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IDA 2015 World Congress – A Great Success!

By Rick Stover and Doug Eisberg



IDA's 2015 World Congress on Desalination and Water Reuse is a wrap! After two years of dreaming, planning and hard work, Congress Co-Chairs Doug Eisberg and Rick Stover are both relieved but also a bit sad to call it done. Here are our reflections on the event.

Why San Diego? There are few places in the world where the emergence of desalination and water reuse are more evident or immediate than in Southern California. San Diego was the birthplace of reverse osmosis, the technology used for desalination and water reuse purification technology

now used around the world. The Point Loma community in San Diego was the testing ground for one of the first thermal desalination units in the Western Hemisphere, a program overseen by the United States Office of Saline Water (OSW). And, of course, San Diego is a great place to be – great to visit, great weather and great people.

The timing of the Congress corresponded with the startup of the Carlsbad Desalination plant, the largest seawater reverse osmosis plant in the Western Hemisphere. Additionally, the Orange County Groundwater

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message

from the President

Emilio Gabrielli



By all accounts, the World Congress in San Diego was a great success. I say “by all accounts” because immediately following my election as President, I dedicated my time on the many duties of this office and leading the IDA in the most effective way possible over the next two years.

As a result, it was difficult to participate in many of the activities that make the IDA World Congress such a special event. That was disappointing for me, especially as I have heard that people enjoyed it a lot, especially some of the features such as the panels, the meetings with students, etc. On the other hand, I believe that the decision to focus right from the start on the many opportunities and challenges facing the IDA will prove to be the right one for our Association.

D&WR, IDA’s quarterly magazine, invited me to write a piece to speak about my vision as President of the IDA – what I see as the main challenges to be and what I hope to achieve. I have

just sent it to them and it will be published in the next issue. All IDA members receive the magazine and can read the full text there, so I will not repeat myself.

Instead, let me add here some comments more of a personal nature.

I will start by saying that I was humbled by the warmth I felt around me after I was elected, in the Board and among members, including those who had not originally supported me. I am very grateful to all and hope to meet people’s expectations. I must say it was particularly gratifying for me to receive the support of the IDA Affiliates, which also gives me the extra challenge to make sure IDA manages to be what our Affiliates expect in terms of leadership, cooperation and support.

I take the above sign of support as a specific personal challenge. In fact, there are indications that the IDA needs to engage more strongly our members and Affiliates. The most striking evidence was the relatively low number of members who took the time to vote in the Board elections. Also, only four affiliates picked up the offer to be represented in the Global Village in IDA’s stand at the World Congress. I do hope that the implementation of the new strategic plan and the effort of institutional progress starting with the establishment of the informal Advisory Group to review the IDA Constitution will provide a fertile ground where we can grow much greater engagement with our members and Affiliates.

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IDA 2015 World Congress – A Great Success!

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Replenishment project – the groundbreaking indirect potable reuse water recycling facility that initially started up in the 1970s – opened its facility expansion just before the Congress convened. The unprecedented drought in the American Southwest was the backdrop of the event, adding a profound degree of urgency and relevance to the proceedings and increasing interest in local projects.



In planning the Technical Program, we committed to honor and preserve the outstanding legacy of the World Congress as the premier event in the global desalination and water reuse industry, featuring cutting edge work in subject areas ranging from brackish and seawater desalination to industrial and domestic water reuse; from environmental management and environmental challenges to governance, finance and project delivery; and from lessons learned in long running plants to the latest breakthroughs and emerging technologies. The 2015 World Congress brought together stakeholders from all parts of the globe, including end users, utilities, researchers, consultants, members of academia, manufacturers and suppliers.

That said, we wanted this Congress to be different from the 2013 meeting in Tianjin while bringing back some of the features of the IDA Congresses in Perth, Dubai, Maspalomas and Singapore. Specifically, the Technical Planning Committee was tapped to review all the abstracts, and session co-chairs were given a more empowered role in reviewing papers and shaping the content of the program with a goal of high quality papers and presentations. Also, this year we made water reuse /recycling a more significant part of the program in addition to desalination topics.

The response of the IDA membership to the Call for Papers was amazing as we received well over 400 abstracts. We implemented a new software platform through which we reviewed abstracts and communicated with the committee and the authors.

From the overwhelming number of abstracts, over 300 papers were written and submitted from 44 different countries. The papers were organized into 24 sessions over four full days, including oral and digital poster presentations. While new to many, this year's digital poster presentations were particularly successful, with people lined up to present and listen — so successful, in fact, that the 10 stations we set up were not enough.

This World Congress was full of "firsts." For example, we rolled out an official World Congress smart phone App. We organized nine technical panels with invited speakers who addressed many of today's most pressing water reuse and desalination issues and dedicated one full day to youth education activities.

The Exhibition with over 100 companies showcased the latest technologies, equipment and

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IDA 2015 World Congress – A Great Success!

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services. Also for the first time, the Congress hosted an Innovation Theater that offered a popular forum for companies to make presentations about new technologies and solutions in the heart of the Exhibition area. In addition, the Congress hosted the IDA Education Day that was attended by over 400 middle school students and also a highly successful IDA Public Outreach session where global experts informed local community leaders about programs in other parts of the world.

On Friday, we toured the recently expanded Orange County GWRS Indirect Potable Reuse System facility and the brand new Carlsbad Seawater Desalination facility. The sponsored reception at the lovely Birch Aquarium was a wonderful celebration of the birthplace of reverse osmosis, where we had many original General Atomic (ROGA) employees in attendance. The company-hosted events were well attended and a lot of fun. And who could forget the breathtaking opening event on the waterfront with skydivers landing with flags for Toray, SWCC and IDA. What a week!

Based on both written and verbal feedback, the program was well-received. Some thought there was too much to see, some wanted increased exhibit hall attendance, while many said the event was informative, inspiring and motivating. From the standpoint of the Co-Chairs, we couldn't have been happier.

We would like to thank Patricia Burke and her team Darlene Seta, Karen Zilinek, Nancy Pagels, Leslie Merrill, and the office staff for the incredible job they did and for their tireless work. We couldn't have done it without them. We would also like to extend our great appreciation to the Technical Program Committee and the Session Co-Chairs who volunteered their time to make the Congress a success. Last but not least, we thank the speakers and delegates for their participation in and support of the San Diego Congress.



World Congress by the Numbers

Attendance at the 2015 IDA World Congress was approximately **1,700**, with delegates from **63 countries** representing Europe, the Middle East, North America, Asia, and such countries as Russia, Ukraine, South Africa, Côte D'Ivoire, Chile and Argentina.

A record **476 abstracts** were submitted for the Technical Program. The final program comprised

301 total presentations (157 podium presentations and 144 digital poster presentations) and **24 sessions**, each with two or three co-chairs.

9 interactive panel discussions added a popular new dimension to the Technical Program.

The **11,000 square meter Exhibition** featured **115 companies** from **20 countries**. Also part of the Exhibition, the new Innovation Theater was fully booked, featuring well-attended presentations on new technologies and services from **12 companies** around the world.

More than **850 delegates** attended "A Celebration of California" at the Birch Aquarium, the public exploration center for the world-renowned Scripps Institution of Oceanography at the University of California at San Diego.

400 middle school students from the San Diego area were invited to participate in a special Education Day at the World Congress, where they learned about desalination and water reuse, attended a presentation hosted by IDA Past Presidents Lisa Henthorne and Dr. Jim Birkett, toured the Exhibition Hall, were welcomed at four booths set up specifically for Education Day, and participated in interactive exercises led by David H. Paul, Inc., City of San Diego Public Utilities Department, Orange Water County District, Poseidon Water, Pure Water and three student Science Fair Award Winners.

Over **50 civic leaders** attended an invitation-only Public Outreach session featuring speakers from the USA, Australia and Singapore.

Awards presented at the World Congress totaled **\$31,500 US**. Six awards at **\$5,000 US** each were presented in the categories of State of the Art, Innovation, Research & Development, Environment & Sustainability, Young Leaders Program, and Emerging Leader sponsored by ARWADEX – Water Desalination Conference in the Arab Countries'. Three awards at **\$500** each, chosen by delegate vote, went to Most Appreciated Presenter, Most Appreciated

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IDA Recognizes Award Recipients at World Congress



IDA presented awards totaling \$31,500 US at the 2015 IDA World Congress on Desalination and Water Reuse. Six awards at \$5,000 US, each selected by the World Congress Awards Committee, were presented in the following categories:

- **State of the Art**, awarded to presenter Dr. Glenn Byrne, Rolled Alloys (UK), for the paper, *Stray Current Corrosion in SWRO Systems*.

This award recognizes the paper that presents the application of an established desalination or water reuse technology in a way that reflects the best engineering practices in all aspects of the project or topic presented. The project or topic is significant for the industry and in the world, depicting an impressive piece of engineering, a solution or infrastructure that has long-term value to the desalination community.

- **Innovation**, awarded to presenter Mr. Bart Nelemans, Aquastil b.v. (Netherlands), for the paper, *New Module Design Development for Membrane Distillation*.

This award recognizes the paper that presents an innovative desalination or water reuse technology that has reached the commercial stage but is not yet considered to be widely adopted. However, the data presented on the technology suggests that it is likely to become a game-changer for the industry and that it could represent the next state-of-the-art advancement.

- **Research & Development**, awarded to presenter Mr. James C. Lozier, CH2M Hill (USA), for the paper, *Innovative Membrane-Based Treatment Method for Brines from Coal Seam Gas Production*.

This award recognizes the paper that presents fundamental or applied research of a technology or concept related to desalination or water reuse that is at a pre-commercialization stage, but shows interesting signs of development that could lead to significant discoveries or technologies upon maturity.

- **Environment & Sustainability**, awarded to presenter Mr. Troy Walker, Hazen and Sawyer (USA), for the paper, *Safety & Reliability of Direct Potable Reuse: Using the Critical Control Point of Methodology*.

This award recognizes the paper that presents a desalination or water reuse research topic, case study, technology or any project in such a way that demonstrates how desalination can be applied while respecting the environment and applying best sustainability principles.

- **Young Leaders Program**, awarded to presenter Ms. Johanna Ludwig, akvolution GmbH (Germany), for the paper, *Ceramic*

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IDA Recognizes Award Recipients at World Congress

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Membrane Treatment for Saline Water Reuse in a Large Marine Aquarium.

This award recognizes the paper that demonstrates scientific originality, whose topic is relevant and important to the fields of desalination and/or water reuse.



The Emerging Leader Award, sponsored by “ARWADEX – Water Desalination Conference in the Arab Countries” and presented to Prakash Narayan Govindan, Gradiant Corporation (USA).

Members of the Awards Committee were Guillaume Claret, H2O Innovation; Tom Pankratz, WDR; Lisa Henthorne, Water Standard; Mike Dixon, Alberta Water Smart; Ronan McGovern, Massachusetts Institute of Technology; Alejandro Sturniolo, RWL; John Tonner, Consolidated; Ties Venema, Fluytec; Fahad Al Muhaizie, Advanced Water Technology; Fayyaz Mubeen, international consultant and IDA Director; Veronica Garcia Molina, Dow; Jochen Kalemberg, OMYA; and Eng. Zamzam Alrakaf, Kuwait Ministry of Electricity & Water and IDA Director.

IDA also presented awards in **three new categories**, each one in the amount of \$500 US and selected directly by conference delegates who voted on the official World Congress mobile app. Recipients were:

Most Appreciated Presenter: Mr. Jaichander Swaminathan MIT (USA), for *Experimental Investigation of High Efficiency Single-Stage Membrane Distillation Configurations*.

Most Appreciated Poster: Mr. David Martin Warsinger, MIT (USA), for *Effect of Filtration and Particulate Fouling in Membrane Distillation*.

Most Appreciated Moderator: Dr. Heike Glade, University of Bremen (Germany) in Session 24, *Thermal Desalination: Membrane Distillation*.

In addition, **Presidential Awards** were presented to Doug Eisberg and Dr. Richard L. Stover for their outstanding performance as the Technical Program Co-Chairpersons of the 2015 IDA World Congress, and to Mohammad Abunayyan, Chairman of Abunayyan Holding and ACWA Power International for his vision, leadership and creativity that have established ACWA Power International as a leader in providing clean and sustainable water and energy, and for ACWA Power’s support of IDA’s programs including sponsorship of several World Congresses.

IDA also presented an **Industry Contribution Award** to Ms. Faith Leitner in memory of her father Gordon Leitner, a pioneer in desalination.

IDA World Congress Education Day Teaches Students about Desalination and Water Reuse



IDA proudly welcomed over 400 students to a special Education Day at the World Congress in San Diego. Middle school students from the La Mesa Spring Valley and Cajon Valley Union School Districts viewed a short film in the Innovation Theater in the Exhibition Hall followed by a 10 minute presentation about water reuse and desalination with industry leaders and Past IDA Presidents Lisa Henthorne and Dr. Jim Birkett.

The team brought over 65 years of combined experience and knowledge to the World Congress classroom. Ms. Henthorne has over 25 years of experience in the field of membranes and desalination in seawater, brackish water and wastewater reclamation applications. Dr. Birkett, a recipient of IDA's Lifetime Achievement Award, has more than four decades of experience in the study of desalination, advanced water treatment and membrane separation technologies.

"We really tried to get the kids engaged by talking to them about recycling water. We gave the example of recycling cans and bottles and talked about how it is just as important to



recycle water. We then talked about desalination," said Dr. Birkett. "The students enjoyed a film clip from Australia and really liked it when we passed around things they could touch and feel. The teachers also asked questions to help the students understand the importance of learning about water recycling," said Dr. Birkett.

Ms. Henthorne was delighted to talk with the young students about how conservation is everyone's responsibility. She got a little help from her 14-year old daughter who developed a PowerPoint presentation with embedded videos to creatively engage the students. The students also enjoyed visual aids such as membrane elements to explain the desalination process. "I think it is really important to teach children in their formative years about stewardship and responsibility for water," said Ms. Henthorne.

IDA Young Leaders escorted student groups through the Exhibition hall. Educators commented that Education Day was a great experience for students and should be part of every World Congress, applauding the presentations

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IDA World Congress Celebrates California and Honors Pioneers at Birch Aquarium



Over 850 local and international guests enjoyed a behind-the-scenes look at the Birch Aquarium in San Diego, the public exploration center for the world-renowned Scripps Institution of Oceanography at UC San Diego. Delegates from IDA's World Congress and invited guests enjoyed several current and major exhibits as well as live exhibits showcasing 6,000 specimens representing more than 350 species of fishes and invertebrates.

As part of IDA's World Congress Celebration of California event at the Birch Aquarium, IDA honored the early employees of General Atomic/Fluid System and Allied Signal who commercialized the first spiral wound reverse osmosis membrane. IDA invited many of the original employees to the event. These ROGA (Reverse Osmosis/General Atomic) pioneers wore special badges, and IDA asked guests to thank them for their significant contribution to the industry.

"The event at the Birch Aquarium was a meaningful experience on so many levels. Paying tribute to the ROGA pioneers during the World Congress in San Diego, the birthplace of membrane technology, was poignant and powerful. Sharing the experience with over 850 delegates and guests illuminated the mission of IDA and our World Congress. We were thrilled to see so many industry leaders enjoying this unique venue while networking and sharing ideas," said Patricia Burke, IDA Secretary General.

"Congratulations on what by all appearances was a very successful Congress. On a personal note, having a chance to catch up with the ROGA pioneers was a big highlight for me. Charlie Hull got me hooked on water when he hired me as an engineering intern at Fluid Systems nearly four decades ago, and many others in attendance that evening mentored and encouraged me along the way. It was nice to be able to thank them for getting me started in what has been a very rewarding career choice. Thank you for a delightful evening and an outstanding conference," said Peter MacLaggan, Vice President, Poseidon Water.

A special California Celebration Night menu was exclusively designed by San Diego's own Culinary Concepts Catering to create the perfect dining experience for this special event.

"It was a pleasure to be involved in the conference and for GHD to be a sponsor. I thought the conference was excellent in all ways," noted Chris Hertle, Market Leader Water, GHD.

"It was a pleasure to be a part of the event and help to make it a success. The work that Doug and others did in recognizing the desal pioneers at the event was also a very nice touch, acknowledging and honoring those on whose shoulders we all stand," commented Brent Alspech, Arcadis.

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IDA World Congress Celebrates California and Honors Pioneers at Birch Aquarium

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A special thank you to our supporting affiliate American Membrane Technology Association (AMTA) and our sponsors:

- Alkema Solutions, Inc.
- ARCADIS
- Avista Technologies
- Biwater
- Carollo Engineers
- CH2M Hill
- Consolidated Water Company (CWCO)
- Energy Recovery
- GHD Pty Ltd
- Hazen and Sawyer
- Hydranautics
- LG Chem
- Metropolitan Water District of Southern California (MWD)
- Michael Baker International
- Orange County Water Department (OCWD)
- Piedmont Pacific
- Poseidon Water
- Professional Water Technologies
- Protec Arisawa America
- R. L. Truby & Associates
- Reasonable Solutions
- San Diego Water Authority (SDCWA)
- Sacyr Environment USA
- Toray USA



Message from the President

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I believe there is already a good sign about engagement because there were 420 responses to the questionnaire about the San Diego Congress. Statistically, this is a large number for any event of this kind, and the response surpasses the results of all previous surveys. I like to interpret this not only as the interest generated by a successful Congress (again, well done Doug, Rick, Secretariat and all involved), but also renewed engagement by participants in offering constructive criticism at a time where members feel that the new IDA Board is committed to

listen in order to push forward our Association, of which the Congress is a crucial part.

In closing, I want to reiterate my commitment to the future of IDA, our members and the desalination and water reuse community at large. I am inspired by the confidence that has been placed in me and wish to thank you for your support. It is my great hope that this message represents the start of an increasing dialogue with each of you. Rest assured that I am fully engaged in helping IDA achieve its full potential as the point of connection for the world's desalination and water reuse industries.

IDA World Congress Education Day Teaches Students about Desalination and Water Reuse

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and saying that, "The Innovation Theatre was fact-filled and engaging."

In addition, three students participated in Education Day in a booth that showcased their winning Science Fair projects.

Education Day exhibits were sponsored by Poseidon, David H. Paul, Inc., The City of San Diego and the Orange County Water District. IDA exhibitors that hosted students at their booths were Acciona, Acuamed and Singapore International Water Week.

"It was wonderful to see the students learning about desalination and water reuse from our esteemed industry leaders. Educating youth about desalination and water recycling is important for the future," said Patricia Burke, IDA Secretary General.

World Congress by the Numbers

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Poster and Most Appreciated Moderator. Three Presidential Awards were also conferred.

The World Congress also featured sold-out plant tours to two of the most high profile facilities in the USA: the soon-to-be commissioned Carlsbad desalination plant, the largest seawater desalination plant in the Western Hemisphere, and the Orange County Groundwater Replenishment System, the world's largest water purification system for potable reuse.

Approximately **30 credentialed media** from around the world were invited to attend the Congress as we presented a Press Briefing on the State of Desalination and Water Reuse, presented by six of the world's top experts on the topic from the USA, UK, Saudi Arabia, Australia and Singapore.

ROGA Reflections

It was a thrill for the ROGA Pioneers to see each other as well as meet hundreds of industry colleagues. Here are some of their thoughts and reflections about IDA's World Congress and early days in the industry.

Bob Palias

"As Pete Darby and I entered the Birch Aquarium, we encountered a large group of ROGA/ Fluid Systems former employees. It was great to be together one last time. I know we also enjoyed speaking with the new leaders of the industry.

Thanks so much for your efforts to see that those who worked so hard in the early years to get the membrane industry recognized are not forgotten. I am proud to have been associated with such a fine group of individuals."

Rick Lesan SpiralOptions

"First, Doug, thanks to you for setting up the event at the Birch, and thanks for a great job with making San Diego a great host city for the 2015 IDA World Congress. I am sure that choice of the city had to do with the recognition of the Carlsbad Plant startup. As that plant utilizes 8 inch spiral elements, it is appropriate to remember that the first field testing of 8 inch spiral elements occurred here in San Diego. It was at the SDGE plant in Chula Vista.

"The development program was funded by the Office of Saline Water (OSW) OWRT after their successful scale up of development of spiral wound technology to 8 inch format. It was necessary to find a practical permeate water carrier sheet to resist the high pressure need for seawater desalination. The ROGA team was able to find

a simplex knit fabric that was standard for many years with seawater spirals. The field testing of elements created with this backing material was planned for the Chula Vista site where OSW was using steam from the power plant to test some of the new thermal concepts being developed at the time. The test unit consisted of a single housing (pressure vessel) containing six elements.



"It would produce about 10 gpm of permeate at about 1500 ppm TDS. Drinkable, but single pass quality was still a ways in the future. Nonetheless, it did show that high pressure spirals were practical in a format that exists 40 years later.

"An interesting bit of history was that the original pressure housing for this test was fabricated from epoxy lined carbon steel pipe as was standard practice for all spiral elements at the time. It turned out that the combination of high pressure and seawater salinity was too much for thin epoxy lining. Salt would diffuse across the epoxy, and the pipe housing would fail in a month. This started a crash program at ROGA to introduce FRP housings for seawater spirals. This later was to become standard for use throughout the spiral world for all application, as Doug and Pete can well appreciate. In my memory, the date for this field test was about

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1973, give or take a year. The first prototype 8 inch FRP housing was destruction tested in the General Atomic explosion pit. Curt would remember this. I am hoping that this might jog some others memories with dates and detail."

Curt Elwell

"Seeing everyone at Birch was great! Thanks for everything you did to organize this event and I hope we all can get together more often. I definitely remember all that Rick has mentioned. Here is just some of what I remember.

"Not only did we do the pit testing at GA in La Jolla/Sorrento Valley, but we also performed the burst testing of the 8 inch studded vessels in the ROGA Production/Testing Hangar on Harbor Drive across from the old PSA Hangar, which I'm sure you all remember.

"As I remember, in the early seventies, besides the flat sheet CA membrane being made in the Hangar, Bob Riley's group in Rose Canyon would develop various new flat sheet membranes. We would then perform cell and element testing of the new membrane, as well as long-term testing at our site in Mission Valley, at the River Valley Golf Course. We were given a 30' x 20' metal shed (we would fill their irrigation pond in exchange) about 30 yards past the #1 hole. I know Rick and Jim remember those golf balls hitting the wall.

"Dick Sudak's group at that time, on the other side of the parking lot, would design and build the RO systems. That building is still there (not much longer though); I believe it's Avis now.

"Just glad to be part of it all!"

Bob Riley

"Thank you so much for extending the invitation to attend the social gathering of the IDA at the Birch Aquarium. The setting could not have been more fitting, and it was inspiring to see the interest in RO and how the industry has matured. You are to be commended for organizing such an event.

"I would like to add to Rick and Curt's comments by pointing out how fortunate we all were to have the OSW funding all our development work at ROGA. The scientists and engineers of OSW were highly qualified professionals, and their interest, encouragement and support were unprecedented. They had foresight, and even more importantly, they were enthusiastic believers. We owe a lot to those early folks at OSW.

"It was nice to get together once again with the early ROGA group. It is a great group whose team accomplishments I am happy to have been a part of. The first RO test system was operated on seawater with cellulose acetate membrane coupons at the foot of Scripps pier by Sid Loeb and his students at UCLA. That was 1962. A year or two later, they operated a small tubular plant at the same site. Thus, it was most appropriate that the event was held at Scripps Aquarium, since you could see the site from the tide pool area of the outdoor patio."

Ron Fox Consultant

Membrane Chemistry and Manufacturing Technology

"What a pleasure to attend your reception at Birch Aquarium, a site with the most beautiful

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ROGA Reflections

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view in the county. When I was a kid we hiked those hills, barren at the time, which were adjunct to Camp Callen, and were storage areas for Army armaments. What a change in 65 years, but the view is the same, maybe grown up and more appreciated now.

"This reception was an opportunity to see many friends and associates, sharing and catching up on our lives and activities. By way of pioneer information, did you know that the multi-leaf spiral element and the engineering of its construction were invented in 1965 by the late Donald T. Bray MSChE RO, project manager at General Atomic? He conceived the details of its configuration, efficiency, and construction while lying on the beach in Acapulco. He became so excited about it that he (and his wife) abandoned their vacation to come back to San Diego and try it out. A couple of years later, he left GA and founded Desalination Systems, where he had to license his own invention from General Atomic.

"Membrane research and development since 1962 has been a continuous series of varied programs based on some fundamental chemistries and physics plus enormous amounts of empirical data to establish optimum formulations and techniques for attaining cost effective membrane performance and routine manufacturing in high yields.

"This began with cellulosic membranes, which remained the bulwark of desalination, ever improving, for over 10 years. Then came the various composite membranes, following with new developments in them to this day. Now there are new forms of membranes, their chemistries and applications unimagined in the early years of membrane R&D. Yet there is still much work for the old proven and cheaper

membranes under routine manufacture, now by many different companies worldwide.

"I enjoyed talking with all in such a nice social evening."



Professor David Furukawa

"It was terrific to see all of the ROGA friends. No doubt that the developments that started there were ground-breaking. Here's a vignette about how I became involved.

"I was R&D manager for Havens International (on Aero Drive, SD), a manufacturer of tubular UF and RO equipment. The uniqueness of our product was that the support tube was made of fiberglass, which consisted of longitudinal glass rovings followed by bias-wrapped glass and finished with another layer of longitudinal fibers and later, a woven fiberglass tape. The glass was pulled and wrapped around a steel mandrel. Inductive coils around the mandrel heated the adhesive, which was a phenol formaldehyde impregnated with small bits of nylon 66 (to allow flexing). The polymerization that occurred was a condensation reaction causing water molecules to evaporate; pores formed as water vaporized through the support tube. It was a clever invention developed by Dr. Glenn Havens (physicist).

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ROGA Reflections

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“Our first membrane was a UF membrane, which was admittedly developed via alchemy, not polymer science. Since we could not achieve a single step seawater membrane (we did sell a couple of small seawater units), which was the Holy Grail, we instead developed a membrane (CA based) to remove proteins from cheese whey. The resulting soluble (undenatured) protein proved great for food products, especially fruit drinks. An early system was sold to a California dairy, then six systems to an internationally well-known beverage corporation; they used the protein in a fruit drink to combat protein deficiency in South America.



“In spite of that good fortune, Havens International had to file for Chapter 11 bankruptcy, a move caused by a major stock market failure (1970-71). We managed to sell the company for cash to Merck, which assigned us as a division of Calgon Corporation in Pittsburgh, PA, and Calgon-Havens was born. We developed a unique purification process using UF, and Merck was able to greatly reduce its cost of manufacturing for some of their intermediates.

“Calgon, on the other hand, did not know quite what to do with a systems business since they sold chemicals and carbon by the pound. I convinced them to sell off the business while we still had a strong core of loyal people. I approached Dr. Jack Hunter, former director of OSW, who was keenly interested in getting involved in an RO business. By then he had become VP at UOP, and they acquired the assets of the business, moved it back to San Diego, and named the new entity ‘Fluid Sciences by UOP.’ It became obvious that tubular systems were not going to be profitable anytime soon, and we made the decision to acquire ROGA, which was available at that time. Voilà, the birth of ‘Fluid Systems by UOP’ with tubular manufacturing in Kearney Mesa and ROGA spiral wound near the airport.

“Within two years, the ROGA GM shed the tubular business and concentrated on spiral wound. As best I can recall, the manufacturing equipment was sold to a company in Israel, a move precipitated by Dr. Sidney Loeb, who frequently came to San Diego to talk about membrane development and, more importantly, play tennis with Doc. You see, when Dr. Loeb’s membrane was announced over the radio in 1961, Doc was on his way home, turned around and drove directly to talk with him at UCLA. A good friendship formed, which I cherished.

“So there you are, another RO business that developed concurrently with spiral wound technology and eventually came together. I was not directly involved with the spiral wound development, except that I remember testing one of the first prototypes in Denver (Bureau of Reclamation Research, 1965).”

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Jim Beckman

"Again, many thanks to Doug for arranging the IDA reception. It was great to renew old friendships. The timing was perfect with the IDA Conference in town and the approaching start-up of the Carlsbad desalination facility.

"Recently, I was looking at some old ROGA/ Fluid Systems memorabilia, and I found a copy of an interesting table from one of our 1976 government research reports. It highlights some of our major accomplishments from the early days. I thought you all might enjoy reading this summary:

1963 – 1966 Reverse Osmosis Project (General Atomic Division, General Dynamics Company) Invention and patenting of the first reverse osmosis membrane elements – multi-leaf, up to 4" x 1' (15 sq. ft.) – structure elucidation and utilization of continuously cast "Loeb" type cellulose acetate membrane.

1967 – 1969 ROGA Division (Gulf General Atomic) Development of 3' elements, 4" diameter – 50 sq. ft. utilizing sail-cloth membrane support, impregnated tricot product channel, and a special flexible water-compatible epoxy adhesive. 50,000 GPD testing at River Valley, and Acid Mine Drainage Testing.

1970 – 1973 ROGA Division (Gulf Environmental Systems) Prototyping of 6", 8" and 12" diameter elements. Continuous membrane casting on support fabric - 4" elements = 80 sq. ft.; Ocean Reef Installation 0.9 MGD – potable water from brackish water (7000 ppm); 1-MGD – Dallas (Texas Instruments) – part of a ultrapure water train for industrial use (semi-conductor); demonstration of sewage

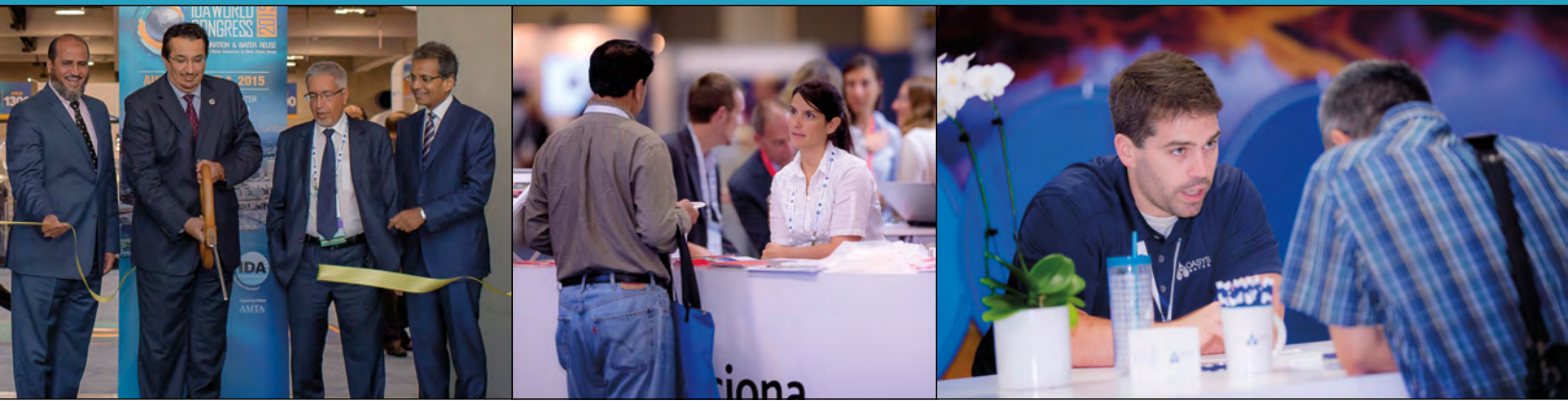
reclamation at Pomona, Santee; development of "Simplex" channel material & FRP element tubes for seawater; development of membrane cleaning compositions, membrane surface restorative compounds and techniques.

1974 – 1976 Fluid Systems, Division of UOP, Inc. Installation of 900,000-GPD system @ 95% recovery for waste treatment at a brass mill; commercially improved 8" brackish elements; commercial development of brackish (4,6,8,12" diameter) and seawater FRP pressure tubes; prototype improved 12" brackish elements using 60" wide membrane; prototype improved 6" seawater elements (using Simplex product channel material); development of asymmetric CTA membrane for brackish and seawater; development of PA-300 (thin-film composite polyamide-polysulfone membrane and elements); 5-MGD RO wastewater reclamation for installation at Orange County (OCWD) Water District; start-up of 1-MGD potable system – Florida Keys Aqueduct Authority.

"I know that now, 50 years later, this all seems like baby steps to where RO is today. But I know all of us feel honored to have been part of the early days. It all had to start somewhere."



Exhibition Review: Size, Scope and Quality Leads



With 115 exhibitors from 20 countries, the Exhibition was the largest in World Congress history. And while some exhibitors commented that traffic inside the cavernous exhibition hall was perhaps a bit light, the majority noted that the quality of leads was very high, exceeding expectations as a business-building event.

Following is a sampling of comments from our Exhibitors:

“As a major supplier to the global desalination industry, Flowserve was very pleased with the large number of customers who visited with us at the event. The show gave us an opportunity to network with many of our key business partners.”

—**Gene Mills**

Vice President of Business
Development & Capital Projects
Flowserve

“The PWT team was pleased to see such a nice improvement in this year’s World Congress as compared to the 2013 event held in Tianjin. The convenient downtown San Diego location created seamless travel planning and provided a wealth of entertaining opportunities for the exhibitors. The Exhibit hall foot traffic was a bit on the light side, but this is a nod to the high quality of papers presented.”

—**Ryan Furukawa**

Director – Specialty Chemicals,
PWT

“Although the traffic was lite at the exhibition hall, Piedmont was very happy with the quality of the people attending the world congress. We were able to interact with most of our largest clients and have meaningful business meeting with potential partners. The networking events (organized by the IDA or by third parties) were, in our opinion, the best part of the World Congress from an exhibitor point of view.”

—**Simon Bouchard**

General Manager
Piedmont, a division of H2O Innovation
specialized in flexible couplings

“Participating in the IDA World Congress 2015 in San Diego, California has been a remarkable success for us; not only was it a great place to display our new products, but also having the possibility to meet key decision-makers from leading industrial water companies was crucial for us. The IDA (World Congress) in San Diego exceeded our expectations.”

—**Karen Pors Fischer**

Marketing Communications Manager
Danfoss High Pressure Pumps

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First "Conversations with Pioneers" Video Interviews Completed at IDA World Congress

Tom Pankratz, Editor of WDR and former IDA Director, conducted a series of video interviews at the World Congress with early thermal desalination pioneers. The "Conversations with Pioneers" are intended to inform and perhaps more importantly, preserve a valuable part of desalination industry's history. Mr. Pankratz tells IDA News about this exciting venture.

The "Conversations with Pioneers" program was initiated when Faith Leitner – the daughter of the desalting icon Gordon Leitner – asked some of her late father's friends for suggestions on ways that she could commemorate his love for the industry in which he spent his career. The ad hoc group considered the usual awards and scholarships before deciding that the best way to honor Gordon's legacy was to help preserve its history.

AMTA, IDA's North American affiliate, had already conducted a series of video interviews with American membrane pioneers that was very successful, and it was decided that a similar series, consisting of video interviews with veteran thermal desalters, would be an appropriate way to recognize and remember Gordon.

Faith agreed to fund the first phase of the project in which up to 15 veteran desalters active in the international market prior to 1980 would be invited to participate. The participant list evolved somewhat when it became clear that some older veterans were unable to travel. However, we were still able to get a good cross section of people involved in the early days of MSF, MED, VC and freeze desalination.

Some of the desalters had already been planning to attend the IDA conference, while others flew into San Diego just for the videotaping. Avista's Doug Eisberg and the IDA's Topsfield team



helped with the logistics, and five interview sessions were conducted on the Sunday before the IDA World Congress opened, with two or three 'pioneers' participating in each one-hour session.

To keep the interviews from becoming strict Q&A sessions, each group of pioneers included participants with similar or overlapping backgrounds in the hope that they would feed off of each other as they reminisced about technology, projects, people and events; the strategy seems to have worked well.

The final videos should soon be posted on the IDA website. It would be nice if the process were continued at future IDA events, and if possible, it would also be good if arrangements could be made to interview some of the veterans who are unable to travel.

Gordon had a passion for our industry and he would be very proud of Faith for her help in producing this video archive in his memory.

Innovation Theater a Success



One of the new features of this World Congress was an Innovation Theater where new technologies and services could be presented. Conveniently located in the Exhibition area and with seating for 50 per session, the Innovation Theater hosted 12 presentations over the course of three days. A special thanks to all the presenters and to Suez, the Innovation Theater Sponsor.

Acciona Agua: “Engineering the Water Energy Nexus through Innovation in Desalination and Water Reuse” presented by Jorge Malfeito and Marina Arnaldos

Acuamed: “New Conventional Resources in the Context of Water Planning” presented by Gabriela Manueco and Angel Cajigas

Adionics: “Selective Solvent Extraction of Salts from Water by Means of Fluorinated Organic Solvents” presented by Thierry Darde

Avista Technologies: “Advancement in Membrane Foulant Analysis Using Chromatic Elemental Imaging” presented by Sara Pietsch

LG Chem: “LG Chem Water Solutions” presented by Nicholas Dyer

Marine Tech: “A New Technology to Reduce Desalination Production Costs” presented by Sophie Bertrand and Thierry Carlin

Ocean Pacific Technologies: “Axial Piston Pumps Bring Efficiencies” presented by John MacHarg

Piedmont Pacific: “Changing PX and UF Modules with Ease and Safety” presented by Simon Bouchard

Salt Water Solutions: “A New Way of Designing with RO Membranes” presented by Darren Szczepanski

Spiral Water Technologies: “Award Winning Spiral Water Automatic Filter” presented by Ashwin Gulati

Suez: “A Look into the Future of Seawater Desalination: Masdar Project” presented by Miguel Ángel Sanz and Sophie Bertrand

TPTec (Thermal Purification Technologies): “Efficient ZLD Using LTDIs and LTDry” presented by Espen Mansfeldt

Public Outreach Session Attracts More than 50 Civic Leaders

Public officials from throughout southern California attended a special invitation-only session designed to explore the topics of desalination and water reuse in greater detail, while sharing lessons from other countries' successful programs.

Doug Eisberg introduced the program and then turned it over to Kevin Price, former executive with the US Bureau of Reclamation and now a Senior Science and Technology Advisor with the Middle East Desalination Research Center, who led the session and created a context for further discussion. He was followed by a presentation of Western Australia's experience by Neil Palmer, Chief Executive Officer of the National Centre of Excellence in Desalination Australia, who countered concerns over

potential environmental impacts with powerful video of marine life thriving around the intakes and outfalls at the Kwinana plant. Tiing Liang MOH, Senior Assistant Director of PUB, Singapore's National Water Agency, offered compelling insights into that country's "Four National Taps," a global model for successful integrated water resources management.

A lively Q&A followed, providing ample opportunities for attendees to query speakers and also serving as a platform for many officials to show their openness to and support of desalination and water reuse as California continues to suffer the effects of a historic drought.

Exhibition Review: Size, Scope and Quality Leads

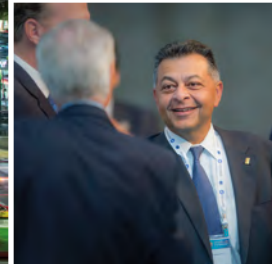
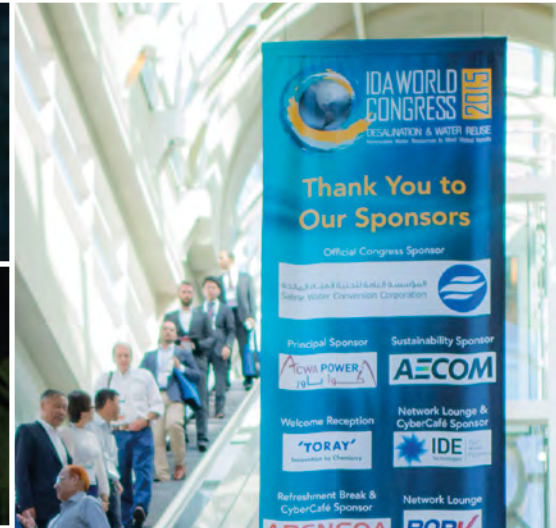
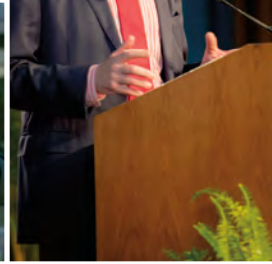
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"As a first time exhibitor at an IDA event, we found it invaluable. We are a fast growing new player in the desalination and reuse market as a developer and builder, seeking the right industry exposure and making the right contacts to drive our business. In San Diego, we managed to do that on day 1. It was an awesome event as an exhibitor, exceeding our

expectations. IDA outshines all of the other industry public forums combined. It's undoubtedly the place to be, and we are looking forward to the next one. Thank you, IDA."

—Todd Leyland
Strategy Advisor
Advanced Water Technology

Moments from the IDA 2015 World Congress



IDA WORLD CONGRESS 2015
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IDA
International Desalination Association

IDA Establishes Advisory Group to Assess Constitutional Updates

With IDA's Constitution now more than 30 years old, Association leadership has determined that it is time for a review and potential updates that reflect the many changes that have taken place on a global level and within IDA itself since the Constitution was written.

As a result, IDA has established an informal Advisory Group to review the IDA Constitution. The Advisory Group, which been endorsed by the Board of Director, is co-chaired by former IDA Presidents Lisa Henthorne and Randy Truby, who also serves as IDA's Comptroller. Other Advisory Group members are Carlos Cosin, Chairman and CEO of Abengoa Water, IDA Director and Chairman of IDA's Constitution Committee; Dr. Ahmed S Al-Arifi, Director General R&D Technologies, Saline Water Conversion Corporation (SWCC); Graham Dooley, Director of OSMOFLO; and Veronica Garcia-Molina, Technical Service & Development Leader (EMEA), Dow Water & Process Solutions.

The Advisory Group review will include a comprehensive analysis of Constitution-specific portions of recent membership and Board of Director surveys as well as the 2014-2019 Strategic Plan. Specific topics for review include implementing term limits for Directors, limiting the number of votes that can be cast by a single company's employees in the biennial election for IDA's Board of Directors, and placing a limit on the number of Directors that can be elected from any one company for a specific term.

After analysis of the specified documents, the Advisory Group will hold regular conference call discussions. The Group is expected to issue a response approximately three months later.

International Desalination Association (IDA) Comptroller's Report

In an effort to enhance transparency, IDA is publishing the introduction to the report recently issued by its Comptroller Randy Truby. Details may be requested by contacting Patricia A. Burke, IDA Secretary General.

As the IDA Comptroller, I am required to present a brief report on the condition of the Association at the end of each two-year term. The function of the Comptroller is defined under a provision of the IDA Constitution, Article VII – Section 9. "The Comptroller shall periodically, at his/her discretion, review all activities of the Association and specifically the Treasurer's and Secretary General's activities to see that they are in accordance with the Constitution, Bylaws and directives of the Board.

"The Comptroller will be a member of the Association but may not be a Director, nor engaged in any other business arrangement with the Association. The Comptroller may not have a vote in the business of the Board of Directors but will submit a report at least every two years which will be read at the next General Meeting and will be printed in the regular Association publication."

As the Comptroller, I have reviewed all of the minutes of the Board meetings and the monthly and quarterly reports of the Treasurer

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and Secretary General in addition to the annual auditor's report prepared by P. F. Bruno & Company. IDA is compliant and is meeting all the requirements of its non-profit status under the laws of the United States. The investments of the Association are managed by UBS and Merrill Lynch based upon guidance provided by the Secretary General and Treasurer and appear to be appropriate to meet the goals of the Association.

The Comptroller received inquiries about the most recent Board of Director elections. Upon review the election did not violate any of the requirements of the Constitution.

The Comptroller received three requests from IDA members to present an overview of the financial status of IDA at the Members Meeting in September 2015. This overview has been

prepared in collaboration with the Treasurer and staff in Topsfield and was presented as requested.

In summation the International Desalination Association has been operating as required by the Constitution and meeting its non-profit status. I wish to thank the Board of Directors and all the Officers and Committee Chairmen and members for their cooperation and continuing efforts. I also commend the President, Secretary General and her staff as well as the Treasurer for their efforts and diligence in protecting the Association assets and reputation.

—Randolph L. Truby
Comptroller and Chairman of the Audit Committee

Meet IDA's Leaders

IDA invites you to learn more about its officers for the 2015-2017 term. Each one of these individuals brings an outstanding level of experience to his/her position as well as exceptional commitment to helping IDA fulfill its mission. To learn more about all of IDA's Directors, please visit the website at <http://idadesal.org/about/directors/>



President

Dr. Emilio Gabrielli, Brazil

IDA's new President Emilio Gabrielli is Director, Overseas Business Development – Global Sales of Water

Treatment for Toray. He has been involved in the water treatment industry for more than 40 years, and his experience is truly global.

He started with solar desalination in Peru in 1975. Then, with Italconult/Weir and Italmipianti, he worked on desalination plants in Libya, Algeria and Saudi Arabia based on EDR and MSF technology associated with power generation. Later, with Permutit Australia, he became involved with membrane technology and zero-discharge, including vapor compressors and crystallizers. When Thames Water bought the PWT Group, which included Permutit Australia, he became involved in various combinations of BOT, PPP and asset acquisitions in all continents.

In 2003, after four years as Managing Director of Thames Water / Brazil, Mr. Gabrielli was appointed Executive Secretary (CEO) of the Global Water Partnership (GWP), an international network of institutions committed to the sustainable development and management of water resources founded by The United Nations Development Program, the World Bank and the Government of Sweden.

During his six years at GWP, he was able to look at the water industry from the policy perspective and gained in-depth diplomatic experience. He visited

governments, industry and institutions in water at all levels of society in more than 100 countries in pursuit of sustainable and equitable management of water resources.

He joined Toray in 2009 and is based in Brazil.

"My vision is a better world through water security. Desalination and water reuse have an important role to play in this. I am committed to supporting those mechanisms of IDA that encourage the sharing of experiences and ideas, and promoting a broader appreciation of water resources issues within the desalination community with the goal of facilitating the effective application, whenever appropriate, of more advanced, reliable, efficient and effective desalination, reuse and filtration technologies. Moreover, I am committed to working to revise the IDA Constitution as necessary to propel the Association into the future," he said.

Born in Florence, Italy, Mr. Gabrielli holds a degree in Chemical Engineering from the Bologna University, where he also obtained a post-graduate specialization certificate in Computer Modeling as part of a research program developed on the bases of his degree dissertation.

He has authored and co-authored over 20 technical publications, has often contributed to papers, magazines and newsletters, and has also participated in panel debates and interviews with media around the world. Active in IDA since the Association's founding, he also holds the honorary position of Global Ambassador of the Australian Water Association.

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Meet IDA's Leaders

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1st Vice President

Ms. Shannon McCarthy, Italy

Shannon McCarthy is Co-founder and a Partner of United4Water, a consulting firm operating in the water, food and energy sectors, providing strategic advice and assistance in business development, project planning and management, capacity building, environmental stewardship and corporate social responsibility.

Ms. McCarthy has over 20 years' experience working with the Middle East and North Africa region, including 17 years' experience in the field of water sustainability and non-conventional water resource technologies, specifically desalination. She currently serves the International Desalination Association in the role of Vice President and Chair of the Foundation and Public Outreach Committee.

Prior to U4W, Ms. McCarthy, served as the Deputy Center Director of the Middle East Desalination Research Center, an international intergovernmental non-profit organization, born through the Water Working Group of the Middle East Peace Process and based in Muscat, Sultanate of Oman. As part of the MEDRC start-up team, she developed and implemented cooperation programs in education, training and research for the Middle East and North Africa region, including the Core Parties of the Middle East Peace Process (Israel, Jordan, and the Palestinian Authority), focusing on desalination and water reuse technologies. She has a strong record of mobilizing resources and bringing together stakeholders from both government and the private sector to support education, scientific research, professional

training programs, and specialized technology workshops related to desalination and water sustainability.

Ms. McCarthy participated in executive study programs related to Public Policy and Management for Infrastructure Development at John F. Kennedy School of Government, Harvard University and an undergraduate degree in International Relations, specializing in US- Soviet relations, at San Francisco State University.



2nd Vice President

Ms. Zamzam Saleh Alrakaf, Kuwait

Zamzam Saleh Alrakaf is Deputy Chief Engineer, Director of Design in Desalination Projects, Ministry of Electricity & Water, State of Kuwait. In this position, she is responsible for executing and supervising all desalination projects in Kuwait.

From 1984-1989, she was Process Engineer in Doha West Power Station and was the first female engineer to work in a Power Station in Kuwait. In 1989, she became Process Design Engineer in Design Department Desalination Project and in 1992 was named the Director of Design Department in Desalination Project. In 2001, she became the Deputy Chief Engineer and the Director of Design Department, and continues in that role today.

She is also a Qualified Arbitrator in the Ministry of Justice in Kuwait and is a member of Save International and Kuwait's Engineering Society.

Zamzam Saleh Alrakaf received a Bachelor of Chemical Engineering degree in 1984 with an Honor list From Kuwait University.

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Meet IDA's Leaders

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Treasurer

Mr. Michel Canet, France

Michel Canet joined Veolia Water Group 15 years ago and is presently Executive Vice President –

Business Development within Veolia Water Solutions & Technologies, a subsidiary of Veolia Water. Under his leadership, the Veolia Water Group has been successful on large desalination projects such as Gold Coast, Sydney, the hybrid desalination project of Fujairah2, and the Az Zour desalination plant in Kuwait. Recently he has participated in the award of the Sadara Desalination project for Marafiq.

Veolia is the largest company worldwide involved in thermal and membrane desalination technologies and is committed to always promoting more sustainable solutions with optimized carbon footprint.

Prior to joining Veolia, Mr. Canet spent a few years as design engineer in the French Subsidiary of the Bouygues Group. He was then expatriated to perform construction activities:

- In Africa for four years, to construct facilities for the oil industry
- In the Middle East for three years, to construct infrastructures
- In South Africa for eight years, as a manager of a subsidiary of the French construction company Spie Batignolles. During this period, he was involved in projects related to water and infrastructure sectors

In addition to his current responsibilities with Veolia Water Solutions & Technologies, Mr. Canet is also a Board member of OTV SA,

a Board member of SIDEM, and serves as a Counselor of Foreign Trade for France.

Mr. Canet has been an active IDA Director since 2005, First Vice President from 2007 to 2009, Second Vice President from 2009 to 2011, Treasurer from 2011 to 2013, member of the Operation and Technical Committees and Co-chairman of many sessions on various IDA forums and seminars. He has also been active within the Environmental Task Force Committee and has participated in the issuance of the Blue Paper that followed IDA's Environmental Symposium, held in Bahrain in December 2010.

Mr. Canet is a Civil Engineer from Ecole Spéciale des Travaux Publics in Paris. He also received a Masters degree in Construction and Environment from the Centre des Hautes Etudes de la Construction in 1975.



Secretary

Mr. Neil Palmer, Australia

Neil Palmer currently holds the position of Chief Executive Officer with the National Centre of Excellence in Desalination (NCED) at Murdoch University in Western Australia.

He worked as a professional engineer for the South Australian Government's Engineering and Water Supply Department from 1975 to 1994 in water supply and sewerage planning, design, construction and operation. In 1989 and 1990, he worked in Fiji for the Public Works Department, where he was responsible for operation and upgrading of Suva's wastewater system.

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Meet IDA's Leaders

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From 1994 to 1997, Neil was Principal Wastewater Adviser with the South Australian Environment Protection Authority. In 1997, he joined United Utilities Australia (UUA) as Water Quality Manager, progressing to Chief Engineer in 2005 where he was responsible for engineering design and process solutions to support UUA's operations and business development activities.

Neil is a member of the Institution of Engineers, Australia and a Life Member of the Australian Water Association. He is a past President of the AWA SA Branch and was a member of AWA's national Board for six years. He has been a member of the International Desalination Association since 2004.

He graduated with a Bachelor of Engineering (Civil) from the University of Adelaide in 1974 and completed a Master of Engineering Science (Public Health Engineering) at the University of New South Wales in 1983.



Comptroller

Mr. Randy Truby, United States

Randy Truby has been a professional in the membrane desalination industry since 1969 where he began his career as a Research Assistant at General Atomic Company. He is currently President, R L Truby & Associates. His clients include NanoH2O where he serves as Director, Global Sales and Strategies and Toray where he serves as Chairman of the Global Sales Team. Mr. Truby has additional consulting clients.

Mr. Truby has been involved in the development, application and manufacture of reverse osmosis, nanofiltration, ultrafiltration, and microfiltration membranes for over 42 years. He has served as partner and Vice President of Aqua Media Ltd., CEO of Fluid Systems Corporation, Vice President of Hydranautics/Nitto and CEO of Toray Membrane USA during his career. In this capacity Mr. Truby was involved in many of the major desalination systems installed around the world.

Mr. Truby is currently Comptroller of the International Desalination Association (IDA) and is also a Past President. He is Director Emeritus of the American Membrane Technology Association (AMTA) and served as Chairman of the Board of Directors for the Affordable Desalination Collaboration. Mr. Truby has authored over 45 technical presentations on membrane desalination.

Mr. Truby graduated with Honors in 1968 from San Diego State University with a BS Degree in Biology.



Editor

Mr. Antonio Casanas

Antonio Casanas holds a MSc in Chemical Industrial Engineering, with several masters in water treatment, water desalination and environment. He also holds a degree in Risk Prevention.

He began his career working with the Australian multinational Hardie Irrigation and later with ESSO. He joined Dow Chemical in 1989, initially being the technical-commercial person responsible for the Liquid Separations

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Meet IDA's Leaders

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business in the Canary Islands and the Account Manager for Dow Liquid Separations for Spain and Portugal. He has been directly involved in the design of the largest RO projects of Dow worldwide and has given technical assistance during the start-up of the main Spanish desalination plants like Ceuta, El Atabal, La Tordera, Javea, Lanzarote IV, among others.

He has participated as a teacher in the Desalination Master program organized by the University of Las Palmas de Gran Canaria and in the most important desalination courses organized in Spain and has presented works in several international congresses and for several national and international magazines. He belongs to the AEDyR Board of Directors and serves as its secretary and previously was the AEDyR representative in the IDA Board.



Secretary General

Ms. Patricia A. Burke

Patricia Burke is the IDA Secretary General and an officer on the IDA Board of Directors. Ms. Burke was one of the founding members of the association and has been actively involved in IDA and its predecessors since 1973.

In her capacity as the Secretary General, she is responsible for the organization and implementation of all the association's activities from congresses, seminars, workshops, publications and website in all areas of the globe.

Ms. Burke has been a member of the US Water Resources Export Council, IDA Director, NWSIA Director and led a number of US Department of Commerce missions and is a representative to the United Nations NGOs. She maintains membership in many professional societies.

Calendar of Events

November 18-21, 2015

IDW 2015

Jeju, Korea

January 18-21, 2016

International Water Summit

Abu Dhabi, UAE

February 1-4, 2016

**AWWA/AMTA 2015 Membrane Technology
Conference & Exposition**

San Antonio, Texas, USA

February 7-9, 2016

Saudi Water & Electricity Forum

Riyadh, Saudi Arabia

February 29 – March 2, 2016

WEX Global 2016

Lisbon, Portugal

April 19-20, 2016

Global Water Summit 2016

Abu Dhabi, UAE

May 10-12, 2016

Ozwater 2016

Melbourne, Australia

May 22-26, 2016

**Desalination for the Environment, Clean Water and
Energy**

Rome, Italy

May 31-June 3, 2016

CaribDA 2016 Biennial Conference & Exposition

Trinidad

July 10-14, 2016

Singapore International Water Week

Singapore

September 26-27, 2016

IDA Water Reuse Conference

Nice, France

October 4-6, 2015

WETEX 2016

Dubai, UAE

October 9-13, 2016

IWA World Water Congress

Brisbane, Queensland, Australia

November 6-9, 2016

**Membranes in Drinking and Industrial Water
Production**

Leeuwarden, The Netherlands

May 6-10, 2018

**Desalination for the Environment, Clean Water and
Energy**

Nantes, France



International Desalination Association

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Email: info@idadesal.org