational data
- What is the variation between plant design and actual performance?
- Interpreting and using the actual performance for operational economy
- How do we apply an effective utilisation concept at the SWCC operated Al-Jubail desalination plants and what results were achieved?

16:50 **Closing Remarks from the Chair and Conference Adjourns**

DAY TWO – TUESDAY, 25TH JANUARY

08:30 Registration and Coffee

09:00 **Chair's Introductory Remarks**

N.B Krishnan

Head of Operations for Power and Desalination Plants
EMIRATES POWER COMPANY

09:10 **Operational Experience of Bajo Almanzora Plant: Feeding a Nanofiltration Plant with Surface Brackish Water and Conventional Pretreatment**

Agustin Beledo

Plant Manager
GALASA

- Plant design versus feed water type
- Pretreatment reagents selection according to membrane specifications and feed water quality
- Plant operation and analytical control strategies
- What early alert systems are used to protect the membranes?
- Chemical cleaning optimisation at Bajo Almanzora plant
- What strategies do we use to anticipate and fight biofouling?

09:50 **On-Line Diagnostics of Heat Exchange Efficiency for MED Desalination Plants**

Evginey Muralev

Deputy Director for Science
MAEC

- What are the main problems that arise during MED unit operation, and how are they overcome?
- Diagnosing different failures of desalination equipment and instruments
- Producing distillate as a primary subject for diagnostics
- Using limited information for adoption of mathematical models of the MED unit
- Selection of criteria for on-line control
- Practical results of MED effects efficiency on-line diagnostics application

10:30 Morning Refreshments

11:00 **O&M of Desalination Plants: Shifting Perspective from Capital Cost to Lifecycle Cost**

Corrado Sommariva

Senior Consultant
ILF CONSULTING

- Evaluating technologies and perspectives from the CAPEX and lifecycle approach
- What are the sensitivities towards O&M cost in technology and specification selection?
- O&M issues
 - what is the traditional approach for thermal technology?
 - costs trading CAPEX versus OPEX for SWRO
 - operator training
 - capacity building
- Technology development: what is the the way forward?
 - membrane technology versus MSF impact on O&M
 - reliability and sustainability of operation
- From manual to fully automated:
 - issues related to de-skilling
 - cost effectiveness

Strategies to cope with the expected surge in O&M responsibility over the next decade

12:00 Acid Cleaning for MSF Plant Performance Restoration and Related Commercial Issues in an Independent Water and Power Project (IWPP) Scenario

N.B Krisnan

Head of Operations for Power and Desalination Plants
EMIRATES POWER COMPANY

- What is the importance of efficient water production in the IWPP set-up?
- Planning and preparing for unscheduled outages and their commercial impact
- What are the requirements for forecasting acid cleaning period?
- How do we monitor and predict scaling and degradation?
- What is the alternate method of acid cleaning being followed at Taw A2 Plant?

12:40 Lunch

14:00 Design Considerations and Plant Performance Optimisation in SWRO Plants

Stefan Ryber

Managing Director
AQUA-CONSULT FZE

- Pre-treatment
 - what is the fouling potential of sea water in the Gulf Region and how does this impact on pre-treatment design?
 - water chemistry and chemical dosing
 - dissolved Air Flotation (DAF): what are the pros and cons for use in sea water?
 - what are the pros and cons of an Integrated Membrane System (IMS) versus conventional?
- RO System
 - selection of membranes: brief outline of main principles
 - system design principles: brief outline and comparison
 - single pass system
 - two pass system
 - conventional
 - split partial second pass
 - membrane replacement
 - when and how?
 - practical advices for membrane replacement evaluation
- Plant performance monitoring and data collection
 - importance and impact on plant life
 - typical examples

14:40 Understanding Correct Procedure for Continuous Control of the System and Maintaining Pumps

Ahmed Hashim

Manager, Addur SWRO Desalination Plant
MINISTRY OF ELECTRICITY AND WATER
KINGDOM OF BAHRAIN

- Recognising the amount of maintenance that goes towards high pressure pumps
- How do we ensure that high pressure pumps are working well?

- Following an appropriate course of action with practical examples of:
 - doing the maintenance as scheduled
 - not overloading or overflowing the high pressure pump
 - supplying customers with suitable instructions
 - directions for sensors, oil, membranes and cleaning parameters
- Looking at the specific parameters such as:
 - pressure control
 - flow control
 - intake quality control
 - STI quality measurements
 - chlorine measurements

15:20 Afternoon Refreshments

15:50 How to Deal Effectively With Concentrate Challenges in Order to Assist Maintenance

Parmod Budhiraja

Engineer and Chemical Treatment Specialist, UAE
FEDERAL ELECTRICITY AND WATER AUTHORITY

- What to do with the concentrate? How to reduce the concentrate? How to discharge the concentrate?
- Separating your feedwater into a product stream
- Insights into how to deal with the concentrate stream
- What problem do we face when limiting the concentrate stream?

16:30 Closing Remarks from the Chair and End of Conference

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AZALIYA is a joint company developed by the two parent companies of VEOLIA WATER and MUBADALA DEVELOPMENT COMPANY, to build a strategic and long term partnership gathering all water and sanitation activities of the VEOLIA Water portfolio in the Middle East and North Africa.

Dedicated to outsourcing services to local authorities and industrial clients, AZALIYA already provides water services to more than 8.5 million people and wastewater services to 5.5 million people.

AZALIYA has more than 4,500 employees working on a wide range of contracts for Public Authority as for Industries, from O&M to concession and has built several successful Public Private Partnership (water, wastewater, RO, TSE, process water,...)

This long term collaboration on future projects was made to stay at the forefront of water management technology and become the industry leader in the MENA region.

Azaliya brings together the expertise of the world leader in environmental services with the experience of the leading investment and development company in the region.

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Date: 24–25 January 2011

Time: 9:00–16:30

Venue: Millennium Hotel Abu Dhabi

Address: Khalifa Street, PO Box 44486, Abu Dhabi, UAE

Telephone: +971 (0)2 614 6000

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