

Advance Program

IDA



# Gran Canaria

Maspalomas, de Gran Canaria, Spain • **October 21-26, 2007**

World Congress on Desalination and Water Reuse



**International Desalination Association**

# **WORLD CONGRESS ON DESALINATION AND WATER REUSE**

*Desalination: Quenching a Thirst*

Palacio de Congresos de Maspalomas

Gran Canaria, Spain

**October 21-26, 2007**

## **ADVANCE PROGRAM**



*In Cooperation with*  
**Cabildo de Gran Canaria**



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Ms. Lisa Henthorne, Technical Program Co-Chair (United States)  
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## ABOUT IDA

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**The International Desalination Association (IDA)** was established in 1973. IDA is a global educational and networking association of over 1200 members in fifty-six countries committed to advancing the appropriate use of desalination technology and water reuse worldwide. IDA is associated with the United Nations as part of a growing international network of nongovernmental organizations (NGOs). Together with its regional and associate affiliates, IDA is an alliance of more than 2,000 worldwide industry leaders. IDA membership is comprised of scientists, end-users, engineers, consultants and researchers from governments, corporations and academia. IDA's global infrastructure and emphasis on information technology allow members constant access to each other and the most recent industry information at [www.idadesal.org](http://www.idadesal.org).

The IDA publishes periodicals and related information on the desalination and water reuse industry. Publications distributed to members include the bimonthly IDA News, the D&WR Quarterly, and the IDA Yearbook. IDA also publishes an on-line membership directory.

IDA is a non-profit organization holding regularly scheduled Congresses every two years with an accompanying exhibition. IDA also conducts several specialized seminars, forums and workshops in different regions of the world during the year. We work together with our regional and association affiliates to coordinate activities that are of benefit to our members.

Twenty years later, IDA continues to grow and move around the globe. A partial list of our past World Congresses follows:

- Singapore (2005)
- Paradise Island, Bahamas (2003)
- Manama, Bahrain (2001)
- San Diego, CA, USA (1999)
- Madrid, Spain (1997)
- Abu Dhabi, UAE (1995)
- Yokohama, Japan (1993)
- Washington, DC, USA (1991)
- Kuwait City, Kuwait (1989)
- Cannes, France (1987)

IDAWC- MP07  
GRAN CANARIA SPAIN

# WORLD CONGRESS on DESALINATION & WATER REUSE

## GENERAL SCHEDULE

WITH TECHNICAL SESSIONS

PALACIO de CONGRESOS  
de MASPALOMAS



| SUNDAY<br>21-Oct-07                                                                                                       | MONDAY<br>22-Oct-07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TUESDAY<br>23-Oct-07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | WEDNESDAY<br>24-Oct-07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | THURSDAY<br>25-Oct-07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | FRIDAY<br>26-Oct-07                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>IDA GOLF TOURNAMENT</p>  <p>VENUE</p> | <p>REGISTRATION OPENS: 7:30AM<br/>Co-Chairs &amp; Presenters of the day<br/>7:30AM Breakfast Meeting</p> <p><b>9AM</b><br/>OPENING CEREMONIES<br/>"Guest Speakers"</p> <p>Refreshment Break</p> <p><b>SESSION 1</b><br/>"The Spanish Experience"</p> <p>IDA LUNCHEON<br/>1:30 - 2:30</p> <p>Afternoon Sessions Running 2:30-6PM</p> <p><b>SESSION 05</b><br/><b>SESSION 15</b><br/><b>SESSION 16</b></p> <p>Refreshment Break 4-4:30PM</p> <p><b>SESSION 05 Continued</b><br/><b>SESSION 15 Continued</b><br/><b>SESSION 16 Continued</b></p> <p><b>IDA Board of Directors</b><br/>"New Board Elections"<br/>(term: 13)<br/>6-7:30PM</p> <p>OPEN</p> | <p>REGISTRATION OPENS: 8AM<br/>Co-Chairs &amp; Presenters of the day<br/>7:30AM Breakfast Meeting</p> <p>Morning Sessions Running 9:00-12:30</p> <p><b>SESSION 07</b><br/><b>SESSION 08</b><br/><b>SESSION 09</b></p> <p>Refreshment Break 10:30-11AM</p> <p><b>SESSION 07 Continued</b><br/><b>SESSION 08 Continued</b><br/><b>SESSION 09 Continued</b></p> <p>IDA LUNCHEON<br/>12:30 - 2PM</p> <p>Afternoon Sessions Running 2-5:30PM</p> <p><b>SESSION 13</b><br/><b>SESSION 19</b><br/><b>SESSION 20</b></p> <p>Refreshment Break 3:30-4PM</p> <p><b>SESSION 13 Continued</b><br/><b>SESSION 19 Continued</b><br/><b>SESSION 20 Continued</b></p> <p>IDA Membership Meeting 5:30PM</p> <p>OPEN</p> <p><b>CANARY NIGHT</b><br/>AN EVENING EVENT</p> | <p>REGISTRATION OPENS: 8AM<br/>Co-Chairs &amp; Presenters of the day<br/>7:30AM Breakfast Meeting</p> <p>Morning Sessions Running 9:00-12:30</p> <p><b>SESSION 10</b><br/><b>SESSION 12</b><br/><b>SESSION 17</b></p> <p>Refreshment Break 10:30-11AM</p> <p><b>SESSION 10 Continued</b><br/><b>SESSION 12 Continued</b><br/><b>SESSION 17 Continued</b></p> <p>IDA LUNCHEON<br/>12:30 - 2PM</p> <p>Afternoon Sessions Running 2-5:30PM</p> <p><b>SESSION 04</b><br/><b>SESSION 11</b><br/><b>SESSION 14</b></p> <p>Refreshment Break 3:30-4PM</p> <p><b>SESSION 04 Continued</b><br/><b>SESSION 11 Continued</b><br/><b>SESSION 14 Continued</b></p> <p><b>IDA Board of Directors</b><br/>"Ratification of Appts &amp; Committees"<br/>(term: 13)<br/>5:30-7PM</p> <p><b>HOSTED THEME PARTY</b><br/>AN EVENING EVENT</p> | <p>REGISTRATION OPENS: 8AM<br/>Co-Chairs &amp; Presenters of the day<br/>7:30AM Breakfast Meeting</p> <p>Morning Sessions Running 9:00-12:30</p> <p><b>SESSION 03</b><br/><b>SESSION 06</b><br/><b>SESSION 18</b></p> <p>Refreshment Break 10:30-11AM</p> <p><b>SESSION 7 Continued</b><br/><b>SESSION 12 Continued</b><br/><b>SESSION 17 Continued</b></p> <p>IDA LUNCHEON<br/>12:30 - 2PM</p> <p>Afternoon Sessions Running 2-5:30PM</p> <p><b>SESSION 02</b><br/><b>SESSION 21</b></p> <p>Refreshment Break 3:30-4PM</p> <p><b>SESSION 02 Continued</b><br/><b>SESSION 21 Continued</b><br/>ROUNDTABLE: Interactive Panel Discussions</p> <p><br/><b>CLOSING CEREMONIES &amp; AWARDS</b><br/><b>GALA DINNER</b><br/>AN EVENING EVENT</p> | <p><b>DESALINATION PLANT TOURS</b></p>  <p>(all day events)</p> <p><b>Specialized Workshop I</b><br/>Corrado Sommariva</p> <p><b>Specialized Workshop II</b><br/>David H Paul</p> <p><b>Specialized Workshop III</b><br/>MASAR Technologies</p> <p><b>Specialized Workshop IV</b><br/>MEMBRANE Consultancy<br/>Accociates</p> |

Schedule as of August 1, 2007 and is SUBJECT TO CHANGE

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## TECHNICAL PROGRAM REVIEW

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*By Lisa Henthorne and Ursula Annunziata – Technical Program Co-Chairs*

### INTRODUCTION

As we head into the second decade in the 21st century, the world's media is increasingly reflecting what we in the water business have been saying for many years – “Water shortages, along with climate change, are becoming the critical factors in



*Ms. Ursula  
Annunziata*

determining the future of our planet.” Until relatively recently, this realization, and hence all associated resources and development, had been limited to those areas of the world where water supplies had already become an issue – notably the Middle East. Of course, expertise was proliferating amongst the suppliers to these projects, but originally these were mostly, although not exclusively, in Europe and America. Now, however, it appears that hardly a country in the world is not host to a membrane or



*Ms. Lisa  
Henthorne*

thermal desalination plant, and concurrently, local expertise is growing so that many countries now have their own indigenous equipment manufacturers, at least for small plants. Naturally the larger and municipal desalination plants are designed and built using the knowledge and expertise of global consultants and plant constructors.

Since our last Congress two years ago, the areas which have shown significant growth in desalination, and have made progress in securing safe water supplies for the future, include Singapore, Australia, China, North Africa and other parts of the Mediterranean. Obviously these are in addition to the already well established markets in the Middle East, the Americas, and Spain, where projects are still advancing at a very rapid rate.

As the name of the IDA Congress implies – “Desalination and Water Reuse” with the subtitle of “Quenching a Thirst” – the importance of conserving water supplies by reuse has been recognized, and we are trying to particularly focus on the reuse aspect, side by side with direct desalination, within this conference. Another important aspect is to continually reassess progress made in renewable desalination and strategies for protecting the environment.

We hope that this Congress, by bringing together, in both oral and poster form, some major advancements and innovations within the broadest parameters of water production and management, will enable scientists and operators, economists and engineers, from both developing and developed countries, to benefit from a showcase of the most advanced water technology.

Knowledge is to be shared – time may be running out.

## THE CONGRESS

The Gran Canaria Congress will open with the first technical session highlighting some of the desalination work currently being carried out in our host country. Spain and the Canary Islands have long been globally recognized as one of the most vibrant and active areas for innovation and large project installation, and this session showcases some examples of how Spain is so successfully overcoming its water shortages. For example, the Barcelona Desalination Plant with a production of 200,000 cubic meters per day is currently the largest seawater potable reverse osmosis project in Europe and one of the largest in the Mediterranean Sea and the world. It is an excellent example of a successful collaboration between the public and private sectors – in this case the Catalanian Government, Degremont, Aigües de Barcelona and Dragados-Drace.

Another plant, also of 200,000 cubic metres per day in Valdelentisco, conceived originally for agricultural use but eventually also providing potable water, is a collaboration between public and private sectors – Acuasegura, the Ministry of the Environment, and the joint venture Ferrovial Cadagua.

However, other papers cover tertiary treated water, novel designs, the local issue of irrigation for agriculture, and even some of the history of desalination in Spain.

Biofouling in membranes is, and continues to be, a conundrum which cannot be successfully prevented. Session 2 looks at various new strategies which are currently being used in the prevention, control and investigation of biofouling, including the theoretical approach which justifies certain successful results. The topic of membrane fouling, but from the inorganic viewpoint, is continued in Session 20 – Scale Control in Membrane Systems – where a mixture of theoretical and practical assessments of both chemical and design advancements indicate that wherever there is a problem, a solution is bound to follow. Particular topics here include high silica and high phosphate feedwaters, which may be part of agricultural or tertiary treated feed supplies.

Boron has been a topic of increasing interest in the past few years as legislation has reduced permissible levels in agricultural and drinking water, resulting in boron often becoming the determining factor in the capital requirements and membrane system design – especially in seawater. Session 3 is dedicated to boron management, the first time boron has had its own session at an IDA conference.

The issue of specialized and corrosion resistant materials for use in desalination plants has long been recognized as vital for the increasingly long life cycles we require of our installations – not to mention the guarantees built into contracts. The concentration of salts and the frequent high operating temperatures create an exceedingly harsh and corrosive environment, and Session 4 will take a look at a broad range of solutions and experiences in this area.

At the design stage of a desalination plant, the available options are seemingly infinite. Session 5 concentrates on selection and optimization of the best available

technologies at the design stage, taking the critical financing of the project into consideration. Planning and optimization strategies are looked at as an essential part of the whole economics design and implementation.



Possibly the single most important factor in reducing the cost of desalinated water has been the development in energy recovery and efficiency. Session 6 highlights the fact that this continues to be true. Presentations include the existing RO installations at Perth and Hamma, waste water energy recovery at Ulu Pandan and Orange County, and some evaluations of current and novel energy recovery devices, both theoretical, practical and economical. The Affordable Desalination Collaboration (ADC) is a California non-profit organization composed of a group of leading companies and agencies in the desalination industry that have agreed to pool their resources and share their expertise in the mission to realize the affordable desalination of seawater. This group also presents some interesting impartial analysis of the contribution of energy recovery devices.

The next five sessions, 7 to 11, are dedicated to innovations. The first innovation session clearly indicates that membranes continue to be developed and refined. These developments have allowed the field of application of membranes to be broadened, while at the same time possible new applications have pushed researchers and membrane manufacturers to develop specific characteristics to fit these new applications. Session 7 presents some of the most notable advancements and enhancements, including some high temperature options, comparisons between the conventional 8" and the innovative 16" SWRO membrane, membrane distillation, nanofiltration enhancing thermal processes, and other novelties.

The second of the innovation sessions addresses thermal desalination. Although thermal desalination has been with us for several decades, it remains a very important technology. Session 8, with a broad selection of presentations covering MED, vapour compression, modeling, reduced construction time, new antiscalants and many other developments, demonstrates that there are still new ways to re-engineer, re-design and innovate in this important field.

Third in innovations is Session 9 on water reuse, which alongside the major contribution provided by direct desalination, provides an important part of the answer to conservation of our dwindling water supplies. Not surprisingly this session contains several papers on membrane bio reactors, but other innovations in this field are also presented.

Sessions 10 and 11 address innovations in pretreatment for RO desalination. Together they present a range of innovative and state-of-the-art pretreatment technologies applicable to RO desalination. Although UF/MF membrane pretreatment has now risen to commercial application and is a favorite topic in these sessions, other pretreatment strategies, such as ceramic membranes, nano-filtration and electrodialysis

reversal, are also presented. Other papers present pilot plant and large plant existing experiences, improvements in operation, and comparisons of conventional versus low pressure membranes, as well as theoretical and economic evaluations.

The environmental impact of large desalination facilities is increasingly under scrutiny, as we become more concerned about the potential short and longterm effects of removing a certain quality of water in the intake and putting back a different quality via the discharge. The larger the plant, the greater the effect, and it is right that we monitor this closely. Session 12, Intakes and Outfalls for Desalination Facilities, offers a variety of experiences in existing plants, some interesting modeling methodology for design optimization, and suitability comparisons for different waters and geographical locations.

The design of membrane reverse osmosis plants is another topic of critical importance as installations become larger. No longer do we see the standard designs of a few years ago –developments in all areas have permitted exciting and innovative designs, utilizing new and specific membrane elements, energy recovery devices, resulting in cost savings and even economies of space. Session 13 presents a number of existing, projected, and conceived designs incorporating these features.

We have noted that the environment is becoming increasingly stringently monitored, and consequently it follows that the changes in measurable parameters occurring throughout the various stages of a desalination plant should also be similarly observed. This new session, Session 14, on monitoring and predictive tools, brings together different types of technology used for monitoring and predicting results throughout the desalination process, including specialized autopsy, various simulation and modeling techniques, simple but effective laboratory techniques, membrane forensics, and the use of predictive indices.

Experiences in the operation of plants are always key to the dissemination of practical knowledge, especially when performance is evenhandedly presented, showing not only accumulation of successful operating data, but also situations where difficulties were experienced, problems overcome, and innovative remedies trialed. Sessions 15 to 17 present respectively operational experiences in membrane, thermal and water reuse systems. These sessions were particularly heavily oversubscribed and amongst the poster and oral sessions there is a wealth of information being presented from all over the world, including Singapore, Pakistan, the Middle East, Mexico, Australia and Europe. Some aspects are experimental, others may focus on certain features of a desalination plant such as backwash, antifoam dosage and specific refurbishment, while many recount commissioning and operational experiences with innovative and/or conventional designs. The water reuse presentations in Session 17 also cover installations in many differing parts of the world, including the USA, Japan, China, North Africa, Australia and Europe, indicating that we have all realized the importance of reusing our assets in the form of water reclamation schemes of one sort or another. Naturally



the challenges may be very different from one location to another, both economically and technically, and this is reflected in the wide scope of the papers and posters.

Although Session 12 brings environmental considerations in intakes and outfalls to the fore, Session 18 is dedicated to “Protecting the Environment” and covers all environmental topics relevant to desalination and water reuse. A number of aspects are explored including environmental incentives, concentrate minimization, recovery of certain elements from discharges, and various procedure and impact assessment studies.

The IDA embraces with enthusiasm any form of desalination which may be renewable or non-traditional, and strives to promote and disseminate this information. Great progress is being made in this area, and Session 19 explores this stimulating area – we take a look at advances in solar, nuclear, sea and wind powered desalination, along with hybrid plants integrating these with more conventional technology and other innovations. This could well be our future - naturally!

Scale control in membranes ranks alongside biofouling as a constant companion – the potential to be ever present, but experience has shown that there are excellent methods of control. As the feed supplies to desalination plants become more complex, particularly with water reuse, new products and strategies become essential to control higher levels of ions which previously would have not been considered possible to treat without expensive pretreatment. Session 20 looks at scale removal strategies and scale prediction techniques, as well as some specific scale problems such as silica and phosphate.

The final Session 21 brings together for the first time all aspects of water management and planning. As many countries move inexorably into that growing list of countries where water shortage is becoming or has already become a reality, this session becomes increasingly significant, and we explore such critical issues as security, sustainability, impact of energy usage, and demand management, utilizing examples of aquifer storage recovery, risk management and other innovative concepts.

## CONCLUSION

Perhaps more than ever before, the world of desalination and water reuse needs to meet regularly for exchange of ideas, as the speed of innovation increases, and the spread of this acquired knowledge for the benefit of all becomes paramount. The 2007 IDA World Congress in Gran Canaria looks set to fulfill the promise engendered by the quality and quantity of papers submitted, and we expect that all the desalination delegates attending will be able to benefit fully from this excellent global forum – posters, papers, discussion groups, peer group contacts and general exchange of ideas.

*We look forward to welcoming you.*

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## A MESSAGE FROM THE POSTER CHAIRMAN

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I have been the IDA Poster Chairman for the last five IDA world congresses. During that time, the quality of the IDA poster presentations and poster importance now equals that of an IDA oral presentation. My committee co-chairmen (Mr. Markus Kyburz and Mr. Beat Schneider) and I take pride in meeting the needs of the authors presenting in the poster format.

- An oral session is typically 5-10 minutes of time for audience discussion. In a poster setting, the author has the opportunity to have one on one discussion with those interested for the complete four day program schedule. You are in control of how much time you want to spend with the interested attendees.
- There may be a number of technical papers which are better suited for a poster presentation if they include complicated graphs or are extremely technical. The 20 minutes for the oral presentation may not be enough time to explain your scientific findings.
- As with the oral presentations, the poster manuscripts are published in the Congress Proceedings. Having printed copies available to aid in your discussions are welcome and recommended.
- Poster presenters receive the same recognition on their name badge “Presenter Ribbon” as an oral presenter.
- Each poster will have a 6” x 36” Title / Author sign which can be taken home by the presenter for future displays.
- The award given for the Best Overall Poster is identical to the awards for the Best Oral paper, and the monetary amount is the same.

During this World Congress, IDA has arranged to have the Poster Display area adjacent to the cyber café and refreshment area so there will be plenty of exposure and good attendee traffic. In closing, we have found that a well organized poster permits a much closer interaction between the authors and the attendees, allowing for a more detailed presentation of data than can be accomplished from a conventional speaker’s platform of a 30 minute oral presentation.

We look forward to seeing you in Maspalomas.

*Wil Pergande*

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## TECHNICAL PROGRAM BY SESSION

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The Congress theme “Desalination: Quenching a Thirst” reflects the maturity of the desalination processes and their importance in addressing the increasing global demand for quality water.

Opening day ceremony will include presentations from several distinguished representatives from the desalination industry and local government.

The Technical Program consisting of four days will present over 200 manuscripts in either Oral or Poster format throughout 21 sessions.

In addition there will be several invited papers and keynote addresses.

*Note: This is a tentative listing and subject to change.*

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### SESSION 01: Advancements in the Spanish Desalination and Water Reuse Market

The Spanish desalination and water reuse markets is one of the most vibrant and active scenes globally. Recent federal mandates have been very influential in this latest wave of new projects and innovations in Spain.

CO-CHAIRS:

*Carlos Cosin Fernandez, Spain*

*Jose Antonio Membiela Martínez, Spain*

### ORAL PRESENTATIONS:

#### **BARCELONA: 200000 M3/DAY OF POTABLE WATER COMING FROM MEDITERRANEAN SEA**

**Authors:** Mr. Gerardo Cremer, Mr. Francisco Beltran, Ms. Veronique Bonnelye, Mr. Ignacio del Campo, Mr. Miguel Angel Sanz, Mr. Miguel Angel Sanz

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-056)

#### **PRESENT AND FUTURE OF TERTIARY TREATMENT IN EDAR OF SURESTE – GRAN CANARIA**

**Authors:** Enrique Palacios, Monica Gutierrez, Jose Antonio Ramirez, Guillermo Hijos Gago, Rafael Sanchez, Mr. Enric Palacios Doñaque

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-217)

## **A SPANISH CHALLENGE: DESALINATED SEAWATER FOR IRRIGATION IN THE MEDITERRANEAN**

**Authors:** Mr. Adrián Baltanás, Enrique Verde, Francisco Hijós, Fernando Troyano

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-222)

## **ENGINEERING DESIGN OF BAJO ALMANZORA SEAWATER DESALINATION PLANT**

**Authors:** Mr. Javier F. Alcantara Perez, Mr. Jorge Salas Orta, Mr. Adrián Rodríguez Rodríguez, Mr. Bartolomé Marín Fernández, Mrs. Blanca Ruescas Vélez

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-237)

## **RE-USE OF WASTE WATER USING MEMBRANE TECHNOLOGY (BENIDORM-SPAIN)**

**Authors:** Engr. Mariano Sola Ibañez, Ms. Paloma de la Fuente Espeja, Engr. Nazaret Ontañón Nasarre, Engr. Atanasio Encinas García, Mr. Juan Lahoz Valverde, Engr. Mariano Díez Ponce

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-250)

## **HISTORY OF THE FIRST REVERSE-OSMOSIS PLANTS IN SPAIN**

**Authors:** Mr. Juan M<sup>a</sup> Galtes - Ros

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-260)

## **VALDELENTISCO DESALINATION PLANT: 200,000 M3/DAY OF WATER FOR IRRIGATION AND DRINKING**

**Authors:** Dr. Manuel Latorre

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-083)

## **POSTER PRESENTATIONS:**

### **ABRERA (BARCELONA, SPAIN) DRINKING WTP UPGRADE THROUGH ELECTRODIALYSIS REVERSAL (200,000 M3/DAY)**

**Authors:** Mr. Mario Ferrer Arasa, Mr. Fernando Valero Cervera, Mr. Domingo Zarzo Martinez, Mr. Xavier Vives Rife

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-079)

## **DESALINATION: THE CAUSE OF THE SOUTH EASTERN OF GRAN CANARIA SUSTAINABLE DEVELOPMENT**

**Authors:** Engr. José R Sánchez Ramírez, Dr. Roque Calero Pérez, Engr. Juan E González González, Ms. Eva García Romero, Engr. Irene Santana Romero

**Paper's Country of Attribution:** Spain  
IDAWC REF:(MP07-076)

## **NITRATE AND HARDNESS REMOVAL WITH ELECTRODIALYSIS REVERSAL IN GANDÍA (VALENCIA, SPAIN)**

**Authors:** Mr. Vicent Sarrió Chàfer, Mr. Javier Sanchis Carbonell, Mr. Juan C. de Armas Torrent

**Paper's Country of Attribution:** Spain  
IDAWC REF:(MP07-208)

## **MONITORING THE BRINE DISCHARGE FROM A DESALINATION PLANT IN THE MEDITERRANEAN**

**Authors:** Yolanda Fernández-Torquemada, Angel Loya, Yolanda Múgica, José L. Sánchez-Lizaso, José Templado, Marta Calvo, Ana Antoranz, José M. Cortés

**Paper's Country of Attribution:** Spain  
IDAWC REF:(MP07-233)

## **TERRASSA-LES FONTS'S RECLAMATION WATER PLANT: CHALLENGES OF PLANNED REUSE**

**Authors:** Dr. Luis Seguí, Mr. Luis Cabrera, Mr. Jordi Serrahima

**Paper's Country of Attribution:** Spain  
IDAWC REF:(MP07-239)

## **NEW DESIGN OF FILTER SYSTEMS OF MIRES ACTIVOSA TO DEPART FROM THE PARAMETERS BIOKINETICS**

**Authors:** Dr. Prof. Juan Emilio González, Engr. Juan José Santana, Dr. Francisco Javier Santana, Dr. Jennifer Vaswani, Engr. José Rafael Sánchez Mancomunidad

**Paper's Country of Attribution:** Spain  
IDAWC REF:(MP07-241)

## **CONTROL OF THMS AT THE LLOBREGAT DWTP (NE, SPAIN) USING ELECTRODIALYSIS REVERSAL**

**Authors:** Mr. Fernando Valero, Mr. Juan C. García, Mr. Santiago González, Mrs. M. Eugenia Medina, Mr. Juan C. de Armas Torrent, Mr. Manuel Hernández, Mr. José J. Rodríguez

**Paper's Country of Attribution:** Spain  
IDAWC REF:(MP07-207)

## SESSION 02: Biofouling in Membranes

Ever a hot topic and one that has never been solved, biofouling in membrane systems continues to be a conundrum in the RO desalination industry. This large selection of papers addresses new techniques to deal with and investigate biofouling issues.

CO-CHAIRS:

*Andreas Gorenflo, Germany*

*Miguel Sanz, France*

*Santiago Talo, Spain*

### ORAL PRESENTATIONS:

#### THE MICROBIAL MEMBRANE FOULING STORY

**Authors:** Prof. Harvey Winters, Prof. Anthony G. Fane, Bjarne Nicolaissen

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-267)

#### CHLORINE DIOXIDE FOR PREVENTION OF BIOFOULING OF POLYAMIDE RO ELEMENTS

**Authors:** Dr. Peter K Eriksson

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-113)

#### EFFECTIVE CHLORINE INJECTION FOR MAINTAINING STABLE OPERATION IN SEAWATER DESALINATION PLANT

**Authors:** Mr. Mikio Katsube, Mr. Toshiyuki Yagi, Mr. Masaki Nishida, Mr. Nobuya Fujiwara

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-117)

#### CHLORITE AND CHLORATE EFFECT ON THE REVERSE OSMOSIS MEMBRANES PERFORMANCE.

**Authors:** Mr. Jorge J. Malfeito, Dr. Enrique Ferrero, Dr. Vanesa Ayala, Mrs. Anna Llansana

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-127)

#### THE SALINE EFFECT ON THE MEASUREMENT OF BIOMASS CONTENTS IN SEAWATER

**Authors:** Jose M. Veza, Francisco J. Santana, Marta Ortiz, Jose J. Sadhwani, Juan E. Gonzalez

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-012)

## **REVERSIBLE-AND-IRREVERSIBLE SWRO MEMBRANE FOULING OWING TO ALGAE BLOOMING: THE ADDUR EXPERIENCE**

**Authors:** Dr. Ahmed H. A. Hashim, Prof. Kenneth M. Persson

**Paper's Country of Attribution:** Bahrain

IDAWC REF:(MP07-173)

## **POSTER PRESENTATIONS:**

### **ADVANCED FOULING RESISTANT PVDF HOLLOW-FIBER MEMBRANE MODULES FOR WATER TREATMENT**

**Authors:** Mr. Yuuji Tanaka, Mr. Yoshinari Fusaoka, Mr. Kei-ichi Ikeda,  
Dr. Shin-ichi Minegishi

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-134)

### **A NEW METHOD OF BIO-FOULING PREVENTION FOR SWRO**

**Authors:** Mr. Fahad H. Al Mohannadi, Dr. Totaro Goto, Mr. Mitsuyoshi  
Hirai, Dr. Hideo Iwahashi, Mr. Khalid M. Jolo, Dr. Masahiro Kishi, Mr.  
Kazuhisa Takeuchi

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-178)

### **IMPROVEMENT OF THE RO PRETREATMENT: FUJARAH PLANT EXPERIENCE**

**Authors:** Mr. Abd Al Raouf Abudeyyeh, Engr. Ahmed Khafagy

**Paper's Country of Attribution:** UAE

IDAWC REF:(MP07-213)



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## **SESSION 03: Boron Management**

This is the first IDA conference in which Boron has its own session! In membrane systems boron can often be the determining factor in the design of the system and capital requirement. Methods to effectively address and manage the boron issue are presented.

CO-CHAIRS:

*Markus Busch, Germany*

*Josep Coma Salvans, Spain*

*Dr. Nabil Nada, Saudi Arabia*

### **ORAL PRESENTATIONS:**

#### **STUDY OF DIFFERENT ALTERNATIVES FOR BORON REDUCTION IN DESALINATED WATER**

**Authors:** Dr. Prof. Prats Rico Daniel, Mrs. Chillón Arias M. Fernanda, Mr. Valero Bru Laureano

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-006)

#### **PERFORMANCE ADVANCEMENT OF HIGH BORON REMOVAL SEAWATER RO MEMBRANES**

**Authors:** Mr. Masahiro Henmi, Mr. Hiroki Tomioka, Mr. Tomonori Kawakami

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-038)

#### **BORON REJECTION BY SWRO MEMBRANES: FROM TRANSPORT MECHANISM TO PROCESS COST ANALYSIS**

**Authors:** Mr. Hoon Hyung, Mr. Pranay Mane, Dr. Jess Brown, Dr. Mark Wilf, Dr. Jongsang Park, Dr. Prof. Seong-Hee Kim, Dr. Prof. Jae-Hong Kim

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-107)

#### **CURAÇAO DESALINATION PLANT: ONE-YEAR OPERATION 2D-PASS BORON REMOVAL AT HIGH PH**

**Authors:** Ms. Véronique Bonnélye, Mr. Humphrey Gouverneur, Mr. Miguel A. Sanz, Mr. Laurent Francisci, Mr. Jon Laraudogiot, Mr. Gerardo Cremer

**Paper's Country of Attribution:** France

IDAWC REF:(MP07-130)

## **SURVEY OF BORON LEVELS IN SEAWATER DESALINATION PLANTS IN SAUDI ARABIA**

**Authors:** Dr. Radwan A. Al-Rasheed, Mr. Saad A. Al-Sulami, Mr. Ghazi Hassain

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-164)

## **BWRO PERMEATE CIRCULATION PROCESS FOR BORON REMOVAL IN SWRO**

**Authors:** Mr. Fahad H. Al Mohannadi, Dr. Totaro Goto, Mr. Mitsuyoshi Hirai, Mr. Hisao Imai, Dr. Hideo Iwahashi, Mr. Khalid M. Jolo, Dr. Masahori Kishi, Dr. Mitsuhisa Takeuchi

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-179)

## **POSTER PRESENTATIONS:**

### **NEW SHUQAIQ SWRO DESALINATION PLANT WITH ADVANCE BWRO PROCESS**

**Authors:** Dr. Victor Van Der Mast, Mr. Thomas Altmann, Mr. Tony Attenborough, Mr. Takayoshi Hori, Mr. Yoshiaki Ito, Dr. Hideo Iwahashi, Mr. Fayyaz Muddassir Mubeen

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-243)

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## **SESSION 04: Desalination Materials and Corrosion**

Desalination processes generally take place in a very corrosive environment. The industry has developed specialized materials and techniques to address this harsh environment, many of which are presented in this session.

**CO-CHAIRS:**

*Engr. Ahmed Alarifi, Saudi Arabia*

*Dr. Glenn Byrne, United Kingdom*

*Gonzalo Pique, United States*

## **ORAL PRESENTATIONS:**

### **SUPERFERRITIC STAINLESS STEELS – THE COST EFFECTIVE ANSWER FOR HEAT TRANSFER TUBING**

**Authors:** Daniel S. Janikowski, William Henricks

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-016)

## **USE OF A NEW ALTERNATIVE SOLUTION FOR MED AND MSF HEAT EXCHANGER TUBING**

**Authors:** Mrs. Haydée V. Richaud-Minier, Mr. Pascal Gérard, Mr. Hervé Marchebois

**Paper's Country of Attribution:** France

IDAWC REF:(MP07-021)

## **CORROSION RESISTANCE OF DUPLEX STAINLESS STEELS FOR THERMAL DESALINATION PLANTS**

**Authors:** Dr. Sophie Jacques, Dr. Jerome Peultier, Mrs. Véronique Baudu, Mr. Bastien Chareyre, Dr. Jean-Christophe Gagnepain

**Paper's Country of Attribution:** France

IDAWC REF:(MP07-030)

## **STAINLESS STEELS FOR LT-MED PLANTS**

**Authors:** Ms. Malin Snis, Mr. Jan Olsson, Mr. George Antonopoulos, Mr. Daniel Bjorklund, Mr. Mikael Willfor

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-052)

## **MSF EVAPORATORS FLASH CHAMBER MATERIALS EVALUATION AFTER 20 YEARS IN SERVICE**

**Authors:** Engr. Saleh A. Al-Fozan, Dr. Anees U. Malik

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-159)

## **AN OVERVIEW OF THE LOCALIZED CORROSION PROBLEMS IN SEAWATER DESALINATION**

**Authors:** Dr. Anees U. Malik, Dr. Ismaeel N. Andijani, Engr. Saleh A. Al-Fozan, Engr. Fahd Al-Muaili, Engr. Mohammad Al-Hajiri

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-162)



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## **SESSION 05: Economics and Optimization Strategies**

The financing of a desalination project is of critical importance. This session includes planning and optimization strategies as part of the economics design and implementation.

CO-CHAIRS:

*Fareed Al Yagout, Saudi Arabia*

*Michel Canet, France*

*CHAN Yoon Kum, Singapore*

### **ORAL PRESENTATIONS:**

#### **DELIVERY OF DESALINATION PROJECTS THROUGH ALLIANCE CONTRACTING: MANAGING THE RELATIONSHIP**

**Authors:** Mr. Jason C Ricketts, Mrs. Melanie J Cave, Mr. Michael J Voros

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-075)

#### **COST REDUCTION STRATEGIES FOR AUTONOMOUS DESALINATION UNITS BASED ON RENEWABLE ENERGIES**

**Authors:** Engr. Sofia Sanchez Ana, Engr. Penate Suarez Baltasar, Engr.

Soulis Kostantinos, Engr. Subiela Ortín Vicente

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-251)

#### **MODELLING AND OPTIMIZATION OF DUAL PURPOSE POWER AND DESALINATION PLANTS**

**Authors:** Mr. Thomas Altmann, Mr. Anthony Attenborough, Mr.  
Manfred Rieder

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-246)

#### **PRETREATMENT OPTIONS FOR REVERSE OSMOSIS DESALINATION - TECHNO-ECONOMIC ASSESSMENT UNDER INDIAN CONDITIONS**

**Authors:** Mr. D. Goswami, Ms. Saly T. Panicker, Dr. S. Prabhakar, Dr.  
Pradip Kumar Tewari

**Paper's Country of Attribution:** India

IDAWC REF:(MP07-053)

#### **THE MYTH AND THE REALITY OF THE HYBRID DESALINATION PROCESS**

**Authors:** Dr. Ismat Kamal

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-048)

## **MEMBRANES FOR WASTEWATER RECLAMATION – EXPANDING THE LIMITS**

**Authors:** Mr. Jason A Diamond, Ms. Ana Luisa Calderon, Mr. Robert Flis, Mr. Jaime Sanchez, Mr. Fraser Charles Kent, Ms. Annyse Balkwill

**Paper's Country of Attribution:** Canada

IDAWC REF:(MP07-245)

## **POSTER PRESENTATIONS:**

### **TECHNO-ECONOMICS OF HYBRID DESALINATION SYSTEMS**

**Authors:** Dr. Mabrouk Methnani, Mr. Seok Ho Choi, Dr. Altaf Hussain, Mr. Young Jin Baek

**Paper's Country of Attribution:** Austria

IDAWC REF:(MP07-036)

### **COSTING MEMBRANE AND THERMAL PROCESSES**

**Authors:** Dr. Irving Moch Jr

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-046)

### **OPTIMIZATION OF SEAWATER CONVERSION PROCESSES**

**Authors:** Dr. Philip Liu

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-201)

### **TECHNICAL AND FINANCIAL ASPECTS IN DESALINATION PROJECTS OVER DIFFERENT COUNTRIES**

**Authors:** Engr. José Antonio Membiela

**Paper's Country of Attribution:** Mexico

IDAWC REF:(MP07-259)

### **TECHNOLOGY SELECTION AND APPROPRIATE FUNDING METHOD FOR 20,000 M3/D SEAWATER DESALINATION IN IRAN.**

**Authors:** Engr. Mohammad Bagher Kiaei

**Paper's Country of Attribution:** Iran

IDAWC REF:(MP07-263)

### **IWPP PROJECTS: A CHALLENGE FOR THE OPTIMIZATION OF COMBINED POWER / WATER PLANTS**

**Authors:** Dr. Emilio Ghiazza, Engr. Anna Maria Ferro

**Paper's Country of Attribution:** Italy

IDAWC REF:(MP07-227)

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## **SESSION 06: Energy Recovery and Efficiency**

This topic continues to be one of the most important in reducing the cost of desalinated water, and here both existing and developing energy recovery systems are presented.

CO-CHAIRS:

*Borja Blanco, United States*

*Dr. Irving Moch, Jr., United States*

### **ORAL PRESENTATIONS:**

#### **MATHEMATICAL MODEL FOR ISOBARIC ENERGY RECOVERY DEVICES**

**Authors:** Engr. Juan Maria Sanchez Sanchez, Engr. Noemi Sanchez Castillo, Engr. Ruth Sanchez Castillo

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-088)

#### **A NOVEL EQUIPMENT CENTRALIZATION SCHEMA REDUCES THE COST OF PERMEATE**

**Authors:** Mr. Eli Oklejas Jr., Ms. Lisa Leachman, Mr. Ryan Kitzmiller, Ms. Anca Seisan, Mr. Eric Kadaj

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-027)

#### **THE 200,000 M3/DAY HAMMA SEAWATER DESALINATION PLANT - LARGEST SINGLE-TRAIN SWRO CAPACITY**

**Authors:** Dr. Richard L Stover, Dr. Michael Nelson P.E., Mr. Jeremy Martin

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-112)

#### **LOW ENERGY CONSUMPTION IN THE PERTH SEAWATER DESALINATION PLANT**

**Authors:** Miguel Angel Sanz, Dr. Richard L Stover

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-111)

#### **OPTIMIZING LOWER ENERGY SEAWATER DESALINATION, THE AFFORDABLE DESALINATION COLLABORATION**

**Authors:** Mr. Stephen Dunderf, Mr. John MacHarg, Mr. Thomas F. Seacord

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-150)

## **IMPLEMENTING ENERGY SAVING RO TECHNOLOGY IN LARGE SCALE WASTEWATER TREATMENT PLANTS**

**Authors:** Mr. Rich N. Franks, Dr. Craig R. Bartels, Mr. Mehul Patel, Mr. Tian Xiah Young

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-148)

## **POSTER PRESENTATIONS:**

### **ERD FOR SMALL SWRO PLANTS**

**Authors:** Mr. Anders Valbjørn

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-044)

### **LOW ENERGY CONSUMPTION SWRO: A NEW APPROACH FOR SMALL ISLANDS FRESHWATER SUPPLY**

**Authors:** Engr. Fernando J Pérez-Fernández, Dr. Fernando D Pérez Monteagudo

**Paper's Country of Attribution:** Norway

IDAWC REF:(MP07-086)

### **MIXING AND OVERFLUSHING – IMPORTANT CONSIDERATIONS ON USING PRESSURE EXCHANGER TECHNOLOGY**

**Authors:** Mr. Wolfgang Kochanowski, Mr. Gerhard Schwarz, Dr. Toni Klemm, Dr. Stephan Bross

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-200)



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## **SESSION 07: Innovations in Membrane Desalination**

Membranes are still being improved and refined. With the field of application of membranes constantly being broadened, this session presents some of the most notable advances and enhancements.

CO-CHAIRS:

*Dr. Mahmoud Abdel-Jawad, Kuwait*

*Dr. Adil Bushnak, Saudi Arabia*

*Dr. Masaru Kurihara, Japan*

### **ORAL PRESENTATIONS:**

#### **ADVANCEMENTS IN THE DESIGN OF SPIRAL WOUND RO/NF ELEMENTS**

**Authors:** Dr. Craig Bartels, Dr. Stefan Rybar, Mr. Masahiko Hirose, Mr. Rich Franks

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-216)

#### **ASPECTS OF HIGH TEMPERATURE OPERATION WITH SPIRAL WOUND SWRO MEMBRANE ELEMENTS**

**Authors:** Dr. Andreas Gorenflo, Terry Marsh, Markus Busch

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-168)

#### **MEMSTILL MEMBRANE DISTILLATION: A NEAR-FUTURE TECHNOLOGY FOR SEA WATER DESALINATION**

**Authors:** Jan Henk Hanemaaijer, Jolanda van Medevoort, Albert Jansen, Eric van Sonsbeek, Hette Hylkema, Ron Biemans, Bart Nelemans, Allerd Stikker

**Paper's Country of Attribution:** Netherlands

IDAWC REF:(MP07-128)

#### **DEMONSTRATION TESTING OF INNOVATIVE 16-INCH SWRO IN ARABIAN GULF AND SINGAPORE WATERS**

**Authors:** Ms. Lisa Henthorne, Mr. Felix Yuen-Yi Wang, Mr. Sanjeev Unni, Mr. Kishor Deshmukh, Mr. William K Graham

**Paper's Country of Attribution:** Singapore

IDAWC REF:(MP07-188)

## **MEMBRANE MODULE PERFORMANCE OPTIMIZATION USING CFD SIMULATION OF FLOW THROUGH NARROW CHANNELS WITH SPACERS**

**Authors:** Ms. Chrysafenía Koutsou, Dr. Prof. Stergios G Yiantsios, Dr.  
Prof. Anastasios J Karabelas

**Paper's Country of Attribution:** Greece  
IDAWC REF:(MP07-176)

## **INTEGRATED UPGRADING OF THERMAL PROCESSES AND NANOFILTRATION EXPERIENCE OF SEWA PROJECT**

**Authors:** Mr. Leon Awerbuch, Malcolm Parker, Ihsan Agha-Mourad

**Paper's Country of Attribution:** USA  
IDAWC REF:(MP07-257)

## **POSTER PRESENTATIONS:**

### **PERFORMANCE OF NOVEL 16-INCH (SUPER-FLUX) RO DEMONSTRATION SYSTEMS FOR WATER RECLAMATION**

**Authors:** Prof. How Yong Ng, Dr. Kwee Guan Tay, Mr. Seng Chye Chua,  
Mr. Harry Seah

**Paper's Country of Attribution:** Singapore  
IDAWC REF:(MP07-167)

### **EFFECT OF SPACER GEOMETRY ON MASS TRANSFER IN MEMBRANE MODULES – COMPUTER SIMULATIONS**

**Authors:** Mr. Muhammad Shakaib, Dr. Muhammad Fakhir Hasani, Dr.  
Muzzaffar Mahmood

**Paper's Country of Attribution:** Pakistan  
IDAWC REF:(MP07-043)

### **EVALUATION OF A NEW DEVELOPED RO MODEL**

**Authors:** Prof. Toraj Mohammadi, Mr. Omid Bakhteyari

**Paper's Country of Attribution:** Iran  
IDAWC REF:(MP07-197)

### **WATER DESALINATION USING ELECTRO DIALYSIS**

**Authors:** Prof. Toraj Mohammadi, Mr. Mohtada Sadrzadeh

**Paper's Country of Attribution:** Iran  
IDAWC REF:(MP07-198)

### **SEAWATER DESALINATION AND CONCENTRATION BY VACUUM MEMBRANE DISTILLATION USING PVDF MEMBRANE**

**Authors:** Dr. Prof. Xiaolong Lu, Dr. Yue Jia, Dr. Chunrui Wu, Mr. Jing  
Zhao, Mr. Gang Wu

**Paper's Country of Attribution:** China  
IDAWC REF:(MP07-220)

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## **SESSION 08: Innovations in Thermal Desalination**

Although this technology has been around for some decades, there are still new ways to re-engineer, re-design and innovate in this important field.

CO-CHAIRS:

*Leon Awerbuch, United States*

*Engr. Anna Maria Ferro, Italy*

*Dr. Corrado Sommariva, United Arab Emirates*

### **ORAL PRESENTATIONS:**

#### **LATEST DEVELOPMENTS IN MED AND MVC THERMAL DESALINATION PROCESS**

**Authors:** Mr. Avraham Ophir, Mr. Avraham Gendel

**Paper's Country of Attribution:** Israel

IDAWC REF:(MP07-067)

#### **INTERNAL ANALYSIS OF CONSTRUCTION OF MULTISTAGE FLASH PROCESS UNIT AND ROOMS FOR IMPROVEMENTS**

**Authors:** Engr. Khalid Z. Al-Subaie

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-234)

#### **PLANT EXPERIENCE ON NEW ANTISCALANT TECHNOLOGY FOR MSF PLANTS**

**Authors:** Engr. Filomeno A Marchena, Mr. Dionardo R Maria, Mr. Bryce A Uytiepo

**Paper's Country of Attribution:** Aruba

IDAWC REF:(MP07-264)

#### **REDUCTION IN MSF EVAPORATOR MANUFACTURING LEAD TIME FROM 7 MONTHS TO 4 MONTHS**

**Authors:** Mr. Byungjo Kang, Mr. Yongduk Lee, Mr. Inho Cho, Mr. Ohgyoon Kwoun

**Paper's Country of Attribution:** South Korea

IDAWC REF:(MP07-183)

#### **THE IRREVERSIBILITIES INHERITED IN THE DESIGN OF SWCC MSF DESALINATION PLANTS**

**Authors:** Dr. Osman A. Hamed

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-160)

## **AN ADVANCED VAPOR-COMPRESSION DESALINATION METHOD**

**Authors:** Dr. Jorge R Lara, Dr. Prof. Mark T Holtzapple

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-175)

## **POSTER PRESENTATIONS:**

### **INTEGRATED DESIGN OF POTABILIZATION PLANT AT A MSF DESALINATION FACILITY**

**Authors:** Ms. Teresa Shih, Mr. Henry Shih

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-047)

### **DYNAMIC BEHAVIOR OF MULTIPLE EFFECT DISTILLATION WITH THE DISTURBANCE OF SEAWATER MASS FLOW RATE**

**Authors:** Dr. Ashraf Sadik Hassan, Dr. Prof. Abdalla Said Hanafi

**Paper's Country of Attribution:** Egypt

IDAWC REF:(MP07-158)

### **OPTIMIZING ANTIFOAM FEED IN ADDITIVE DOSED MSF PLANTS**

**Authors:** Mr. Dionardo R. Maria, Mr. Bryce A Uytiepo, Engr. Filomeno A Marchena

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-265)

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## **SESSION 09: Innovations in Water Reuse**

The reuse of water is one of the hot topics of today as it provides an important part of the answer to conservation of our dwindling water supplies.

**CO-CHAIRS:**

*GAO Congjie, China*

*Dr. Srinivas Veerapaneni, United States*

## **ORAL PRESENTATIONS:**

### **IMPACT OF EFFLUENT ORGANIC MATTER ON LOW PRESSURE MEMBRANES IN WATER REPURIFICATION**

**Authors:** Dr. Joseph G Jacangelo, Dr. Haiou Huang, Mr. Thayer Young

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-244)

## **INTEGRATED CHEMICAL PRECIPITATION AND ULTRAFILTRATION TREATMENT OF PROCESS WATER**

**Authors:** Mr. Jorge T. Aguinaldo

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-212)

## **HIGH PERFORMANCE MBR MEMBRANE AND ADVANCED MBR+RO SYSTEM FOR WASTEWATER RECLAMATION**

**Authors:** Dr. Hiroo Takabatake, Mr. Atsushi Kitanaka, Dr. Yufang Yang,  
Prof. Xia Huang, Dr. Tadahiro Uemura

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-120)

## **FEASIBILITY OF NEWLY DEVELOPED MEMBRANE BIOREACTORS FOR WASTEWATER RECLAMATION**

**Authors:** Zakir Hirani, Samer Adham, James DeCarolis, Larry Wasserman

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-109)

## **OPERATION OF A 16 INCH SUPER-FLUX RO SYSTEM ON MUNICIPAL WASTEWATER**

**Authors:** Dr. Craig Bartels, Mr. Keith Andes, Mr. James Long, Mr. EU  
Hong-Gay

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-240)

## **REDUCTION OF CAPITAL AND OPERATING COSTS OF MEMBRANE BIOREACTOR USING MODIFIED POLYMERS**

**Authors:** Dr. Seong-Hoon Yoon, Mr. John H Collins, Mr. Jeroen Koppes,  
Dr. Bhasker Davé

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-147)

## **POSTER PRESENTATIONS:**

### **RECLAMATION OF WASTEWATER FROM DI-METHYL ETHER PRODUCTION PLANT**

**Authors:** Mr. Hiroaki Ikebe, Mr. Fumihiro Otsubo, Mr. Toshio  
Tsukamoto, Mr. Masayuki Uchida, Dr. Takaji Akiya

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-166)

## **ULTRAFILTRATION AND NANOFILTRATION PRE-TREATMENT OF REVERSE OSMOSIS TO REUSE WASTEWATER IN A PETROCHEMICAL INDUSTRY**

**Authors:** Dr. Prof. Jaime Lora, Engr. David Sanz, Dr. Prof. José M. Gozálvéz, Dr. Prof. Asunción Santafé, Engr. M. Carmen León, Dr. Prof. J. Miguel Arnal, Engr. Sergio Navalón

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-232)

## **EVALUATION OF TREATMENT OPTIONS FOR TREATMENT OF A HIGH TDS LEACHATE**

**Authors:** Ms. Michele Muller, Prof. Japie J Schoeman

**Paper's Country of Attribution:** South Africa

IDAWC REF:(MP07-051)

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## **SESSION 10: Innovative Pretreatment for RO Desalination, Part I**

This session is one of two presenting a range of innovative and state-of-the-art pretreatment technologies applicable to RO desalination. Low pressure membrane pretreatment has now risen to commercial application and is a favorite topic in these sessions.

**CO-CHAIRS:**

*Leslie Chapple, Singapore*

*Dr. Heike Glade, Germany*

*Dr. Ahmed Hashim, Bahrain*

## **ORAL PRESENTATIONS:**

### **OPERATING EXPERIENCE OF A NEW ULTRAFILTRATION MEMBRANE FOR PRETREATMENT OF SEAWATER REVERSE OSMOSIS**

**Authors:** Mr. Frans Knops, Mr. Stephan Van Hoof, Mr. Arne Zark

**Paper's Country of Attribution:** Netherlands

IDAWC REF:(MP07-023)

### **RESULTS OF SEAWATER DESALINATION IN THE SAN FRANCISCO BAY**

**Authors:** Dr. Val S Frenkel Ph.D., Mr. Todd K Reynolds PE, Mr. Jim Lozier PE, Mr. Bob Castle PE, Ms. Linda Macpherson

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-032)

## **IMPROVING TOTAL WATER COST OF DESALINATION BY MEMBRANE PRE-TREATMENT**

**Authors:** Dr. Craig Bartels, Dr. Graeme Pearce, Dr. Mark Wilf

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-057)

## **EVALUATION OF CONVENTIONAL MEDIA AND MEMBRANE SWRO PRETREATMENT IN HONG KONG, CHINA**

**Authors:** Mr. Robert Huehmer, Mr. James Lozier, Ms. Lisa Henthorne, Mr. Felix Wang, Mr. Harry Lee, Mr. Charles SK Chan

**Paper's Country of Attribution:** Singapore

IDAWC REF:(MP07-191)

## **REHABILITATION OF PERFORMANCE OF RO SEAWATER PLANT THROUGH IMPROVEMENT OF PRETREATMENT**

**Authors:** Dr. Craig Bartels, Dr. Stefan Rybar, Engr. Mariana Vodnar, Dr. Mark Wilf, Engr. Miguel Esteban Martin, Mr. Michael J Jefferies

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-096)

## **INNOVATIVE ULTRAFILTRATION TECHNOLOGY IN A SEAWATER DESALINATION PLANT IN THE MEDITERRANEAN SEA**

**Authors:** Mr. Ralf Kruger, Mr. Roland Winkler, Dr. Peter Berg

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-092)

## **POSTER PRESENTATIONS:**

### **UF PRETREATMENT FOR ONE OF ASIA'S LARGEST DESALINATION PLANTS**

**Authors:** John McArdle, Ruming Pang, Antonia von Gottberg

**Paper's Country of Attribution:** China

IDAWC REF:(MP07-054)

### **SUPERIOR FEED WATER TO SWRO WITH UF PRETREATMENT**

**Authors:** Mr. Miroslav Blazeovski P.Eng, Mr. Rick Yang

**Paper's Country of Attribution:** Canada

IDAWC REF:(MP07-140)

### **MEMBRANE HOLLOW FIBER MICROFILTRATION AS PRE-TREATMENT FOR REVERSE OSMOSIS SEA WATER APPLICATIONS: NINE STUDIES**

**Authors:** William Sellerberg P.E., Anthony Wachinski Ph.D., P.E., Charles Liu Ph.D., P.E., BCEE, Luis Escobar-Ferrand PhDc, P.E.

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-149)

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## **SESSION 11: Innovative Pretreatment for RO Desalination, Part II**

This session continues to present a range of innovative and state-of-the-art pretreatment technologies applicable to RO desalination. Low pressure membrane pretreatment has now risen to commercial application and is a favorite topic in these sessions.

CO-CHAIRS:

*Prof. Enrico Drioli, Italy*  
*Robert Huehmer, United States*  
*Randy Truby, United States*

### **ORAL PRESENTATIONS:**

#### **PRETREATMENT PRIOR TO RO FOR SEAWATER DESALINATION - THE SYDNEY PILOT-SCALE STUDY**

**Authors:** Sophie Rapenne, Catherine L. Port, Stephen J. Roddy, Jean-Philippe Croue

**Paper's Country of Attribution:** Australia  
IDAWC REF:(MP07-231)

#### **COAGULANT CONTROL AND ALUMINIUM SOLUBILITY CHANGE: CASE STUDY OF A UF/RO PLANT**

**Authors:** Ms. Aleid Diepeveen, Dr. Maria D. Kennedy, Mrs. Hilde Prummel, Mr. Sergio G. Salinas Rodríguez, Dr. Prof. Jan C. Schippers

**Paper's Country of Attribution:** Netherlands  
IDAWC REF:(MP07-221)

#### **OPTIMUM NANOFILTRATION MEMBRANE ARRANGEMENTS IN SEAWATER PRETREATMENT: PART-1**

**Authors:** Dr. A. Z. Abdullatif, Dr. A. M. Farooque, Mr. G. F. Al-Otaibi, Mr. N. M. Kither, Mr. S. I. Al-Khames

**Paper's Country of Attribution:** Saudi Arabia  
IDAWC REF:(MP07-163)

#### **PRETREATMENT OF DESALINATION WITH CERAMIC MEMBRANES**

**Authors:** Dr. Josefin Abrahamsson, Dr. Gareth Milton, Dr. Kohji Hattori, Mr. Frank Rogalla, Mr. Daniel Tan, Mr. Jonathan Clement

**Paper's Country of Attribution:** Singapore  
IDAWC REF:(MP07-008)

## **PRETREATMENT PILOT TEST FOR CHENNAI SWDP**

**Authors:** Engr. Rodrigo Segovia, Engr. Jorge Salas Orta, Dr. Abel Riaza, Engr. Arturo Buenaventura

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-171)

## **BIOLOGICAL FILTRATION OF POOR QUALITY BRACKISH WATER REDUCING REVERSE OSMOSIS MEMBRANE FOULING**

**Authors:** Dr. Hans G Peterson, Mr. Robert Pratt, Mr. Ole Jacob Sortehaug, Ms. Roberta Neapetung

**Paper's Country of Attribution:** Canada

IDAWC REF:(MP07-205)

## **POSTER PRESENTATIONS:**

### **FIRST SUCCESSFUL OPERATION OF SWRO PLANT IN SAUDI ARABIA WITH UF PRETREATMENT**

**Authors:** Engr. Amir Basha Syed K., Engr. Saud Mohammed , Engr. Aziz H Gulamhusein, Engr. Ashraf Al Sheik Khalil, Engr. Abdul Kader M. Kaiser, Dr. Stefan Ryber , Dr. Mourad Ben Boudinar

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-073)

### **MEMBRANE PRETREATMENT ALTERNATIVES FOR ARABIAN GULF SOURCE WATER**

**Authors:** Mr. Charles (Chip) G. Harris III

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-050)

### **CHARACTERIZATION OF NANOFILTRATION MEMBRANES AND THEIR EVALUATION FOR RO DESALINATION PRE-TREATMENT**

**Authors:** Mrs. Anna Llansana, Dr. Enrique Ferrero, Dr. Vanesa Ayala, Mr. Jorge J. Malfeito

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-089)

### **PILOT STUDY OF INTEGRATED PRETREATMENT BEFORE REVERSE OSMOSIS**

**Authors:** Ms. Shamma Ahmed Al MAlek, Dr. Prof. Sergei P Agashichev, Mr. Nasser Saddique

**Paper's Country of Attribution:** UAE

IDAWC REF:(MP07-155)

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## **SESSION 12: Intakes and Outfalls for Desalination Facilities**

This session not only looks at methods of ensuring the correct quality of water pre and post desalination plants, but explores the environmental effects of incorrect treatments.

CO-CHAIRS:

*Dr. Roberto Borsani, Italy*

*Thomas Pankratz, United States*

*Julio Zorrilla, Spain*

### **ORAL PRESENTATIONS:**

#### **DESCRIPTION OF DIFFERENT WATER INTAKES FOR SWRO PLANTS**

**Authors:** Mrs. Guenaelle Cartier, Mr. Pierre Corsin

**Paper's Country of Attribution:** France

IDAWC REF:(MP07-185)

#### **SEAWATER INTAKE AND PRE-TREATMENT USING NEODREN-TECHNOLOGY BASED ON SUB-SEABED DRAINS**

**Authors:** Dr. Thomas A. Peters, Mr. Domènec Pintó

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-247)

#### **SPECIAL SEA WATER INTAKE FOR THE SWCC MED SATELLITE PLANTS**

**Authors:** Engr. Detlef Gille

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-103)

#### **TOWARDS IMPROVED DESIGN CONFIGURATIONS FOR DESALINATION BRINE DISCHARGES INTO COASTAL WATERS**

**Authors:** Mr. Tobias Bleninger, Prof. Gerhard H. Jirka Ph.D.

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-139)

#### **MODELLING A SWRO DISCHARGE USING NEAR/FAR FIELD COUPLING METHODOLOGY IN MURCIA (SPAIN)**

**Authors:** Mr. Francisco Lopez Castejon, Mr. Alberto Javier Peran Rex, Mr. Carlos Conradi Monner, Mr. Antonio Belmonte Rios

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-090)

## **NUMERICAL MODELS OF BRINE DILUTION AS DESIGN TOOLS**

**Authors:** Engr. Arturo Buenaventura, Ms. Victoria Hernandez, Dr. Abel Riaza, Dr. Teresa Soriano, Engr. Enrique Ortiz, Dr. Antonio Moñino, Dr. Asuncion Baquerizo, Dr. Miguel A Losada

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-169)

## **POSTER PRESENTATIONS:**

### **UNDER OCEAN FLOOR SEAWATER INTAKE AND DISCHARGE SYSTEM**

**Authors:** Mr. Sunny Wang, Mr. Eric Leung, Mr. Robert Cheng, Mr. Tai Tseng, Mr. David J. Carlson, Mr. Jeff Henson, Mr. Srinivas Veerapaneni, Mr. Diem Vuong

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-104)

### **BOUNDARY INTERACTIONS IN HORIZONTAL DESALINATION DISCHARGES**

**Authors:** Mr. Dongdong Shao, Dr. Prof. Adrian Wing-Keung Law

**Paper's Country of Attribution:** Singapore

IDAWC REF:(MP07-039)

### **IMPACT OF BRINE DISPOSAL FROM EMU DESALINATION PLANT ON SEAWATER COMPOSITION**

**Authors:** Mr. Raed A. I. Bashitialshaaer PhD, Prof. Magnus Larson, Dr. Kenneth M Persson Adj. Prof., Dr. Mustafa Ergil Asst. Prof.

**Paper's Country of Attribution:** Sweden

IDAWC REF:(MP07-068)



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## SESSION 13: Membrane RO Design

There are some exciting developments in membranes these days in response to specific element issues, energy, cost and space savings, and this session gives the opportunity to present some of these.

CO-CHAIRS:

*Dr. Steven Duranceau, United States*

*Dr. Boris Liberman, Israel*

*Peter Nicoll, United Kingdom*

### ORAL PRESENTATIONS:

#### TAMPA BAY SEAWATER DESALINATION PLANT: A RELIABLE SOLUTION

**Authors:** Mr. Alejandro Jiménez, Mr. Jorge J. Malfeito, Mr. Brian J. Moore, Mr. Kent Turner, Mr. Guillermo Hijós

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-080)

#### UNIQUE DESIGN FEATURES OF COMMERCIAL SWRO PLANTS

**Authors:** Engr. Fayyaz Muddassir Mubeen

**Paper's Country of Attribution:** Pakistan

IDAWC REF:(MP07-001)

#### SEMI PRESSURE-CENTRE OR SINGLE-TRAIN PUMPING SYSTEMS FOR LARGE SWRO PLANTS

**Authors:** Mr. Roderick J Mould

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-077)

#### EVOLUTION OF CONFIGURATION AND OPERATION REGIME AT THE LAS PALMAS III RO SEAWATER DESALINATION PLANT.

**Authors:** Mr. Manolo Gonzales, Mr. Jacinto Curbelo, Mr. Antonio Abanades, Dr. Craig Bartels, Mr. Santi Talo, Dr. Mark Wilf, Mr. Javier Suarez

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-058)

#### SMALL SWRO SYSTEM DESIGN CONSIDERATIONS IN CALIFORNIA

**Authors:** Dr. Val S Frenkel Ph.D., PE

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-060)

## **DESIGN, DEVELOPMENT, AND EVALUATION OF SIXTEEN INCH DIAMETER RO MODULES**

**Authors:** Mr. Matthew J Hallan, Mr. Jon E Johnson Ph.D., Mr. Mike S Koreltz, Mr. Martin H Peery, Mr. Glen W Peterson

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-011)

## **POSTER PRESENTATIONS:**

### **THE LARGEST REVERSE OSMOSIS PLANT IN THE DEAD SEA AREA**

**Authors:** Mr. Peter Temple Ballard, Mr. Marc Pétry, Mr. Miguel Angel Sanz, Mr. Jose Del Castillo

**Paper's Country of Attribution:** France

IDAWC REF:(MP07-132)

### **MULTI-STORIED SWRO DESALINATION PLANTS OF PALM JUMEIRAH ISLAND**

**Authors:** Engr. Fayyaz Muddassir Mubeen

**Paper's Country of Attribution:** Pakistan

IDAWC REF:(MP07-002)

### **60% RECOVERY PERFORMANCE OF ADVANCED RO MODULE AT THE FUKUOKA SEAWATER PLANT**

**Authors:** Mr. Hideto Kotera, Mr. Toshiyuki Yagi, Mr. Toshitaka Tanaka, Mr. Nobuya Fujiwara, Mr. Hideo Tsuge, Mr. Toshio Hamano

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-118)

### **BRACKISH VS. SEAWATER DESALINATION: WHICH ONE IS FOR YOU?**

**Authors:** Dr. Val S Frenkel Ph.D., PE

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-049)

### **EL COLOSO: AN INNOVATIVE DESIGN FOR THE LARGEST COPPER MINE IN THE WORLD**

**Authors:** Mr. Marc Pétry, Ms. Véronique Bonnelye, Mr. Francisco Beltrán, Mr. Elias Trauman

**Paper's Country of Attribution:** France

IDAWC REF:(MP07-131)

### **HADERA 100 MCU PER YEAR MEGA SWRO BOT PROJECT**

**Authors:** Mr. Gustavo Kronenberg

**Paper's Country of Attribution:** Israel

IDAWC REF:(MP07-082)

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## **SESSION 14: Monitoring and Predictive Tools**

This a new session which brings together different types of technology used for monitoring and predicting results and trends throughout the desalination process.

CO-CHAIRS:

*Jan Olsson, Sweden*

*Victor Verbeek, United States*

### **ORAL PRESENTATIONS:**

#### **USE OF ADVANCED ANALYTICAL TOOLS FOR MONITORING PERFORMANCE OF SEAWATER PRETREATMENT PROCESSES**

**Authors:** Mr. Jerome Leparc, Mr. Jean Christophe Schrotter, Mrs. Sophie Rapenne, Mr. Jean Philippe Croué, Mr. Philippe Lebaron, Mr. Abdelkader Gaid, Mr. Daniel Lafon

**Paper's Country of Attribution:** France

IDAWC REF:(MP07-124)

#### **USE OF SPECIALIZED MEMBRANE AUTOPSY TECHNIQUES TO UNDERSTAND**

**Authors:** Mr. James C. Lozier, Mr. Robert Castle, Mr. Todd Reynolds, Mr. Val Frenkel, Mr. Paul Sellier

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-151)

#### **UNDERSTANDING THE SDI AND MODIFIED FOULING INDICES (MFI0.45 AND MFI-UF)**

**Authors:** Dr. Siobhan F. E. Boerlage

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-143)

#### **ASSOCIATION OF SOURCE WATER QUALITY WITH HIGH SILT DENSITY INDEX IN PRETREATED FEED WATER FOR A SEAWATER REVERSE OSMOSIS PLANT**

**Authors:** Dr. Mohamed O. Saeed, Mr. Salah I. Al-Khamis, Mr. Ghazi Ozair

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-161)

#### **SIMPLE LABORATORY TECHNIQUES IMPROVE THE OPERATION OF RO PRE-TREATMENT SYSTEMS**

**Authors:** Mr. Edward G Darton, Ms. Silvia Lopez Gallego

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-199)

## **USE OF MEMBRANE FORENSICS FOR SOLVING OPERATIONAL PROBLEMS IN DESALTING FACILITIES**

**Authors:** Dr. Prof. Steven J. Duranceau

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-106)

## **POSTER PRESENTATIONS:**

### **FLOW MODIFICATION SPACERS IN MEMBRANE DISTILLATION (MD) CHANNELS**

**Authors:** Dr. Prof. Abdulaziz M. Alklaibi, Dr. Prof. Noam Lior

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-229)

### **NEURAL NETWORK DESIGN AND ANALYSIS OF REVERSE OSMOSIS DESALINATION**

**Authors:** Dr. Hazim Qiblawey, Dr. Farouq S. Mjalli, Dr. Nabil Abdel-Jabbar, Dr. Prof. Hisham Ettouney

**Paper's Country of Attribution:** Jordan

IDAWC REF:(MP07-219)

### **NF MEMBRANE CHARACTERIZATION FOR HYBRID DESALINATION APPLICATIONS**

**Authors:** Dr. Altaf Hussain, Mr. Seok-Ho Choi, Dr. Mabrouk Methnani, Mr. Young-Jin Baek, Dr. Prof. Abashar M. E. E., Dr. Prof. Al-Mutaz I. S.

**Paper's Country of Attribution:** South Korea

IDAWC REF:(MP07-125)



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## **SESSION 15: Operation of Membrane Desalination Plants**

The practical experience of operators in the review of successful and/or challenging plants is a most instructive session – this is practice, not theory.

CO-CHAIRS:

*Antonio Casanas, Spain*

*Ali Redha Hussain, Bahrain*

*Jose Luis Perez Talavera, Spain*

### **ORAL PRESENTATIONS:**

#### **DESIGN, OPERATING AND RESEARCH EXPERIENCE AT THE PENNESHAW SEAWATER DESALINATION PLANT, SOUTH AUSTRALIA**

**Authors:** Dr. Con Pelekani, Ms. Sarah Ann Jewell, Mr. Geoff Kilmore

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-126)

#### **SWRO DESALINATION FOR HIGH SALINTY**

**Authors:** Dr. Totaro Goto, Mr. Mitsuyoshi Hirai, Dr. Hideo Iwahashi, Mr. Khalid M. Jolo, Mr. Fahad H. Al Mohammadi, Mr. Wataru Sugiura, Takeo Kanno

**Paper's Country of Attribution:** Qatar

IDAWC REF:(MP07-177)

#### **RECENT OPERATIONAL EXPERIENCES WITH ADVANCED SWRO DESIGN CONCEPTS**

**Authors:** Engr. Antonio Casañas, Dr. Veronica Gacia-Molina, Dr. Veronica Garcia-Molina

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-110)

#### **DESIGN OPTIMIZATION AND PRODUCTION ENHANCEMENT AT RAS ABU JARJUR R.O. DESALINATION PLANT**

**Authors:** Dr. Abdulmajeed Ali Alawadhi, Mr. Ali Redha Hussain

**Paper's Country of Attribution:** Bahrain

IDAWC REF:(MP07-253)

#### **THE WORLD'S LARGEST SWRO DESALINATION PLANT: 2 YEARS OF OPERATIONAL EXPERIENCE**

**Authors:** Mr. Micha Taub

**Paper's Country of Attribution:** Israel

IDAWC REF:(MP07-095)

## **TWO YEARS PERFORMANCE EXPERIENCE WITH TOYOBO SWRO MEMBRANE OPERATION AT ADDUR**

**Authors:** Dr. Ahmed H. A. Hashim, Engr. Ebrahim A. Al Ka'abi

**Paper's Country of Attribution:** Bahrain

IDAWC REF:(MP07-003)

## **REFURBISHMENT OF DHEKELIA SEAWATER DESALINATION PLANT**

**Authors:** Mr. Joseba Etxaniz, Mrs. Olga Villa Sallangos

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-194)

## **TEN YEARS OPERATING EXPERIENCE OF THE FIRST LARGE SWRO PLANT IN ISRAEL**

**Authors:** Engr. Menahem Priel, Dr. Pinhas Glueckstern, Engr. Nurit

Perlov, Engr. Nissim Nadav

**Paper's Country of Attribution:** Israel

IDAWC REF:(MP07-186)

## **POSTER PRESENTATIONS:**

### **PRACTICAL IMPLEMENTATION OF RO MEMBRANES BACKWASH TECHNOLOGY**

**Authors:** Dr. Boris Liberman, Engr. Frits van Rooij

**Paper's Country of Attribution:** Israel

IDAWC REF:(MP07-196)

### **DESIGN, CONSTRUCTION AND OPERATION OF A LARGE SEAWATER DESALINATION FACILITY**

**Authors:** Dr. Srinivas Veerapaneni, Foo Hee Kiang, William Yong,

Freeman Scott, Gary Neun

**Paper's Country of Attribution:** Singapore

IDAWC REF:(MP07-135)

### **THAMES GATEWAY WATER TREATMENT PLANT: 150,000M3/DAY BRACKISH WATER DESALINATION PLANT IN LONDON.**

**Authors:** Mr. Brian J. Moore, Mr. Jorge J. Malfeito

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-010)

### **LARNACA DESALINATION PLANT 51,000 M3/DAY - 6 YEARS OF OPERATION**

**Authors:** Engr. Miriam Faigon, Dr. Erineos Koutsakos, Engr. Fritz Van

Roy, Dr. Boris Liberman, Engr. David Moxie, Dr. David Hefer

**Paper's Country of Attribution:** Israel

IDAWC REF:(MP07-025)

## **DESALINATION AND WATER REUSE IN PAKISTAN – RECENT TRENDS**

**Authors:** Engr. Fayyaz Muddassir Mubeen

**Paper's Country of Attribution:** Pakistan

IDAWC REF:(MP07-035)

## **SUCCESSFUL PERFORMANCE OF TOYOBO'S ADVANCED RO MODULE IN ARABIAN GULF SEAWATER**

**Authors:** Mr. Katsushige Marui, Engr. Ibrahim Mohamed Al-Ateeq, Engr. Abdul aziz Al-Rugaibah, Mr. Satoshi Tanaka, Mr. Masaki Nishida, Mr. Nobuya Fujiwara

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-114)

## **EPC, COMMISSIONING, OPERATION: THE WORLD'S FIRST FULL-SCALE LARGE-DIAMETER SWRO PLANT**

**Authors:** Mr. Felix Y Wang, Ms. Lisa Henthorne, Mr. Chee Yon Ho, Mr. Peng Seng Yip, Mr. Soon Chye Teo

**Paper's Country of Attribution:** Singapore

IDAWC REF:(MP07-187)

## **SEAWATER DESALINATION PLANT OF LOS CABOS (SPAIN): AN INNOVATIVE DESIGN**

**Authors:** Mr. Antonio Ordonez, Ms. Eloisa Salgado, Ms. Belen Gutierrez

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-258)

## **PARS SPECIAL ECONOMIC AND ENERGY ZONE (PSEEZ) 12,500 M3 PER DAY SWRO DESALINATION PLANT: CONSTRUCTION, ERECTION, AND 15 MONTHS OF OPERATION AND MAINTENANCE**

**Authors:** Engr. Amir Arsalan Nassiri, Dr. Arian Edalat

**Paper's Country of Attribution:** Iran

IDAWC REF:(MP07-261)

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## **SESSION 16: Operation of Thermal Desalination Plants**

Operations of thermal desalination plants are the focus of this lively session with presentations on the full realm of thermal technologies in application.

CO-CHAIRS:

*Dr. Abdulmajeed Ali Alawadhi, Bahrain*

*Engr. Adnan Abdulaziz Alomran, Saudi Arabia*

*Gerard Canton, France*

### **ORAL PRESENTATIONS:**

#### **TOWARDS EFFECTIVE SCALE CONTROL IN MULTIPLE-EFFECT DISTILLERS AT HIGH BRINE TEMPERATURES**

**Authors:** Dr. Heike Glade, Engr. Carsten Wildebrand, Prof. Stefan Will, Dr. Manfred Essig, Dr. Jens Rieger, Mr. Stephan Nied, Dr. Gregor Brodt

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-136)

#### **THE MECHANICAL VAPOR COMPRESSION: 38 YEARS OF EXPERIENCE**

**Authors:** Mr. Fredi Lokiec, Mr. Abraham Ophir

**Paper's Country of Attribution:** Israel

IDAWC REF:(MP07-084)

#### **SIDE EFFECT OF ANTIFOAM DOSING ON PERFORMANCE OF DESALINATION UNITS**

**Authors:** Engr. Adnan Abdulaziz Alomran, Engr. Saud M Bin Marshed

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-195)

#### **EXPERIMENTAL INVESTIGATION OF VAPOR SIDE CORROSION IN MULTISTAGE FLASH DESALINATION PLANTS**

**Authors:** Dr. Prof. Abraham S Al-Mutaz, Dr. Mahed A Alodan, Dr. Farj Abudaleem, Engr. Ahmed S Alarifi

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-154)

#### **HIGH ENERGY EFFICIENCY MVC DESALINATION PLANTS: A CASE STUDY**

**Authors:** Mr. Charles Desportes, Dr. Jurgen SCHARFFE

**Paper's Country of Attribution:** France

IDAWC REF:(MP07-071)

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## **SESSION 17: Operation of Water Reuse Systems**

Water reuse plants are presented from the perspective of operations including operating regimes, issues, challenges, and what is working best.

CO-CHAIRS:

*Dr. Totaro Goto, Japan*

*Ian Lomax, Germany*

### **ORAL PRESENTATIONS:**

#### **NORIT AIRLIFT MBR: LARGE-SCALE SIDE-STREAM SYSTEM FOR MUNICIPAL WASTE WATER TREATMENT**

**Authors:** Dr. Harry Futselaar, Mr. Rick Rosberg, Mr. Joost Jacobs, Mr. Lute Broens

**Paper's Country of Attribution:** Netherlands

IDAWC REF:(MP07-009)

#### **LONG TERM WWTP PILOT PLANT EXPERIMENTS WITH MBR, MF/UF, RO/NF**

**Authors:** Mr. Juan Luis Martinez Muro, Mr. Juan Jose Garcia Garcia, Mr. Domingo Zarzo Martinez

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-078)

#### **CITY OF DAYTONA BEACH SALINITY BARRIER PROJECT: COMPLETE REUSE OF RECLAIMED WATER**

**Authors:** Dr. Robert G. Maliva, Dr. Thomas M. Missimer, Mr. Mitt Tidwell

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-094)

#### **SALT REDUCTION DEMONSTRATION PROJECT AT MELBOURNE WATER'S WESTERN TREATMENT PLANT**

**Authors:** Mr. John Poon, Mr. Tohi Otimi, Mr. Zlatko Tonkovic, Mr. Matthew Hyatt

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-202)

#### **DEMONSTRATION SCHEME ON RECLAIMED WATER USES IN THE NORTH DISTRICT OF HKSAR**

**Authors:** Mr. Daniel Sin Cheng Yang, Mr. Edward Chi Keung Yip, Dr. Ken Kin Choi Luk, Mr. Felix Wang, Dr. Greg Leslie

**Paper's Country of Attribution:** Hong Kong

IDAWC REF:(MP07-230)

## **EXPERIENCES IN THE USE OF MEMBRANES FOR BIOLOGICAL TREATMENT (MBR)**

**Authors:** Mr. Carlos G. Garcia Soto, Mr. Rafael Buendia Candel, Mr. Domingo Zarzo Martinez

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-065)

## **POSTER PRESENTATIONS:**

### **HYDROCARBON REMOVAL BY ULTRAFILTRATION MEMBRANES IN THE TREATMENT OF INDUSTRIAL WASTEWATER AND RO PRETREATMENT**

**Authors:** Dr. Noredidine Ghaffour, Dr. Wahib Mohamed Naceur, Engr. Nadjib Drouiche, Engr. Tarik Ouslimane

**Paper's Country of Attribution:** Oman

IDAWC REF:(MP07-066)

### **REUSE TEST OF INDUSTRIAL WASTEWATER IN A COTTON DYEING FACTORY**

**Authors:** Dr. Takaji Akiya, Dr. Mutsuo Kawasaki, Dr. Totaro Goto, Mr. Tetsuo Fujioka, Mr. Shigeru Araki, Mr. Yasuo Murata

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-018)

### **MBR APPLIED IN WASTEWATER RECLAMATION FOR THE OPTO-ELECTRONIC INDUSTRY IN TAIWAN**

**Authors:** Dr. Chen-Hung Frank Ni PhD,P.E., Dr. Chi-Hsin Chen PhD.,P.E., Dr. Yu-Chong Murphy Lin PhD.

**Paper's Country of Attribution:** Taiwan

IDAWC REF:(MP07-072)

### **DESIGN, CONSTRUCTION AND OPERATION OF A MUNICIPAL EFFLUENT RECYCLING FACILITY**

**Authors:** Srinivas Veerapaneni, Gerry O'Toole, Etheridge Mike, John Tattersall

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-144)

### **MBR OPTIMIZATION OF COMPLEX WASTEWATER FOR WATER RECLAMATION IN CANARY ISLANDS**

**Authors:** Mr. Jose Antonio Ramirez, Mr. Enrique Palacios, Mrs. Monica Gutierrez, Rafael Sanchez

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-174)

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## SESSION 18: Protecting the Environment

Environmental topics are explored in this session relative to desalination. Issues vary widely depending on location so there are a variety of topics presented.

CO-CHAIRS:

*Asam Almulla, United Arab Emirates*

*Gary Crisp, Australia*

*Eric Jankel, United Arab Emirates*

### ORAL PRESENTATIONS:

#### **BRINE DISCHARGE PROCEDURES TO MINIMIZE THE ENVIRONMENTAL IMPACT AND ENERGY CONSUMPTION**

**Authors:** Engr. Ruth Sánchez Castillo, Engr. Juan Maria Sanchez Sanchez, Engr. Noemi Sánchez Castillo

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-087)

#### **INNOVATIVE APPROACHES TO RO CONCENTRATE MANAGEMENT: BENEFICIAL REUSE AND CONCENTRATE MINIMIZATION**

**Authors:** Dr. Samer Adham, Ms. Joan Oppenheimer, Manish Kumar, Mohammad Badruzzaman Ph.D., Ms. Li Liu

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-108)

#### **ENVIRONMENT POLLUTION CONTROL AND ON THE UNDERSTANDING OF CHEMISTRY OF STACK EMISSIONS & CORROSION IN OIL FIRED BOILERS**

**Authors:** Dr. Abdulghani I Dalvi

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-063)

#### **INCENTIVES FOR THERMAL DESALINATION IN THE UK**

**Authors:** Mr. Peter G Nicoll, Mr. Stephen M Othen

**Paper's Country of Attribution:** United Kingdom

IDAWC REF:(MP07-105)

#### **FEASIBILITY STUDY ON BUILDING A PORT NEAR A POWER & DESALINATION PLANT**

**Authors:** Dr. Khaled A Mohamed

**Paper's Country of Attribution:** UAE

IDAWC REF:(MP07-157)

## **WHO GUIDANCE ON DESALINATION: RESULTS OF THE WORK GROUP ON ENVIRONMENTAL IMPACTS**

**Authors:** Ms. Sabine Lattemann

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-266)

## **POSTER PRESENTATIONS:**

### **OIL REFINERIES WASTE WATER RECOVERY. A FRIENDLY APPROACH TO THE AQUATIC ENVIRONMENT**

**Authors:** Dr. Francesco M. Salimbeni

**Paper's Country of Attribution:** Switzerland

IDAWC REF:(MP07-228)

### **APPLICATION OF FUEL ADDITIVES AND THEIR USE TO REDUCE CORROSION AND STACK EMISSIONS IN SWCC BOILERS**

**Authors:** Dr. Mohd. Mahmoodur Rahman, Dr. Abdul Ghani I. Dalvi, Dr. Khan Ashfaq Rabbani, Mr. Saad Al-Sulami, Mr. Faisal Mandili, Mr. Hani Mamoun Khaledi, Mr. Bandar Al-Jowdi

**Paper's Country of Attribution:** Saudi Arabia

IDAWC REF:(MP07-165)

### **COMPARATIVE LIFE CYCLE ASSESSMENT STUDY OF PRETREATMENT ALTERNATIVES FOR RO DESALINATION**

**Authors:** Mr. Clemens Fritzmann, Prof. Thomas Melin, Mrs. Claudia Niewersch, Dr. Thomas Wintgens, Mr. Andreas Jansen

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-091)

### **STRATEGIES TO REDUCE THE IMPACT OF SALT ON CROPS PRODUCTION**

**Authors:** Engr. Norbert Francois Tchouaffe Tchiadje

**Paper's Country of Attribution:** Cameroon

IDAWC REF:(MP07-145)

### **THE LIBYAN EXPERIMENTAL ON THE ENVIRONMENTAL IMPACT ASSESSMENT FOR DESALINATION PLANTS**

**Authors:** Engr. Mohamed Mustafa Saleh Elabbar

**Paper's Country of Attribution:** Libya

IDAWC REF:(MP07-262)

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## **SESSION 19: Renewable and Non-Traditional Desalination**

Cutting edge desalination configurations and technologies are the focus of this session. Come and explore where desalination may be in the future.

CO-CHAIRS:

*Manuel Hernandez-Suarez, Spain*

*Fayyaz Mubeen, Pakistan*

*Dr. Roya Sheikholeslami, Australia*

### **ORAL PRESENTATIONS:**

#### **LOW COST ACTIVATED CARBON ELECTROSORPTIVE DEIONISATION TECHNOLOGY IN BRACKISH WATER DESALINATION**

**Authors:** Dr. Linda Zou, Dr. Daoduo Qi

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-211)

#### **SYSTEM INTEGRATION OF RENEWABLE ENERGIES FOR MEMBRANE WATER PURIFICATION**

**Authors:** Dr. Markus Forstmeier, Mr. Wilhelm Feichter, Dr. Oliver Mayer

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-024)

#### **COMPARISON OF VARIOUS MEMBRANE DISTILLATION METHODS FOR DESALINATION USING HYDROPHOBIC CERAMIC MEMBRANES**

**Authors:** Dr. Prof. André B Larbot, Ms. Izabela Struzynska, Dr. Wojciech M Kujawski, Dr. Prof. Michel C Persin, Dr. Sophie A Cerneaux

**Paper's Country of Attribution:** France

IDAWC REF:(MP07-007)

#### **COMPUTATIONAL MODELING OF INCLINED MULTI-STAGE SOLAR DESALINATION STILL N2**

**Authors:** Dr. Yasuo Obikane, Dr. Prof. Sigeru Ikeo

**Paper's Country of Attribution:** Algeria

IDAWC REF:(MP07-193)

#### **EXPERIMENTAL RESULTS OF A NEW HYBRID SOLAR-GAS MULTI-EFFECT DISTILLATION SYSTEM**

**Authors:** Mr. Diego C. Alarcón-Padilla, Dr. Julián Blanco-Gálvez, Dr. Lourdes García-Rodríguez, Dr. Wolfgang Gernjak, Ms. Lidia Roca-Sobrino

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-172)

## **THOUGHTS CONCERNING DESALINATION RESEARCH**

**Authors:** Dr. Jim Birkett

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-119)

## **POSTER PRESENTATIONS:**

### **PV AND THERMALLY DRIVEN SMALL-SCALE, STAND-ALONE SOLAR DESALINATION SYSTEM WITH VERY LOW MAINTENANCE NEEDS**

**Authors:** Dr. Prof. Hassan E. S. Fath, Dr. Prof. Samy M. Elsherbini, Dr. Alaa E. Hassan, Mr. Matthias Rommel, Engr. Marcel Wiegghaus, Engr.

Joachim Koschikowski, Ms. Mostafa Vatansever, Dr. Hassan E. S. Fath

**Paper's Country of Attribution:** Egypt

IDAWC REF:(MP07-206)

### **THE EFFECTIVITY OF A TUBE-TYPE SOLAR DISTILLATOR WITH A HEAT ACCUMULATOR**

**Authors:** Dr. Kazuo Murase, Mr. Yusuke Yamagishi, Mr. Yusuke Iwashita, Mr. Keita Sugino

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-015)

### **PERTH REVERSE OSMOSIS PROJECT: POTABLE WATER FROM SEA AND WIND**

**Authors:** Mr. Miguel Angel Sanz, Mr. Noel Winsor, Mr. Gary Crisp, Miguel Angel Sanz

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-045)

### **RESPONSE TO VARIABLE ENERGY SUPPLY WITH A HYDRAULIC RECOVERY SYSTEM: PILOT STUDY**

**Authors:** Engr. Lidia E. Segura, Dr. Ignacio A. De la Nuez, Dr. Antonio Gómez

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-055)

### **FLOATING FRESHWATER PRODUCTION**

**Authors:** Engr. Hans Gerd Knoop HGK, Dr. Birte Clason BC, Dr. Frank Urban FU

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-097)

## **IMPACT OF SOLAR ENERGY COST ON WATER PRODUCTION COST OF SEAWATER DESALINATION PLANTS IN EGYPT**

**Authors:** Engr. Aya M Lamei, Dr. Elisabeth von Munch, Prof. Pieter van der Zaag

**Paper's Country of Attribution:** Netherlands

IDAWC REF:(MP07-146)

## **SOLAR TUBULAR STILL PRODUCTION COMPARED TO A CONVENTIONAL STAIRWAY DISTILLER FOR RURAL COMMUNITIES**

**Authors:** Engr. Manuel Fuentes, Dr. Aldo Ivan Ramírez, Engr. Arturo Gonzalez, Dr. Sofía Esperanza Garrido, Engr. Antonio Ramírez, Engr. Juan Matias Chacon

**Paper's Country of Attribution:** Mexico

IDAWC REF:(MP07-152)

## **MATCHING RENEWABLE ENERGY SOURCES WITH SMALL SCALE DESALINATION UNITS IN EGYPT**

**Authors:** Engr. Abdel Hakim Mohamed Hassabou, Dr. Inas Kamal El-Gafy

**Paper's Country of Attribution:** Egypt

IDAWC REF:(MP07-214)

## **PV-RO DESALINATION STAND-ALONE SYSTEM IN THE VILLAGE OF KSAR GHILÈNE (TUNISIA)**

**Authors:** Engr. Peñate Baltasar, Engr. Castellano Fernando, Dr. Ramirez Penelope

**Paper's Country of Attribution:** Tunisia

IDAWC REF:(MP07-252)

## **NEW ANALYSIS OF A TUBULAR SOLAR STILL**

**Authors:** Dr. Kh. Md. Shafiul Islam, Dr. Prof. Teruyuki Fukuhara, Mr. Amimul Ahsan

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-041)

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## **SESSION 20: Scale Control in Membrane Operation**

There is still room for improvement in the management of scale - chemical products which are more environmentally acceptable and more specific, better inhibitors and synergistic combinations, and improved predictive or preventative techniques.

CO-CHAIRS:

*Linda Dudley, Barbados*

*Prof. David Hasson, Israel*

*Prof. Anastasios Karabelas, Greece*

### **ORAL PRESENTATIONS:**

#### **THEORETICAL AND PRACTICAL EXPERIENCE OF CALCIUM PHOSPHATE INHIBITION IN RO WATERS.**

**Authors:** Mr. Stephen P Chesters, Mr. Edward G Darton, Mr. Fernando del Vigo

**Paper's Country of Attribution:** United Kingdom

IDAWC REF:(MP07-182)

#### **SILICA POLYMERIZATION AND FOULING ASSESSMENT IN RO DESALINATION PROCESS**

**Authors:** Dr. Ghulam Mustafa, Dr. Roya Sheikholeslami

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-121)

#### **DEVELOPMENT OF THE ELECTROCHEMICAL SCALE REMOVAL TECHNIQUE FOR DESALINATION APPLICATIONS**

**Authors:** Prof. David Hasson, Mr. Victor Lumelsky, Mr. Gal Greenberg, Mr. Yosef Pinhas, Prof. Raphael Semiat

**Paper's Country of Attribution:** Israel

IDAWC REF:(MP07-028)

#### **A NEW INDEX FOR SCALING ASSESSMENT**

**Authors:** Dr. Ahmed Hannachi, Ms. Imen Naimi, Ms. Raoudha Zinoubi, Dr. Hamza Elfil

**Paper's Country of Attribution:** Tunisia

IDAWC REF:(MP07-081)

#### **DESIGNING BETTER ANTISCALANTS BASED ON IMPROVED UNDERSTANDING OF SCALE FORMATION**

**Authors:** Mr. Matthias Gloede, Prof. Thomas Melin

**Paper's Country of Attribution:** Germany

IDAWC REF:(MP07-102)

## **HIGH RECOVERY REVERSE OSMOSIS PROCESS FOR SCARCE DRINKING WATER RESOURCE: YALGOO CASE STUDY**

**Authors:** Mr. Marin Slunjski, Mr. Marc Fabig, Mr. Gary Crisp

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-242)

## **POSTER PRESENTATIONS:**

### **THE INFLUENCE OF CO<sub>2</sub> INJECTION ON THE FEED WATER CHEMISTRY AND SCALING/CORROSION POTENTIALS**

**Authors:** Dr. Aiman Eid Al-Rawajfeh

**Paper's Country of Attribution:** Jordan

IDAWC REF:(MP07-034)

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## **SESSION 21: Water Management and Planning**

This new session topic is hot with presentations on planning supply of future water demands using desalination and water reuse. Critical issues including sustainability, energy usage impacts, and demand management are presented.

**CO-CHAIRS:**

*Ghassan Ejje, Belgium*

*Christopher Gasson, United Kingdom*

*Isao Takekoh, Japan*

## **ORAL PRESENTATIONS:**

### **RISK MANAGEMENT OF RO SEAWATER DESALINATION PROJECTS BY MEMBRANE SUPPLIER**

**Authors:** Mr. Masaaki Ando, Mr. Naoki Tada, Mr. Satoru Ishihara, Mr.

Hiroshi - Iwahori P.E.Jp, Mr. Yuuji - Nishida

**Paper's Country of Attribution:** Japan

IDAWC REF:(MP07-062)

### **PERTH SEAWATER DESALINATION PLANT – BLAZING A SUSTAINABILITY TRAIL**

**Authors:** Mr. Gary Jon Crisp, Ms. Michelle Louise Rhodes

**Paper's Country of Attribution:** Australia

IDAWC REF:(MP07-192)

### **HARNESSING THE SYNERGY OF DESALINATION AND AQUIFER STORAGE RECOVERY**

**Authors:** Mr. Paul Choules, Mr. David Yoxtheimer P.G.

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-029)

## **GETTING DOWN-TO-EARTH FOR WATER REUSE OPTIMIZATION**

**Authors:** Mr. Nauman Rashid

**Paper's Country of Attribution:** UAE

IDAWC REF:(MP07-218)

## **FUTURE CHALLENGES OF INTEGRATION OF DESALINATION, POWER, ENERGY, ENVIRONMENT AND SECURITY**

**Authors:** Mr. Leon Awebuch, Dr. Corrado Sommariva

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-256)

## **ADVANCES AND CHALLENGES OF SEAWATER DESALINATION IN CALIFORNIA**

**Authors:** Mr. Nikolay S Voutchkov

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-100)

## **POSTER PRESENTATIONS:**

### **THE EVOLUTION OF SWRO CO-LOCATION IN THE US: ANALYSIS AND ALTERNATIVES**

**Authors:** Mr. Brent Alspach

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-116)

### **COLLABORATIVE METHODS: EVALUATING, PLANNING, AND FINANCING A BRACKISH GROUNDWATER REVERSE OSMOSIS PLANT**

**Authors:** Mr. Paul E. Smith P.E., Ms. Ellen S. Posivach

**Paper's Country of Attribution:** USA

IDAWC REF:(MP07-069)

### **AESTHETIC, LANDSCAPE AND BIO CLIMATIC TREATMENT OF DESALINATION PLANTS DEVELOPED IN SPAIN**

**Authors:** Mr. Francisco J. Hijós Bitrián, Mrs. M<sup>a</sup> Gabriela Mañueco Pfeiffer

**Paper's Country of Attribution:** Spain

IDAWC REF:(MP07-255)

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## **INTERACTIVE PANEL DISCUSSION**

*Challenges Associated with Large and Innovative Desalination Plants and How We Solved Them*

An interactive round-table will cap off the week's desalination discussions featuring speakers on topics relative to large-scale or innovative desalination plants in Australia, the Middle East and Europe. The discussion will focus on the challenges inherent in financing, building and/or operating facilities which are ground-breaking in size or technology advancements. The audience will have the opportunity to round-out the discussion with provocative thoughts and questions.

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## SPECIALIZED WORKSHOPS

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Four full day post Congress workshops will be offered at an additional fee and under the direction of the following reputable consultants.

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### **Dr. Corrado Sommariva Workshop I: Friday, October 26, 2007 Desalination Management and Economics**

The course initially provides basic approach for CAPEX and OPEX budgeting in desalination industry, with a general overview of water management and planning issues both for RO and Thermal Plant. The course also provides details of water tariff financial modelling and tariff correction factors, issues like private/public.

The course will be delivered with practical examples of water tariff modelling and budgeting exercise and will include “classroom exercises and discussions”

#### ***Workshop topics include:***

Desalination process comparison: MSF, MED, RO and future trends; financial modeling; and budgeting a desalination project

#### ***Who should attend:***

The course is designed both for professionals aiming at widening their budgetary and management skills in seawater desalination and for management who desire to acquire a specific knowledge in seawater desalination.

#### ***Workshop materials:***

Presentation material (CD plus handouts) and the book entitled, “Desalination Management and Economics”

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## **David H. Paul Workshop II: Friday, October 26, 2007**

*New IDA World Congress 8-Hr Training Program*

### **Expert Troubleshooting of Membrane Systems**

This eight-hour training program provides a thorough understanding of over 20 expert-level troubleshooting tools used to solve both simple and complex reverse osmosis (RO) and nanofiltration (NF) problems. The program is presented using a highly visual, enjoyable, easily understood, multimedia format. David Paul, President of DHP, Inc., a world leader in advanced water treatment training, will be the instructor. David has 30 years of membrane water treatment experience including 19 years as a trainer and consultant. Attendees are taken step-by-step through David's troubleshooting methodology. He has provided troubleshooting services to over 100 membrane plants, including brackish and seawater plants.

#### ***What You'll Learn***

- How to use over 20 troubleshooting tools
- The most common problems encountered
- Expert troubleshooting of:

High permeate conductivity; High feed pressure; High pressure drop(s); The requirement for too frequent cleaning; Decreasing effectiveness of chemical cleanings; High element replacement rate.

#### ***Who Should Attend this Workshop?***

Anyone needing to know the latest **UNBIASED** information on troubleshooting RO and NF water treatment problems (DHP is a training company, NOT an equipment vendor).

For More Information on this Training Program, including a detailed agenda:  
[www.dhpseminars.com/pdfs/IDA\\_Maspalomas.pdf](http://www.dhpseminars.com/pdfs/IDA_Maspalomas.pdf)

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## **MASAR Workshop III:**

### **Friday, October 26, 2007**

#### ***Advanced & Intensive Training Workshop on***

### **Membrane Desalination Technologies in Practice**

#### ***Program Overview***

The MASAR Workshop combines presentations and interactive group discussions, highlighted in two 30-minute open-forum periods, for experience exchange to encourage proactive participation and maximize trainee benefits via questions and feedback. Technologies to be discussed in the workshop include RO/NF, conventional and UF/MF membrane filtration pretreatment processes. Energy recovery technologies are also included with comparisons of membrane/thermal energy consumption and economics for seawater desalination.

#### ***Workshop Topics include:***

Membrane plant design criteria; System operation & performance real-time monitoring, evaluation & optimization; Membrane fouling identification, prevention & control; Energy conservation & desalination economics; Design, operation & maintenance practical guidelines.

#### ***Workshop Instructors***

The MASAR Workshop is conducted by two of the water desalination industry's leading international experts: Eng. Mohamad Amin Saad, President & Chief Trainer of MASAR Technologies, Inc., and Dr. Irving Moch, Jr., President of I. Moch & Associates, Inc., with combined technical expertise, hands-on plant experience and field training of more than 50 years worldwide.

#### ***Who Should Attend this Workshop?***

Water desalination plant operators, engineers, managers and end-users, with desalination background and/or technical experience, primarily at seawater RO plants for drinking/potable water applications. Marketing, business & finance professionals seeking a better and practical understanding of membrane technology applications and markets will also benefit.

#### ***Trainee Benefits***

Each attendee receives an interactive *CD-ROM*, designed for on-the-job training, and containing all workshop presentation slides, technical publications and references, combined with a printed *Workbook* for presentation reference and notes. Each attending trainee also receives a *Certificate of Completion*.

For More Information on this Training Program, including a detailed agenda: [www.masar.com/training/masarworkshop.html](http://www.masar.com/training/masarworkshop.html)

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## **Membrane Consultancy Associates Workshop IV: Friday, October 26, 2007**

### ***A Comprehensive Review of***

## **UF/MF and MBR Technology for Water and Wastewater Treatment Applications**

### ***Workshop Presenter***

Dr Graeme K Pearce

### ***Seminar Content and Objectives***

The focus of this Seminar is on the use of UF/MF and MBR in water and wastewater treatment, particularly as a pre-treatment for RO. Membrane technologies will be reviewed, together with the commercial offerings of suppliers. Advantages of competing systems will be highlighted, thus enabling informed selection decisions to be made. The Seminar will then examine case studies and experience of UF/MF and MBR in pre-treatment, and will conclude with a review of operational issues, helping users to understand their systems, improve performance, and solve problems. Assignments will be used to illustrate design and costing topics.

### ***Who Should Attend?***

The Seminar is designed for water and wastewater industry professionals who want to improve their knowledge and skills in Membrane Filtration technology. The content is aimed at process/application engineers, specifiers, and staff with operational responsibility.

### ***Seminar Materials***

Course notes and a CD of the course material will be provided

### ***Trainer Biography***

Graeme Pearce has 25 years of experience in the Membrane Industry, and holds a Chemistry degree and Chemical Engineering doctorate from Oxford University. Membrane Consultancy Associates (MCA), was formed by Graeme in 2005, and specializes in Membrane Filtration technology. MCA helps users in selecting technology, implementing projects, and solving problems. Graeme has a broad experience of lecturing and training both within academia and industry, and is Chartered Chemist and a Chartered Chemical Engineer.

For More Information on this Training Program, including a detailed agenda:  
[www.membraneconsultancy.com](http://www.membraneconsultancy.com)

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## DESALINATION PLANT TOURS

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Plant Tour Visits are being arranged for the following sites on Friday October 26th. Transportation and refreshments will be provided. Details and sign up for the plant tours will be available on site.

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### Las Palmas-Telde

Las Palmas-Telde is a new 35,000 m<sup>3</sup>/d MED plant, built by BABCOCK-WILCOX ESPAÑOLA S.A., AQUAGEST, Inima, OHL, UNELCO, started-up in 2000. This plant was built to replace the first desalination plant built in the Canaries in 1970 which was an MSF plant producing 18,000 m<sup>3</sup>/d.

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### Las Palmas III

Las Palmas III was initially built in 1989 with an original capacity of 36,000 m<sup>3</sup>/d. It has been modified and expanded along the years and now is producing a total of 80,000 m<sup>3</sup>/d. The technology is RO and FILMTEC, TORAY and HYDRANAUTICS elements are being used. This plant is a historical reference and it was one of the largest RO plants in the world when it was built. Breakfast will be hosted by ELMASA during the visit.

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### Jinamar Waste Water Re-use Plant

Jinamar Waste Water Re-use Plant is newly constructed and uses MBR followed by a tertiary treatment using EDR.

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### Sureste

Sureste was originally built in 1993 with a capacity of 15,000 m<sup>3</sup>/d. It is now producing 33,000 m<sup>3</sup>/d. The main curiosity of this RO plant is that during its life they have changed the energy recovery from Francis to Pelton, have increased its capacity by adding a second stage with a booster and have improved the boron rejection by adding a partial second pass. It contains all that we can imagine in a RO plant. ACCIONA will host a BBQ at the conclusion of the visit.

# EXHIBITORS LIST

The 2007 IDA World Congress in Maspalomas, Gran Canaria will feature an exhibition that includes 140 spaces currently featuring over 70 companies from 19 different countries. Due to popular demand, exhibit space has been increased 35% over our previous World Congress in Singapore. The original space was sold out 10 months prior to the event.

The number of exhibiting companies has increased 23% over our last World Congress. This year's exhibitors will display their latest equipment and technology. Attendees will have a unique opportunity to source products and services presented by leading international companies. The IDA World Congress will provide a superb networking and educational opportunity.

## EXHIBITORS

|                                                                     |                                                           |
|---------------------------------------------------------------------|-----------------------------------------------------------|
| ACCIONA Agua (Spanish Pavilion)                                     | GrahamTek                                                 |
| Aqualia                                                             | Harbin ROPV Industry Development Center                   |
| AquaFactory                                                         | HOH Canarias S.A.                                         |
| Aqualyng, A.S. (Spanish Pavilion)                                   | Horizon Environmental Engineering                         |
| AquaTech International Corp                                         | Hydranautics                                              |
| Astramatic, S.A. (Spanish Pavilion)                                 | IDE Technologies Ltd                                      |
| Avista Technologies                                                 | Industeel Arcelor/UGITECH                                 |
| Befesa Construcción y Tecnología Ambiental, S.A. (Spanish Pavilion) | Inima Medio Ambiente, S.A. (Spanish Pavilion)             |
| BASF AG                                                             | Koch Membrane Systems                                     |
| Bekaert Progressive Composites Corp.                                | KSB AG                                                    |
| Bel Group Ltd                                                       | Met-Pro Corp/Fybroc                                       |
| BWA Water Additives                                                 | Middle East Desalination Research Center                  |
| Cadagua, S.A. (Spanish Pavilion)                                    | Ministry of Environment                                   |
| Cadar Ltd                                                           | MTS Valves & Technology (Spanish Pavilion)                |
| Calder AG                                                           | Nalco Company - Permacare                                 |
| Caramondani Desalination Plants Ltd                                 | National Oilwell Varco                                    |
| CAT PUMPS                                                           | Norit/X-Flow                                              |
| CH2M Hill                                                           | Outokumpu Stainless AB                                    |
| Cobra Instalaciones y Servicios, S.A. (Spanish Pavilion)            | Pall Corporation                                          |
| Codeline/Pentair Water India                                        | Piedmont Pacific Corporation                              |
| Danfoss A/S RO-Solutions                                            | Protesa, S.A. (Spanish Pavilion)                          |
| Degremont                                                           | PUB Singapore                                             |
| Doosan Heavy Industries & Const. Co. Ltd                            | Pump Engineering Inc                                      |
| Dow Water Solutions                                                 | S.A. Depuración y Tratamientos (SADYT) (Spanish Pavilion) |
| Drace Construcciones Especiales y Dragados, S.A. (Spanish Pavilion) | Sachan Industries, Inc                                    |
| Duechting Pumpen                                                    | Severn Trent Services                                     |
| ELMASA                                                              | Statiflo International Ltd                                |
| Energy Recovery Inc.                                                | Sulzer Pumps                                              |
| FEDCO                                                               | Taprogge GmbH                                             |
| Flowserve Corporation                                               | Toray Industries Inc                                      |
| Fluytec S.A.                                                        | Torishima Pump Mfg Co                                     |
| GE Water & Process Tech                                             | Toyobo Co. Ltd.                                           |
| Genesys International Ltd                                           | Veolia Water Solutions & Technologies                     |
| Global Water Partnership                                            | Vontron Membrane Technology Co Ltd                        |
|                                                                     | Weir Materials & Foundries                                |

# IDA World Congress 2007 Maspalomas Floor Plan

Updated: July 30, 2007

## Exhibitors

- |                           |                 |                      |                             |                     |                               |
|---------------------------|-----------------|----------------------|-----------------------------|---------------------|-------------------------------|
| 1 Bel Group Ltd           | 25 Befesa       | 49 KSB AG            | 73 Vontron Membrane         | 97 Aquafactory      | 121 Degremont                 |
| 2 Avista Technologies     | 26 Befesa       | 50 KSB AG            | 74 MEDRC                    | 98 Aquafactory      | 122 Degremont                 |
| 3 Energy Recovery         | 27 Befesa       | 51 KSB AG            | 75 Industeel Arcelor        | 99 PUB Singapore    | 123 Degremont                 |
| 4 Energy Recovery         | 28 Befesa       | 52 KSB AG            | 76 Industeel Arcelor        | 100 PUB Singapore   | 124 Degremont                 |
| 5 BASF                    | 29 Sadyt        | 53 Toray Industries  | 77 Plymouth Tube            | 101 Graham Tek      | 125 Koch Membrane             |
| 6 Piedmont Pacific        | 30 Acciona Agua | 54 Toray Industries  | 78 Dow Chemical             | 102 Graham Tek      | 126 Koch Membrane             |
| 7 Duechting Pumpen        | 31 Acciona Agua | 55 ELMASA            | 79 Dow Chemical             | 103 Graham Tek      | 127 Koch Membrane             |
| 8 Duechting Pumpen        | 32 Acciona Agua | 56 ELMASA            | 80 Nalco                    | 104 Graham Tek      | 128 Koch Membrane             |
| 9 Codeline/Pentair        | 33 Inima        | 57 ELMASA            | 81 Bekaert                  | 105 Graham Tek      | 129 HOH Canarias              |
| 10 Codeline/Pentair       | 34 Inima        | 58 ELMASA            | 82 OSMO Sistemi             | 106 Graham Tek      | 130 Outokumpu                 |
| 11 Aquatech International | 35 Cadagua      | 59 Danfoss           | 83 Aqualia                  | 107 Veolia Water    | 131 Torishima Pump            |
| 12 Met-Pro-Fybroc         | 36 Cadagua      | 60 Danfoss           | 84 Aqualia                  | 108 Veolia Water    | 132 Cadar Ltd                 |
| 13 MTS Valves             | 37 Doosan       | 61 Saehan Industries | 85 Aqualia                  | 109 Veolia Water    | 133 Horizon Env. Eng.         |
| 14 Aqualyng               | 38 Doosan       | 62 Saehan Industries | 86 Aqualia                  | 110 Veolia Water    | 134 Norit X-Flow              |
| 15 Cadagua                | 39 Doosan       | 63 Weir Materials    | 87 Harbin ROPV              | 111 Veolia Water    | 135 FEDCO                     |
| 16 Cadagua                | 40 Doosan       | 64 Weir Materials    | 88 National Oilwell Varco   | 112 Veolia Water    | 136 BWA Water Additives       |
| 17 Cobra                  | 41 Sulzer Pumps | 65 IDE Technologies  | 89 Statiflo Int'l Ltd       | 113 GE Water        | 137 Pall Espana               |
| 18 Cobra                  | 42 Sulzer Pumps | 66 Taprogge          | 90 CH2M Hill                | 114 GE Water        | 138 Severn Trent              |
| 19 Drace                  | 43 inge AG      | 67 Calder AG         | 91 Pump Engineering         | 115 GE Water        | 139 Fluytec                   |
| 20 Protesa                | 44 inge AG      | 68 Calder AG         | 92 Global Water Partnership | 116 GE Water        | 140 Prince Sultan Water Prize |
| 21 Acciona Agua           | 45 CAT Pumps    | 69 Hydranautics      | 93 Aquafactory              | 117 Flowserve Corp. |                               |
| 22 Acciona Agua           | 46 CAT Pumps    | 70 Hydranautics      | 94 Aquafactory              | 118 Flowserve Corp. |                               |
| 23 Acciona Agua           | 47 Toyobo       | 71 Genesys Int'l     | 95 Aquafactory              | 119 Flowserve Corp. |                               |
| 24 Astramatic             | 48 Toyobo       | 72 Vontron Membrane  | 96 Aquafactory              | 120 Flowserve Corp. |                               |

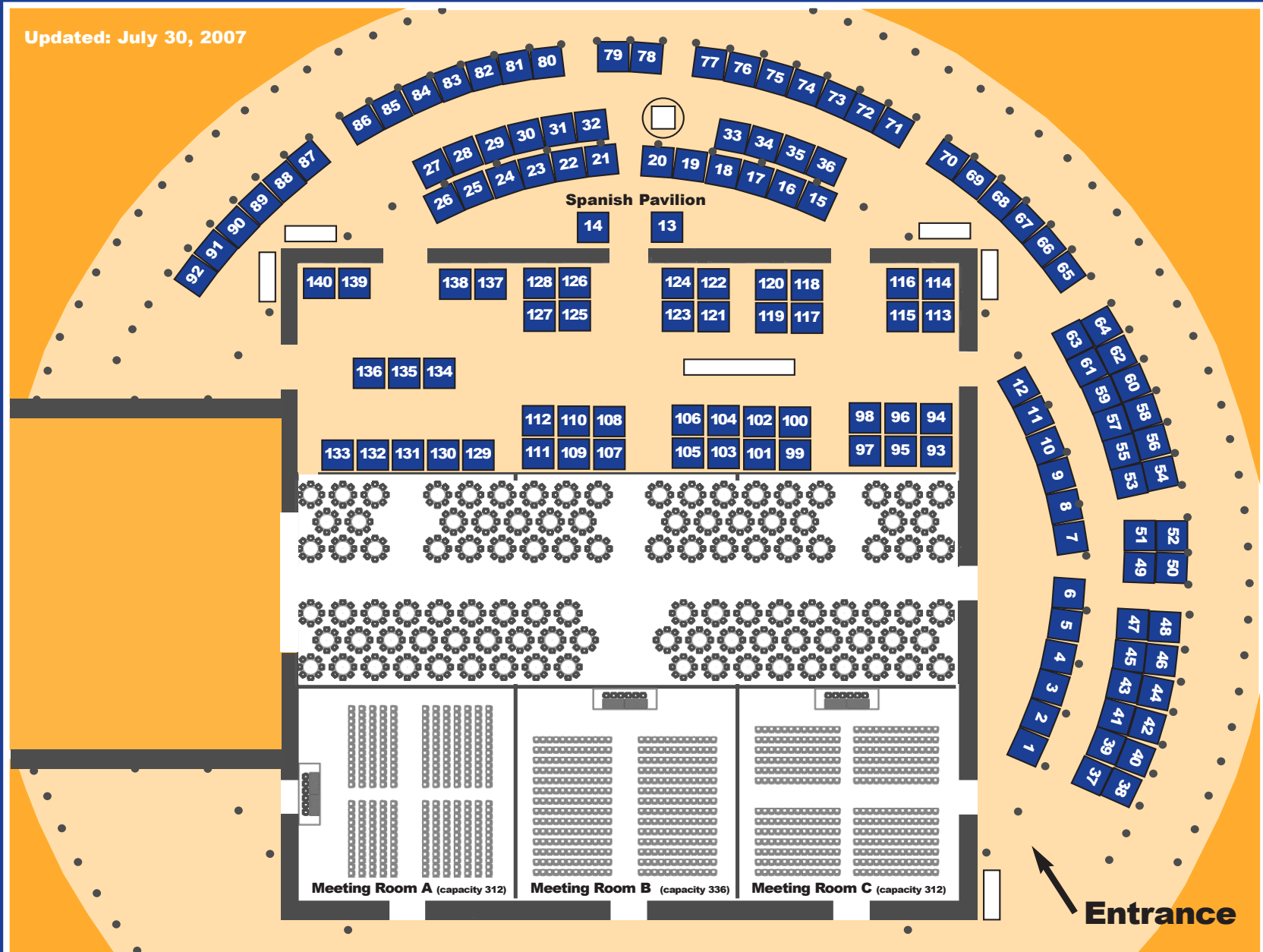
### Spanish Pavilion

Entrance

*Open fold-out, for Exhibitor Booth Numbers.*

## IDA World Congress 2007 Maspalomas Floor Plan

Updated: July 30, 2007



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## CONGRESS INFORMATION

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### Awards

The IDA World Congress is not just a conference for discussion of desalination and water reuse. It is also a place to commemorate the accomplishments of world water experts whose exceptional efforts are already improving our water resources through desalination technologies and increasing our knowledge of water through groundbreaking research.

Awards will be given for best presentation in each of the categories: **Oral** in the field of **Membrane – Thermal – General Topic** and for two **Best Overall Posters**

Award-winning paper criteria includes: technical or scientific originality, relevance and importance to the fields of desalination and water reuse, organization of material, clarity of writing, and excellence of presentation to the attendees.

### Climate

Gran Canaria enjoys a spring climate all year round with average annual temperatures that fluctuate between 18 and 25 degrees centigrade.

The sea is equally as warm with temperatures fluctuating between 18 °C in the winter months and 22 °C during the rest of the year. The island's mild climate and the absence of extreme temperature variations make it possible to practice practically any type of outdoor sports activity during any time of the year.

### Currency

The local currency is the EURO

### Deadlines

- Early Registration Discount ends September 21<sup>st</sup>
- All Pre-registration will end on October 1<sup>st</sup>
- After October 1st all registration will be taken on-site only

### Dining – Shopping – Site Seeing and More

#### *Dining*

The traditional Canarian cuisine can be found in the wide range of restaurants that specialize in local gastronomic pleasure with creativity and style.

#### *Shops*

Gran Canaria boasts an extensive network of shopping areas in the island's main urban and tourist centres. Most shops are open from 10 am to 8 pm, although some close for lunch between 1.30 pm and 4.30 pm; the shopping centres are open from 10 am to 10 pm, while shop owners in tourist centres are free to determine their own business hours and days.

### *Tourist Information Offices*

Gran Canaria has an extensive network of tourist information offices that are situated in every city and town on the island. Here, visitors can obtain information on everything that they may wish to know about the island's culture, customs, places of interest, etc. please visit their web site at <http://www.grancanaria.com/patronato-turismo/6865.0.html>

### **Golf Tournament**

The 3<sup>rd</sup> International Desalination Association golf tournament will be held in Maspalomas on Sunday, October 21, 2007 at the Melonares Golf Course and there will be prizes awarded. All parties interested in participating in this event should contact **Antonio Casanas** at [acasanas@dow.com](mailto:acasanas@dow.com) or Dr. Harvey Winters at [harvey@fdu.edu](mailto:harvey@fdu.edu)

### **Hotel Information**

Maspalomas offers a large selection of hotels where you can combine relaxation with your work. With the most up-to-date infrastructure and accommodation to please visitors from anywhere in the world, these hotels are located in the south of the island. Four-star and five-star hotels are as follows:

Gran Hotel Villa del Conde – SOLD OUT

H10 Playa Meloneras Palace – SOLD OUT

Gran Hotel Costa Meloneras \*\*\*\*

Riu Grand Palace Maspalomas Oasis \*\*\*\*\*

Seaside Hotel Palm Beach \*\*\*\*\*

Hotel IFA Faro Maspalomas \*\*\*\*

All reservations must be made directly with the hotel. Choose from five by visiting <http://www.grancanaria-ida2007.com/hotels.html> to view details, prices and reservation forms. Please be sure to book early to take advantage of the rates and proximity of the meetings and other functions.



## Lunches & Refreshments

Lunches will be provided at the Congress venue each day. The cost of lunches is included in the registration fee. Refreshments will be served in the Exhibition and Poster Presentation areas during event breaks.

## Registration Fees & General Information

The registration fee includes entrance to all IDA Technical Sessions, the Exhibition, Lunches, Receptions and Gala Dinner. It also includes a CD of the Congress Proceedings and a printed Abstract Book.

To register online with a credit card go to [www.idadesal.org](http://www.idadesal.org) For payment by a bank Check (drawn only on a US Bank & in US funds), use Registration Form on page 71.

Early (**discounted**) registration will **end September 21, 2007**. All **pre-registration will end October 1, 2007**. PLEASE NOTE: After October 1<sup>st</sup> all registrations are accepted only on-site. Onsite registration forms will be available on our website at the end of pre-registration.

### CONGRESS: Sunday-Thursday, October 21-25, 2007

|                                                           | <u>Before Sept. 21, 2007</u> | <u>After Sept. 21 &amp; on-site</u> |
|-----------------------------------------------------------|------------------------------|-------------------------------------|
| IDA Members                                               | 800 USD                      | 1000 USD                            |
| Non-Members                                               | 900 USD                      | 1000 USD                            |
| Full-time professors/students<br>(who are members of IDA) | 350 USD                      | 1000 USD                            |

### SPECIALIZED WORKSHOPS: Friday, October 26, 2007

|                                 | <u>Before Sept. 21, 2007</u> | <u>After Sept. 21 &amp; on-site</u> |
|---------------------------------|------------------------------|-------------------------------------|
| Dr. Corrado Sommariva           | 450 USD                      | 500 USD                             |
| David H Paul                    | 450 USD                      | 500 USD                             |
| MASAR Technologies              | 450 USD                      | 500 USD                             |
| Membrane Consultancy Associates | 450 USD                      | 500 USD                             |

*NOTE: All workshops offer one free workshop registration for every 3 registrations for the same workshop purchased by the same organization (applicable only to pre-registrations). Fee payment for ALL group members must be made at the same time.*

### On Site Registration

You may register at the conference site from 3:00 to 5:00 PM on Sunday October 21<sup>st</sup> and beginning at 7:30 AM on Monday, October 22<sup>nd</sup>.

We recommend that you register on Sunday to avoid delays. Exhibitors only are requested to register from 1:00 to 2:00 PM on Sunday, October 21<sup>st</sup>.

## Social Events

The registration fee includes attending all evening social events beginning with Sunday's *Welcome Reception* to Tuesday's *Canary Night*, a hosted Theme Celebration by ELMASA on Wednesday, finishing with the IDA awards & Gala banquet on Thursday.

## Social Programs

Social programs will be available on site for those interested in golf, island tours, sports activities and more.

## Sponsorships

IDA relies on the generosity of the desalination community to achieve our objective of promoting desalination technology worldwide. We are pleased to announce the following companies have signed on as sponsors for the 2007 IDA World Congress.

Platinum Sponsors: ACCIONA Agua  
Dow Water Solutions

Gold Sponsor: DRACE medioambiente

Silver Sponsor: Aquatech International

Social Events: ATTA (Technological Association for Water Treatment)  
ELMASA

## Travel & Visa

Gran Canaria is easily accessible by all major carriers. Gran Canaria airport (code: LPA) is located in the middle of the east coast of Gran Canaria, and is an approximate 25 minute drive to Maspalomas. Visitors traveling from the Middle and Far East will find connecting flights from London, Paris, Frankfurt, Munich, etc. Also, there are limited direct flights from Gatwick. Those coming from North and South America will connect from Madrid with several direct connections to the Gran Canaria daily.

*Visas* - Citizens of the following countries do **not** need a visa to enter Spain:

ANDORRA, ARGENTINA, AUSTRALIA, BOLIVIA, BRAZIL, BRUNEI, BULGARIA, CANADA, CHILE, COSTA RICA, CROATIA, CYPRUS, CZECH REPUBLIC, EL SALVADOR, ESTONIA, GIBRALTAR, GRENADA, GUATEMALA, HONDURAS, HUNGARY, ICELAND, ISRAEL, JAPAN, LATVIA, LIECHTENSTEIN, LITHUANIA, MALAYSIA, MALTA, MEXICO, MONACO, NICARAGUA, NORWAY, NEW ZEALAND, PANAMA, PARAGUAY, POLAND, ROMANIA, SAN MARINO, SEYCHELLES, SINGAPORE, SLOVAKIA, SLOVENIA, SOUTH KOREA, SWITZERLAND, UNITED STATES OF AMERICA, URUGUAY, VATICAN CITY, VENEZUELA, HONG KONG(SAR), MACAO(EAR) and citizens of THE EUROPEAN UNION.

If you are one of these nationalities, you can enter Spain without a visa and stay for up to 90 days in any 6-month period. If your country is **not** listed you will need to

apply for a visa to enter Spain. If you need to contact your local Spanish Embassy or Consulate, please visit <http://www.idadesal.org/PDF/spanish%20embassy%20list.pdf>

If you need an invitation letter to apply for your visa, visit the IDA web site at <http://www.idadesal.org/PDF/visa%20invitation%20info%20form%20mp07.pdf> to download the request form. Please complete and return to IDA **after** you have registered. Letters of invitation will be sent from the Consejo Insular de Aguas and will be sent **only** to registered attendees.

## Venue

*Palacio de Congresos de Maspalomas* is located in one of the most important tourist areas south of the island, just a few meters away from the Dunes natural reserve and a short distance from the six hotels with secured group rates available to all attendees of the Congress.

All of the Congress' technical sessions, exhibitions and luncheons will be held at the Palacio de Congresos de Maspalomas



### *Palacio de Congresos de Maspalomas*

Plaza de las Convenciones s/n

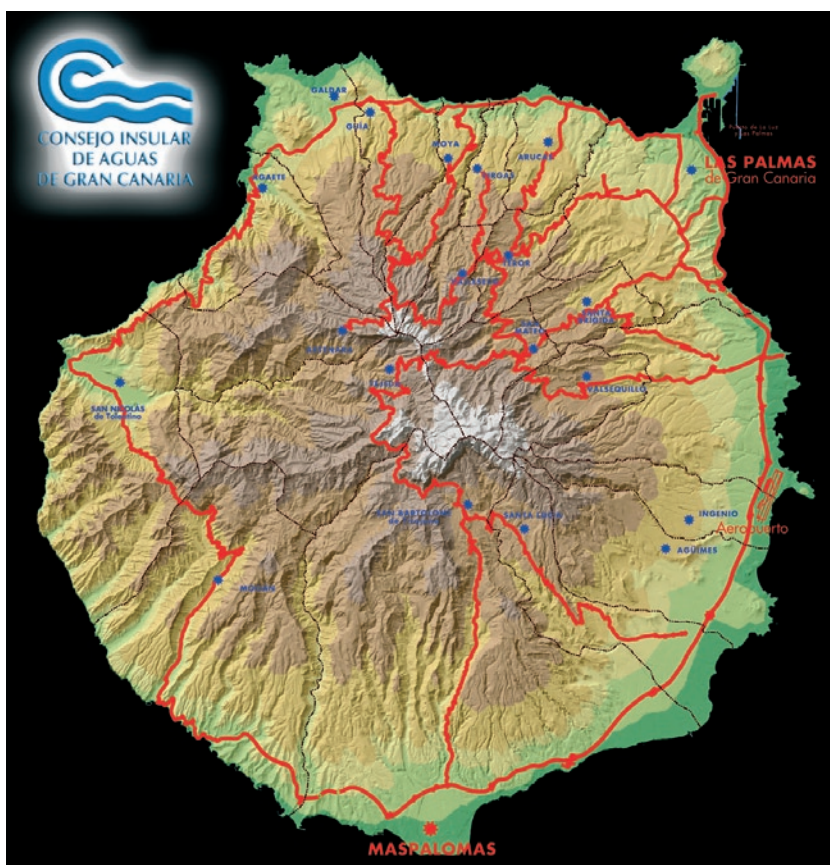
C.P. 35100

San Bartolomé de Tirajana, Las Palmas (province) Spain

Phone: +34 928 1280000

Fax: +34 928 128009

## MAP OF GRAN CANARIA



*The natural landscape, mixed with the mildness of the island's climate, offers unlimited possibilities for recreation making Gran Canaria an ideal place to meetings. Gran Canaria is blessed with a wealth of natural resources, most notably the 60 kilometers of beaches, ranging from the impressive Maspalomas beach, with its oasis of sand dunes right next to the sea, to the concealed and unspoiled Güigüi beach, and the more lively Las Canteras beach right in the capital.*

*The island's mild climate and the absence of extreme temperature variations make it possible to practice practically any type of outdoor sports activity during any time of the year.*

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# IDA AFFILIATES

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IDA is pleased to recognize our affiliates

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## Regional Affiliates

AEDyR – Asociacion Espanola de Desalacion y Reutilizacion

AMTA – American Membrane Technology Association

CDA – Chinese Desalination Association

EDS – European Desalination Society

JDA – Japanese Desalination Association

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## Association Affiliates

WSTA – Water Science and Technology Association

WDEC – Water Desalination Engineering Chapter

PaKDA – Pakistan Desalination Association

InDA – Indian Desalination Association







# International Desalination Association REGISTRATION FORM



## IDA World Congress on Desalination & Water Reuse October 21-26, 2007

Palacio de Congresos de Maspalomas, Gran Canaria, SPAIN

All Fees are in US Dollars

### PRE-REGISTRATION (BEFORE 9/21/07)

|                                       |       |
|---------------------------------------|-------|
| ____ IDA Member Registration          | \$800 |
| ____ Non Member Registration          | \$900 |
| ____ IDA Member AND Full Time         |       |
| ____ Student or Professor Reg.        | \$350 |
| <u>Specialized Workshops</u>          |       |
| ____ Dr. Corrado Sommariva Workshop I | \$450 |
| ____ David H. Paul Workshop II        | \$450 |
| ____ MASAR Technologies Workshop III  | \$450 |
| ____ Membrane Consultancy Workshop IV | \$450 |

\*All workshops purchased during pre-registration offer one free registration for every 3 registrations purchased by the same organization (applicable only to pre-registrations). Fee payment for ALL group members must be made at the same time.

**TOTAL DUE:** \$ \_\_\_\_\_

### LATE REGISTRATION (AFTER 9/21/07)

|                                       |        |
|---------------------------------------|--------|
| ____ IDA World Congress Registration  | \$1000 |
| <u>Specialized Workshops</u>          |        |
| ____ Dr. Corrado Sommariva Workshop I | \$500  |
| ____ David H. Paul Workshop II        | \$500  |
| ____ MASAR Technologies Workshop III  | \$500  |
| ____ Membrane Consultancy Workshop IV | \$500  |

**TOTAL DUE:** \$ \_\_\_\_\_

ATTENDEE NAME \_\_\_\_\_

Mr/Mrs/Ms/Prof/

Given Name

Middle Name

Family Name

COMPANY NAME: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_

Country: \_\_\_\_\_

Postal Code \_\_\_\_\_

Telephone: + \_\_\_\_\_

Facsimile: + \_\_\_\_\_

EmailAddress: \_\_\_\_\_

ATTENDEE Name on Badge to Read \_\_\_\_\_

### ~ METHOD OF PAYMENT ~



☐ Cash

☐ Cheque Number: \_\_\_\_\_

☐ Credit Card for Payment:



Credit Card Number \_\_\_\_\_

Expiration Date: \_\_\_\_\_

CID Number (required):\*\* \_\_\_\_\_

\*\*last 3 digits on back of Visa or MC, 4 digits on front of Amex

Print Name on Credit Card \_\_\_\_\_

Signature of Card Holder \_\_\_\_\_

**CANCELLATION POLICY:** No Refunds after August 24, 2007. Refund requests must be made in writing to IDA and are subject to a \$50.00 handling fee  
**Return form to Ms. Nancy Pagels at npagels@idadesal.org**

PO Box 387, 7 Central Street, Topsfield MA 01983 USA / PHONE: +1.978.887.0410 FAX: +1.978.887.0411 WEBSITE: [www.idadesal.org](http://www.idadesal.org)





## MEMBERSHIP

October 2006

### BENEFITS

Widely regarded as the industry's leading organization, the International Desalination Association is an alliance of more than 1000 industry leaders united in the purpose of advancing desalination technology. IDA members bring a wealth of knowledge and enthusiasm to the industry and their network constitutes a global advisory board.

#### Class I members receive:

- Reduced conference registration price at IDA World Congress
- Reduced prices on exhibition stands at IDA exhibitions (1000 USD value in 2007)
- Ability to reserve premium exhibition stands at IDA World Congress
- Reduced prices at all Association activities including conferences, seminars and workshops (100 USD value for 2006 IDA Int'l Water Forum)
- 35% price reduction for additional IDA individual memberships (30 USD value each)
- Complimentary conference proceedings on IDA web site (full technical paper)
- Complimentary subscription to *The International Desalination & Water Reuse Quarterly* (93 USD annual value)
- Complimentary On-Line Membership Directory
- Annual subscription to *IDA News*
- 10% price reduction on the *2006 Desalting Plants Inventory #19* (120 USD value)
- 200 word company description published in the On-Line Membership Directory

#### Class II and Class III members receive:

- Reduced conference registration price at IDA World Congress
- Reduced prices at all Association activities including conferences, seminars and workshops (100 USD value for 2006 IDA Int'l Water Forum)
- Complimentary conference proceedings on IDA web site (full technical paper)
- Complimentary subscription to *The International Desalination & Water Reuse Quarterly* (93 USD annual value)
- Complimentary On-Line Membership Directory
- Annual subscription to *IDA News*

**INTERNATIONAL DESALINATION ASSOCIATION**



## MEMBERSHIP APPLICATION

October 2006

| Membership Category  | Type     | Eligibility                                                 | Dues  | Includes    |
|----------------------|----------|-------------------------------------------------------------|-------|-------------|
| Class I/Company:     | <u>A</u> | Corporations<br>Utilities                                   | \$750 | 3 employees |
|                      | <u>B</u> | Small companies<br>Universities<br>Non-profit Organizations | \$500 | 2 employees |
| Class II/Individual: |          | Individuals                                                 | \$85  |             |
| Class IID/Add. Mbr   |          | Individual                                                  | \$55  |             |
| Class III:           | <u>A</u> | Students                                                    | \$25  |             |
|                      | <u>B</u> | Libraries                                                   | \$25  |             |

Name (Last, First, Middle) (please attach business card if available)

Company

Address

Telephone

Facsimile

Email

|                                                               |                                                |
|---------------------------------------------------------------|------------------------------------------------|
| <input type="checkbox"/> American Express                     | Credit Card Number _____                       |
| <input type="checkbox"/> Mastercard                           | Name of Cardholder _____                       |
| <input type="checkbox"/> Visa                                 | Expiration Date _____ CID # (required)** _____ |
| <input type="checkbox"/> Discover                             |                                                |
| <input type="checkbox"/> Diners                               | Signature _____                                |
| <input type="checkbox"/> Check Enclosed (Please remit in USD) | CHECK NUMBER: _____                            |

\*\*3 digits on back of Visa or Mastercard, 4 digits on front of American Express

Please complete the section below if you are applying for Class 1 Membership:

Principal Activity of Company

Name of Primary Contact Person

Signature of Authorized Officer

Please direct inquiries to [Candace MacLaughlin](mailto:Candace MacLaughlin@idadesal.org) at [Candace MacLaughlin@idadesal.org](mailto:Candace MacLaughlin@idadesal.org)  
Fax number 978-887-0411

**INTERNATIONAL DESALINATION ASSOCIATION**



**International Desalination Association**

7 Central Street, P.O. Box 387

Topsfield, Massachusetts 01983 USA

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[www.idadesal.org](http://www.idadesal.org)

