IDA 2022 WORLD CONGRESS

SYDNEY, OCTOBER 9 - 13, 2022

IDA CHARTING RESILIENT WATER SOLUTIONS

ADVANCED PROGRAM

Index

01 ABOUT IDA

The International Desalination Association (IDA) is the point of connection for the world's desalination and water reuse community. As the world's leading global organization dedicated to the advancement of desalination, desalination technology and water reuse, IDA brings together people, knowledge and ideas with the goal of ensuring that the world will have access to a sustainable supply of fresh water.

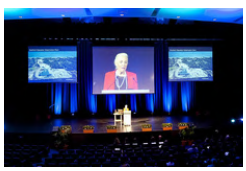
For more than 40 years, IDA has served as the global hub of expertise, news and information, and professional development for the global desalination industry. Its members include the world's leaders in desalination and reuse including end-users, and researchers representing governments, corporations and academia. A non-profit organization, IDA is associated with the United Nations as part of a growing international network of non-governmental organizations (NGOs). IDA views desalination and reuse as critical aspects of the solution to address the world's water problems and advocates their use to provide a reliable and sustainable source of fresh water in all parts of the globe. To this end, IDA supports the development of technological solutions that enhance in-crease energy efficiency, lower costs and promote environmental stewardship.

Education is a key aspect of IDA's mission. Accordingly, IDA provides educational resources about desalination and water reuse to a variety of constituents, from industry professionals to graduate students to the general public. The IDA Desalination Academy is a global institute for specialized training in desalination and reuse and a higher school for special study in this field. It offers courses around the world as well as an online program to fulfill its mission of providing the highest level of training, education and instruction to individuals, utilities, companies, institutions, universities and other organizations interested in all aspects of desalination and reuse.

Other educational initiatives include a Scholarship Program and Fellowship Award that offer op-portunities for members to advance their knowledge and further their professional development. The IDA Young Leaders Program focuses on developing the next generation of industry leaders through mentoring and educational events.

In addition, IDA's print and online media create a library of resources rich in information and ideas. Publications include the IDA Desalination Yearbook, IDA Global Connections magazine and IDA Essentials.






IDA Sustainable Water Resources Foundation (SWRF)

> **With a continuously growing population, innovative water strategies must rise to meet the increasing demand for clean water.**

IDA's Sustainable Water Resources Foundation (SWRF), a 501(c)(3) organization, promotes creative solutions to the world's most pressing water challenges. With a continuously growing population, innovative water strategies must rise to meet the increasing demand for clean water. SWRF promotes this innovation by advocating clean energy solutions, fostering collaboration among professionals, and supporting educational programs and projects concerning the nexus of water, energy, food, and the environment.

In the face of increasing demands for water, exponential population growth, and a changing climate, our water needs have never been greater. The United Nations, alongside the IDA SWRF, prioritizes clean water and sanitation as one of the essential Sustainable Development Goals. Water touches every aspect of human life. It is the nexus where agriculture needs meet human rights and gender equality meets urban planning. Recognizing the mounting challenges of water needs, the SWRF seeks to build a future in which development and responsibility come hand in hand and water is a ubiquitous human right.

For more information, visit: http://www.idaswrf.org/.

IDA Board of Directors

Term 19

- Hon. Fatme Awale, Mombasa County, Ministry of Water
- Mr. Borja Blanco, Aqua Advise
- Mr. Carlos Cosin, Almar Water Solutions
- Mr. Jose Diaz Caneja, ACCIONA
- Mr. Jon Freedman, SUEZ WT&S
- Mr. Mounib Hatab, Future Pipe Industries
- Mr. Mohamad Jaroudi, Future Pipe Industries Qatar
- Ms. Jantje Johnson, OrangeBoat
- Mr. Fady Juez, Metito Overseas Ltd.
- Mr. Youqing Li, Harbin ROPV Industrial
- Prof. John H. Lienhard V, Massachusetts Institute of Technology
- Mr. Imad Makhzoumi, ENOIA
- Ms. Shannon McCarthy, IDA
- Mr. Silvio Oliva, Fisia Italimpianti
- Mr. Johnny Obeid, Veolia Water Technologies
- Mr. Juan Miguel Pinto, Energy Recovery
- Mr. Miguel Angel Sanz, SUEZ International
- Mr. Tim Lam Shing, Water Supplies Department, Hong Kong Government
- Mr. Devesh Sharma, Aquatech International
- Mr. Alejandro Sturniolo, H20 Innovation
- Mr. Victor Verbeek, Toray Membranes
- Dr. Domingo Zarzo Martinez, SACYR

Term 20

- Eng. Abdullah Alzowaid, Saline Water Conversion Corporation (SWCC)
- Mr. Carlos Cosín, Almar Water Solutions
- Dr. Gonzalo Delacámara, IE University
- Mr. José Díaz-Caneja, ACCIONA
- Mr. Jon Freedman, SUEZ WT&S
- Mr. Mounib Hatab, Future Pipe Industries
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- Dr. Jantje Johnson, OrangeBoat
- Mr. Fady Juez, Metito Overseas Ltd.
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- Mr. Miguel Angel Sanz, SUEZ International
- Mr. Devesh Sharma, Aquatech International
- Mr. Alejandro Sturniolo, H2O Innovation
- Mr. Gavin van Tonder, NEOM Water
- Mr. Victor Verbeek, Toray Membranes
- Mrs. Marta Verde, GS Inima

IDA Special Advisory Committees

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Co-Chairs:

Mr. Fermin Lopez, Acuamed
Mr. Alejandro Sturniolo, H2O Innovation, IDA Board Member

Agencies & Public Institutions

Chairman:

Dr. Gonzalo Delacamara, IE University

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Co-Chairs:

Mr. Fernando Bernard, Cuatrecasas
Mr. Miguel Riano, Herbert Smith Freehills
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Industrial Water

Chairman:

Mr. Devesh Sharma, Aquatech International / IDA Board Member

Co-Chair:

Mr. Robert Owens, Bechtel

YLP Co-Chair:

Mr. Michael Warady, Sylmar Group

Financial Institutions

Co-Chairs:

Mrs. Julie Carles, IFC
Mr. Rami Ghandour, Metito
Mr. Bastien Simeon, Amane Advisors

IDA Affiliates

The International Desalination Association (IDA) has a network of regional and association affiliate members from around the world. We are pleased to be associated with the following organizations and their representatives who are on our Board of Directors.

Regional Affiliate Members

AEDyR Asociación Española de Desalación y Reutilización

AMTA American Membrane Technology Association

Australian Water Association

CaribDA Caribbean Desalination Association

European Desalination Society

JDA Japan Desalination Association

Levant Desalination Association

中国膜工业协会 The Membrane Industry Association of China

Association Affiliate Members

亚洲和太平洋地区脱盐协会 Asia-Pacific Desalination Association

ALADYR

Indian Desalination Association

KDPA Korea Desalination Plant Association

Pakistan Desalination Association PakDA

SWA Singapore Water Association

جمعية علوم وتقنية المياه Water Sciences and Technology Association

IDA Membership and Benefits

IDA is dedicated to the development and promotion of desalination and water reuse worldwide. It is the only global association focused exclusively on advanced water treatment technologies and energy for these solutions.

- IDA provides educational resources to industry professionals and students through publications, online and multi-media communications, workshops, conferences, scholarships, and a fellowship program.
- An NGO of the United Nations, IDA is committed to outreach that informs the international community about advanced water treatment solutions and their critical role in providing new and sustainable sources of fresh water around the world
- IDA advocates the development of advanced water treatment solutions and practices that lower costs, reduce energy requirements, and enhance environmental responsibility. We represent the global desalination community at water, energy and environmental conferences and events.
- IDA's biennial World Congress is the premier global event for the desalination and water reuse community.
- IDA serves more than 60 countries from end users to financial institutions and from government organizations to academia.

IDA offers five categories of membership:

- Class I-A membership for corporations or utilities, is $1260 per year. Three employees are included in Class I-A membership.
- Class I-B membership for smaller companies with 10 employees or less. This category includes membership for two employees. Class I-B membership is also available to universities or NGOs. The annual Class I-B membership fee is $840.
- Class II-A membership for individuals. This category includes reduced conference registrations at IDA's World Congress, complimentary proceedings, complimentary online membership directory access, and more. The annual fee is $145.
- Class III-A, III-B, Class III-C membership is for students, non-profit libraries, and individuals from LDCs (respectively). Benefits include reduced fees at all Association activities, complimentary online membership directory access, and more. The fee is $30 / student or library.
- Individuals who are employees of Class I-A or I-B corporate members are $90 additional per person.

Please direct inquiries to membership@idadesal.org

02 ABOUT THE WORLD CONGRESS

Dear colleagues:

The International Desalination Association's flagship event, widely recognized as the premier event on advanced water treatment solutions in desalination and water reuse, returns to Australia a decade after the 2011 IDA World Congress held in Perth. The World Congress will take place during the week of October 9 - 13, 2022, in the magnificent city of Sydney, Australia, at the International Convention Center Sydney (ICC Sydney), a spectacular location and state-of-the-art facility that opened in 2016 at the world-famous Darling Harbour.

IDA World Congress 2022 will consist of panel discussions, an excellent technical program, keynote presentations, an industry-driven exhibition, unparalleled networking opportunities, and specialized workshops. Global attendance from public and private sector leaders, researchers, and academics in desalination, water reuse, energy, environment, and project finance will provide knowledge-sharing and discussion opportunities for participants on many technical and business topics to ensure a secure water future.

First held in 1987, the IDA World Congress has been a global meeting point for promoting the appropriate use of desalination and water reuse technologies as a critical part of addressing the world's freshwater shortages. The theme of the 2022 World Congress is Charting Resilient Water Solutions and how to secure a sustainable future that efficiently meets the growing water demand, threats to water security, and the increasing frequency and severity of droughts resulting from climate change.

We are looking forward to seeing you in Sydney!

Ms. Shannon McCarthy, IDA Secretary General

Our World Congress History:

2024 To be announced at Sydney WC22
2022 Sydney, Australia
2019 Dubai, United Arab Emirates
2017 Sao Paulo, Brazil
2015 San Diego, CA, USA
2013 Tianjin, China
2011 Perth, Western Australia
2009 Dubai, UAE
2007 Maspalomas, Gran Canaria, Spain
2005 Singapore
2003 Bahamas
2001 Manama, Bahrain
1999 San Diego, CA, USA
1997 Madrid, Spain
1995 Abu Dhabi, UAE
1993 Yokohama, Japan
1991 Washington DC, USA
1989 Kuwait City, Kuwait
1987 Cannes, France

Visit wc.idadesal.org for more information.

Congress Sponsors

TITANIUM SPONSOR

المؤسسة العامة لتحلية المياه المالحة
Saline Water Conversion Corporation (SWCC)

PLATINUM SPONSOR

الشركة السعودية لشراكات المياه
Saudi Water Partnership Company

PREMIUM GOLD SPONSOR

METITO
Commitment to a Cleaner Environment

GOLD SPONSORS

DUPONT

TORAY
Innovation by Chemistry

ACWA POWER
أكوا باور

Mutlaq Al-Ghowairi Contracting Co.

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You can depend on us
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desalination plants

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PLANT TOUR SPONSOR

SYDNEY DESALINATION PLANT

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AUSTRALIAN WATER ASSOCIATION

SYDNEY DESALINATION PLANT

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QWI WATER IS OUR CONCERN

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SUPPORTING PARTNERS

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WATER SERVICES ASSOCIATION OF AUSTRALIA

03 SCHEDULE & GENERAL INFORMATION

Venue

Accessibility

Conditions of Entry

Entrance and Venue Levels

General Admission

Ticketing Information

FAQs

Registration

Delegate Registration is open. The IDA World Congress is a five-day event, a week for learning, sharing ideas, developing business, and expanding your network to advance the solutions that will secure water for all.

Registration includes:

Access to technical sessions and exhibition
(Sun Oct 9 to Thu Oct 13)

Lunch and refreshment breaks daily

Networking events:
opening ceremony, welcome reception, gala dinner and awards, closing luncheon

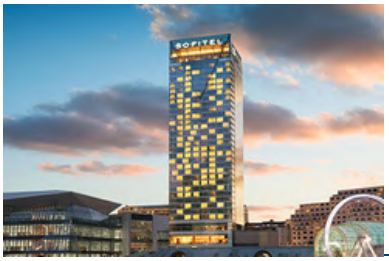
Congress proceedings

Plant Tour
(Friday, October 14) limited
Sydney Desalination Plant

To register please visit: https://wc.idadesal.org/registration/

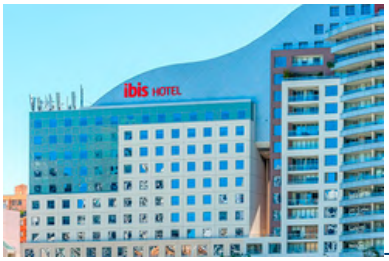
Accommodations

Take your pick from Sydney's huge choice of hotels to suit every taste, need and budget. The IDA has special rates at the following hotels. We recommend you to make your booking as soon as possible to ensure availability at special IDA room rates.



Sofitel Sydney Darling Harbour

Novotel Darling Harbour



Ibis Sydney Darling Harbour

Parkroyal Darling Harbour

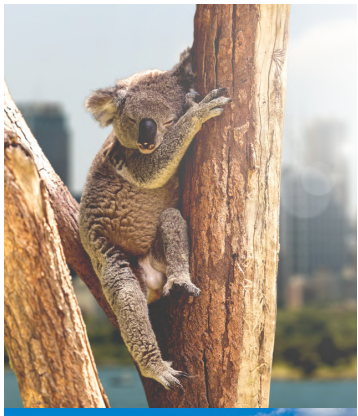
Mantra Sydney Central

More information at https://wc.idadesal.org/accommodation/

Visa Information

Request your Visa as soon as possible!

The Department of Home Affairs manages visas for Australia and the site is continually updated with the Australian law to insure site visitors are getting the most current information. Applications can be made electronically and most individuals attending the IDA World Congress 2022 would be applying for a (subclass600) as this is specific to attending a conference.



Those countries who participate in the Australian biometrics program should visit this link as it is in addition to the standard visa online process. This program is set in conjunction with your country travel requirements, and it requires an additional scanning process. Individuals who travel regularly would have this status on their International profile in any case and are very accustomed to the process.

World Congress Exhibitors and Speakers need to apply for a Subclass 651.

Requests for Visa Invitation Letters should be submitted to registration@idadesal.org.

Several reference links are below including up-to-date information about Covid-19 regulations.

Overseas Travellers (Exemptions)

Some travellers are automatically exempt from Australia's border restrictions and do not need to apply for an individual exemption. Among other groups, this includes:

- Australian citizens, Australian permanent residents and New Zealand citizens usually resident in Australia;
- Fully vaccinated eligible visa holders; and
- Individuals travelling to Australia under a safe travel zone arrangement.

A full list of travellers who are automatically exempt from border restrictions is available here.

Interstate Travellers

Domestic visitors are no longer required to quarantine or hold a permit to enter Victoria from another Australian state or territory to visit, work, transit, or if you are a cross-border resident.

Visa Options

Participants, attendees and speakers that will not be working, performing or otherwise be paid to contribute at the event may be eligible to apply for the following visa options:

- Visitor (subclass 600)(Business stream) visa. For more information click here.
- Electronic Travel Authority – ETA (subclass 601). For eligible passport holders and more information click here.
- Visitor (subclass 651)(Business Stream) visa. For eligible passport holders and more information click here.

A speaker, presenter, exhibitor, or other contributor invited to participate in an event by an Australian organisation may be eligible to apply for a:

- Temporary Activity (subclass 408)(Invited Participant) visa. For more information click here.

Important

Please note that a the letter of support from an Australian organisation is a legislative requirement for the Temporary Activity (subclass 408) (Invited Participant) visa.

Visa Processing Time

Please apply for you visa well in advance of your intended date of travel to Australia, as you could experience long processing times.

Here are a few useful links to keep you in the loop:

- passports.gov.au – Guidance foreign vaccination certificates
- covid19.homeaffairs.gov.au – Travelling to Australia
- General information for visa applicants
- Travel Exemption Portal
- Choosing the correct Visa
- Visa processing times
- Entering Australia Border Checklist

General Schedule & Technical Sessions

Pre Congress - Day 1 Saturday, 8 October 2022

07:00 - 00:00 Construction of Exhibition Hall

13:00 - 16:00 Registration Desk Open for Exhibitors Only

Pre Congress - Day 2 Sunday, 9 October 2022

07:00 - 17:00 Construction of Exhibition Hall 5-6

10:00 - 17:00 Delegate Registration Open

14:30 - 15:30 Term 19 Outgoing Board Meeting

15:30 - 17:00 Term 20 Incoming Board Meeting

18:00 - 20:30 Welcome Reception on the Jackson Vessel

General Schedule & Technical Sessions

Congress - Day 1 Monday, 10 October 2022

07:30 - 08:15	Technical Program Speakers Breakfast Meeting
07:30 - 08:15	VIP Breakfast Meeting - Opening Plenary Speakers
07:00- 17:00	Delegate Registration Opens
08:30 - 11:30	Opening Ceremony
11:30 - 18:00	Exhibit Hall Open
12:30 - 14:00	Lunch Break
14:00 - 17:30	- IDA Innovation Forum - Outback Theater Discussions
14:30 - 17:30	Technical Sessions
15:30 - 16:00	PM Refreshment Break
18:30 - 19:45	Cocktail Reception
19:45 - 22:00	Gala Dinner and Awards Ceremony

General Schedule & Technical Sessions

Congress - Day 2 Tuesday, 11 October 2022

07:30 - 15:00	Delegate Registration / Information Desk Open
07:30 - 08:15	Technical Program Speakers Breakfast Meeting
07:30 - 08:15	Leaders Summit Speakers Breakfast Meeting
08:30- 17:30	IDA Sponsor Forums & Panels
08:30 - 18:00	Exhibit Hall Open
08:30 - 17:30	Technical Program - 4 Parallel Sessions
09:00 - 17:30	Leaders Summit
10:30 - 11:00	Refreshment Break
13:00 - 14:00	Lunch Break
14:00 - 17:30	Outback Sessions (YLP, Sponsors)
15:30 - 16:00	Refreshment Break
18:30 - 20:30	Leaders Summit Reception (invitation only)

General Schedule & Technical Sessions

Congress - Day 3 Wednesday, 12 October 2022

07:30 - 08:15	Technical Program Speakers Breakfast Meeting
08:00 - 14:00	Information Desk Open
08:30 - 17:30	IDA Sponsor Forums & Panels
08:30 - 17:30	Technical Program - 4 Parallel Sessions
09:00 - 18:00	Exhibit Hall Open
10:30 - 11:00	Refreshment Break
13:00 - 14:00	Lunch Break
15:30 - 16:00	Refreshment Break
16:00 - 17:00	YLP Round Table Session
17:30 - 18:30	IDA Membership Meeting
18:30 - 19:30	Term 20 Board Meeting

General Schedule & Technical Sessions

Congress - Day 4 Thursday, 13 October 2022

07:30 - 08:15	Co-Chairs & Presenters of the Day Breakfast Meeting
08:30 - 15:00	Exhibit Hall Open
09:00 - 11:00	Information Desk Open
09:00 - 12:30	Technical Program
09:00 - 13:00	IDA Sponsor Forums & Panels
10:30 - 11:00	Refreshment Break
13:00 - 15:00	Closing Luncheon and Technical Program Awards/Innovation Forum Awards
15:30	Exhibit Hall Breakdown

Congress - Day 5 Friday, 14 October 2022

08:30 - 12:30	Sydney Desalination Plant Tour

Sponsorship Opportunities

Support Dynamic Knowledge Exchange at WC 2022

Sponsorship

Sponsors of the IDA World Congress enjoy global renown and influence among esteemed delegates from both the public and private sectors. Sponsors establish themselves as the pioneers in the field and foster connections with potential clients and partners. Enjoy unmatched brand recognition, product and services endorsement, and extensive media coverage all the while reinforcing your leadership within the desalination and water reuse industry. Our Sponsorship Program includes diverse and unique opportunities to promote your company during the World Congress Week, and many packages that include strategically located exhibition space.

To learn more, please contact us at: sponsorships@idadesal.org

Marketing Opportunities

Secure visibility for your company at the world's largest congress on desalination and water reuse with new advertising opportunities. Enjoy the advantages of advertising in the different communication platforms that IDA has developed for the IDA 2022 World Congress and boost your company's reputation. Professionals worldwide will learn more about your company, services, and products in the different online and offline formats.

IDA offers companies in the sector different formats and resources to advertise. For more information, don't hesitate to get in touch with sponsorships@idadesal.org.

For more information, please visit: https://wc.idadesal.org/become-a-sponsor/

04 TECHNICAL PROGRAM

Message from the WC Technical Program Chairmen

At long last, after several delays due to Covid, it is with great excitement I now welcome you to Sydney! We have some excellent technical content in store for you with over 200 oral presentations in the technical theaters and a handful of carefully tailored panel sessions to help you refresh your knowledge, learn new skills and keep up to date with the latest and greatest advancements in desalination and water reuse.

The technical program encompasses a carefully reviewed and vetted collection of papers, addressing a wide range of important issues facing the industry. As a Technical Program Committee we assembled a team of the very best in our industry who chose a selection of the most relevant topics to keep us all fully engaged during the program.

I would like to highlight two exciting areas withing the technical program. First is an in depth look at brine mining technologies, an important new interest area for our industry. How we can valorize our salty waste stream through minerals and metals extraction is an impactful new development over the last few years that has only been possible through the advancement of new technologies. Second is on digital desalination, including Artificial Intelligence, where we have seen equally impressive developments in our industry. We will hear form several authors presenting real world case studies where digital solutions have been proven via the successful deployment of this technology.

Inspired, influenced, and empowered by the spirit and vision of IDA's leadership, I am proud to lead this program with my co-chairs of the 2022 Technical Program Committee, Mr. Fady Juez, Professor John Lienhard, Mr. Victor Verbeek and, Mr. Greg Wetterau. I also thank the multi-cultural, gender, and age-balanced WC 2022 Technical Program Committee, highly focused on human capital empowerment, efficiency, and excellence. All have worked tirelessly to make the 2022 World Congress Technical Program inspiring for all our delegates.

And finally, I thank all delegates and authors for their innovative ideas, suggestions, and challenges they bring to Sydney this year.

Sincerely,

Dr. Mike Dixon, World Congress 2022 Technical Program Co-Chair

Meet the Chairmen

The World Congress will feature a four day technical, four track technical program. As well as a high-level plenary sessions, business roundtable discussions, Leaders Summit, Innovation Forum, and plant tours.

The Congress Technical Program Committee is led by five distinguished members of the IDA Board of Directors, serving as the Technical Program Committee Co-Chairs. They have formed a dynamic technical committee of 30 members from around the globe.

Prof. John H. Lienhard V
MIT

Dr. Mike Dixon
Synauta

Mr. Fady Juez
Metito

Mr. Greg Wetterau
CDM Smith

Mr. Victor Verbeek
Toray

Technical Committee Members

- Mrs. Olga Sallangos, Caramondani Desalination Plants
- Mr. Tim Lam Shing, WSD
- Ms. Naomi Jones, McCarthy Building Companies, Inc.
- Mr. Kevin Price, AWTT, LLC
- Dr. Antonella DeLuca, OMYA
- Dr. Giancarlo Barassi, Aquatech International
- Mr. Guillaume Clairet, H2O Innovation
- Mr. Alistair Munro, Gaia Wind
- Dr. Victor Monsalvo, FCC Aqualia
- Mr. Patrick Buchta, Dupont-Inge
- Dr. Domingo Zarzo, SACYR
- Mr. Rodrigo Segovia, Almar Water Solutions
- Dr. Jaichander Swaminathan, IIT Gandhinagar
- Dr. Emily Tow, Olin College
- Prof. Shadi Hassan, Khalifa University
- Dr. Mohammad Wakil Shazad, Northumbria University
- Dr. HK Shon, University of Technology Sydney
- Mr. Miguel Angel Sanz, SUEZ
- Mr. Antonio Casanas, Dupont
- Mr. Rama Jagwani, PROJECX
- Mr. Ravid Levy, RLV Consulting
- Mr. Tariq Nada, ACWA Power
- Prof. Duc Long Ngheim, University of Technology Sydney
- Dr. Tony Fane, University of New South Wales
- Mr. Neil Palmer, Osmoflo

Topic Chairs

Mr. Thomas Altmann
ACWA Power

Mr. Borja Blanco
Aqua Advise

Dr. Veronique Bonnelye
Suez

Mrs. Lindsey Brown
GHD

Dr. Emilio Gabbrielli
Independent

Dr. Veronica Garcia Molina
Dupont

Dr. Tony Fane
University of New South Wale

Prof. Stephen Gray
Institute for Sustainable Industries and Liveable Cities

Dr. Jantje Johnson
OrangeBoat

Prof. John Lienhard V
Massachusetts Institute of Technology (MIT)

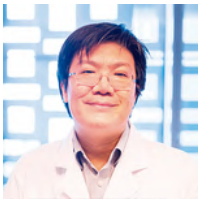
Mr. Jim Lozier
Jacobs

Mr. Neil Palmer
Osmoflo

Mr. Kevin Prize
AWTT, LLC

Mr. Miguel Angel Sanz
SUEZ

Mr. Rodrigo Segovia
Almar Water Solutions



Prof. HK Shon
University of Technology Sydney

Dr. Rick Stover
Gradiant

Mr. Felix Wang
Gradiant

Prof. David Warsinger
Purdue University

Dr. Domingo Zarzo
SACYR

Session Chairs

Dr. Ahmad Al Amoudi
SWCC

Mrs. Ursula Annunziata
EDS

Dr. Giancarlo Barassi
Aquatech International

Dr. Monica Boodhan
University of Trinidad and Tobago

Mr. Patrick Buchta
DuPont

Mr. Guillaume Clairet
H2O Innovation

Mr. Antonio Casañas
Dupont

Dr. Antonella DeLuca
OMYA International AG

Dr. Mike Dixon
Synauta

Dr. Heike Glade
University of Bremen

Dr. Belen Gutierrez
GS Inima

Prof. Seungkwan Hong
Korea University

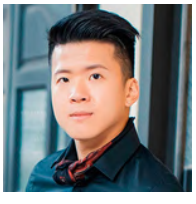
Mr. Hoon Hyung
LG NanoH2O

Mr. Rama Jagwani
PROJECX

Ms. Naomi Jones
McCarthy Building Companies

Mr. Fady Juez
Metito

Dr. Christine Kleffner
TH Köln



Mr. Steven Lam
Gradiant

Dr. Jorge Malfeito
ACCIONA

Mr. Roberto Mangano
ILF Consulting Engineers

Dr. Victor Monsalvo
Aqualia

Mr. Alistair Munro
Ryse Energy

Mr. Scott Murphy
Veolia

Prof. Long Ngheim
University of Technology Sydney

Mr. Juan Miguel Pinto
Energy Recovery, Inc

Mrs. Olga Sallangos
Caramondani Desalination Plants

Mr. Devesh Sharma
Aquatech International

Mr. Daniele Strongone
American Water Chemicals, Inc

Mr. Alejandro Sturniolo
H2O Innovation

Dr. Jaichander Swaminathan
Massachusetts Institute of Technology (MIT)

Mr. Ties Venema
Piedmont

Mr. Victor Verbeek
Toray Membrane

Eng. Nikolay Voutchkov
SWCC

Dr. Mohammad Wakil Shazad
Northumbria University

Mr. Greg Wetterau
CDM Smith, Inc.

Session Categories and Topics

The Call for Papers resulted in over 300 abstracts from countries across the globe. These technical papers will be presented in 38 sessions in the following categories and topics:

01 Seawater and Brackish Water Desalination

02 Water Reuse, Potable and Non-Potable including Public Outreach

03 Industrial Water and Wastewater Treatment

04 Coupling Desalination and Renewable Energy

05 Emerging Technologies, Emerging Issues and Emerging Contaminants

06 Membrane Science

07 Environment and Sustainability

08 Governance, Finance, and Project Delivery

09 Thermal Desalination

10 Pre-Treatment and Post Treatment

11 Plant Operations and Digitization

12 Brine Management and Resource Recovery

Oral Presentations

Day 1 Monday, 10 October 2022

THEATER 1

5.3 Emerging Contaminants in Desalination and Water Reuse

Topic Chair:

- *Mr. Rodrigo Segovia, Chief Technical Officer, Almar Water Solutions*

Session Chairs:

- *Mr. Rama Jagwani, General Manager, PROJECX*
- *Dr. Mike Dixon, CEO, Synauta*

13:00 - 13:20

A Critical Control Point Approach to Management of Water Quality Chemical Risks

- *Presenter: Dr. Kathy Northcott, R&D Manager, Veolia Australia New Zealand*

13:25 - 13:45

Continous Online Monitoring for Potable Water Network

- *Presenter: Dr. Sai Sudhakaran, Sr. Staff Scientist, NALCO Water*

13:50 - 14:10

Abundance of Microplastics from Human Activities to Water Environment

- *Presenter: Dr. Jieun Lee, Research Professor, Pusan National University*

14:15 - 14:35

Design and Integration of Ozonation in Treatment Train for Micropollutant Removal and Urban Wastewater Reuse

- *Presenter: Dr. Sylvie Baig, Head of Scientific Innovation, Suez International*

14:40 - 15:00

Hybrid RO, Softening & Chromium Cr(Vi) Remediation

- *Presenter: Dr. Mohammad Alizadehfard, CEO, OSMOTEC*

15:05 - 15:25
Multiple Point Ozonation for Micropollutants Removal from Wastewater: A Full-Scale Demonstration from Denmark

- *Presenter: Dr. Ronan Guillossou, Process Design Engineer, Suez*

15:30 - 16:00 PM Break

16:00 - 16:20
PFAS Removal with Thin Film Nanocomposite Reverse Osmosis Membranes

- *Presenter: Mr. Eugene Rozenbaoum, Director of Engineering - Americas and Europe, LG NanoH2O*

16:25 - 16:45
Remove Oil Contamination of Seawater by Aerogels

- *Presenter: Dr. Mohammad Alizadehfard, CEO, OSMOTEC*

16:55 - 17:15
Using RO for Removal of PFAS and Other CECS from a Wastewater Impacted Surface Water

- *Presenter: Mr. Greg Wetterau, Vice President, CDM Smith*

THEATER 2

1.1 Seawater Plant Cases Studies and Process Improvements

Topic Chair:

- *Prof. Stephen Gray, Executive Director, Institute for Sustainable Industries and Liveable Cities*

Session Chairs:

- *Dr. Jorge Malfeito, R&D Director Water, ACCIONA*
- *Mrs. Olga Sallangos, Plant Manager, Caramondani Desalination Plants LTD*

13:00 - 13:20
Improving the Performance of A Severely Biofouled Seawater Reverse Osmosis Facility Using the Latest in Chemical Technology - A Case Study

- *Presenter: Mr. Kunihiro Hayakawa, Manager, Kurita Water Industries, LTD*

13:25 - 13:45
Water for Fodder Initiative: Use of Desalination to Provide Drought Relief in Australia
- *Presenter: Mr. Javier Artal Gonzalez, Plant Manager, ACCIONA*

13:50 - 14:10
O&M Start Up: Maintenance Challenges
- *Presenter: Mr. Javier Artal Gonzalez, Plant Manager, ACCIONA*

14:15 - 14:35
Evolution of First Pass Membrane Configuration at A Large Scale Desalination Plant
- *Presenter: Mr. Thomas Ransome, Operations Manager, Sacyr Water*

14:40 - 15:00
Resilience Through Disasters - The Reinstatement and Subsequent Restart of the Sydney Desalination Plant
- *Presenter: Mr. Reece Karamihas, Senior Enginee, Sydney Desalination Plant Pty Ltd*

15:05 - 15:25
Technology and Innovation Hand to Hand With Sustainability. Best Practices in Atacama
- *Presenter: Dr. Belén Gutiérrez, Head of Desalination Area, R&D Department, GS INIMA ENVIRONMENT*

15:30 - 16:00 PM Break

16:00 - 16:20
The Effectiveness of Ceramic Ultrafiltration as a Pre-Treatment for SWRO at Tuas Spring Singapore
- *Presenter: Ms. Carol Wang, Assistant Marketing Manager, Nanostone Water*

16:25 - 16:45
Tuas Desalination Plant
- *Presenter: Mrs. Constanze Simmermacher, Project Manager / Design Manager, Jacobs*

16:55 - 17:15
Performance Study of Sulfuric Acid Shocks in Reverse Osmosis Membranes
- *Presenter: Mr. Javier Artal Gonzalez, Plant Manager, ACCIONA*

THEATER 3

1.3 Novel Approaches to Design and Operation

Topic Chair:

- *Dr. Veronica Garcia Molina, Global Marketing Manager Municipal, Dupont*

Session Chairs:

- *Mr. Fady Juez, Managing Director, Metito Overseas*
- *Dr. Belén Gutiérrez, Head of Desalination Area, R&D Department, GS INIMA ENVIRONMENT*

13:00 - 13:20

Enhanced Biofouling Resistance, Energy Savings and Higher Flux Operation Through New FilmTec™ NF270-440 Membrane

- *Presenter: Dr. Guillem Gilabert Oriol, Technical Leader, DuPont*

13:25 - 13:45

Design Strategies for Reducing Energy and Total Costs for Large Scale Seawater Reverse Osmosis Plants

- *Presenter: Mr. Kenneth Chao, Applications Engineer, LG Chem*

13:50 - 14:10

Energy Recovery Devices in Advanced and Emerging Reverse Osmosis Applications

- *Presenter: Dr. Richard Stover, VP of Technology, Gradiant Membrane Systems*

14:15 - 14:35

Four Simple Innovations to Reduce CO2 Emissions on Large SWRO Plants

- *Presenter: Mr. Stephen Chesters, VP and Managing Director, H2O Innovation*

14:40 - 15:00

Temporally Multi-Staged Batch Counterflow Reverse Osmosis for High Recovery Desalination

- *Presenter: Prof. David Warsinger, Assistant Professor, Purdue University*

15:05 - 15:25

Use of Nanofiltration for Toc Removal while Optimizing Recovery on a Brackish Water Source

- *Presenter: Mr. Michael Bourke, VP Business Development, Wigen Water Technologies*

15:30 - 16:00 PM Break

16:00 - 16:20
Validation of a Method For Modeling Brine and Permeate PH in RO and NF Systems Reverse Osmosis Plants Performance Index

- Presenter: Mr. Mohannad Malki, Technical Director, American Water Chemicals

16:25 - 16:45
Advanced New RO Membrane Having High Rejection for Small Neutral Substance

- *Presenter: Mr. Hiroki Minehara, Professional Researcher, Toray*

16:55 - 17:15
On-Site Evaluation of Biocide Combination for Biofouling Mitigation

- *Presenter: Dr. Lu Yinghong, Chief Research Engineer, Kurita R&D Asia Pte Lt*

THEATER 4

3.5 Oil & Gas

Topic Chair:

- *Mr. Borja Blanco, CEO, Aqua Advise*

Session Chairs:

- *Mr. Roberto Mangano, Managing Director, ILF Consulting Engineers Abu Dhabi*
- *Prof. Long Ngheim, Professor, Director of the Centre for Technology in Water and Wastewater, University of Technology Sydney*

13:00 - 13:20
Membrane Distillation as an Environmentally Friendly Desalination System for Petroleum Refinery's Wastewater Reuse - A Technical And Environmental Case Study

- *Presenter: Dr. Mahdi Jalayer, Head of Basic Design and Senior Research Specialist / Technology Development Advisor, Bandar Abbas Oil Refining Company-Iran / OSMOTEC - Australia*

13:25 - 13:45
Using Direct Contact Condenser in a Wastewater Treatment System for Removal of Organic Contaminants

- *Presenter: Prof. Bahman Abbasi, Assistant Professor, Oregon State University*

13:50 - 14:10

Water for Hydrogen Production: Challenges and Opportunities Supported by Real-World Case Studies

- *Presenter: Mr. Brendan Dagg, Process Engineer, GHD*

2.2 Non-Potable Water Reuse Studies and Projects

Topic Chair:

- *Dr. Domingo Zarzo, Innovation and Strategic Projects Manager, Sacyr Water*

Session Chairs:

- *Dr. Monica Boodhan, Lecturer, the University of Trinidad and Tobago*
- *Mr. Alejandro Sturniolo, Global Head of Water Reuse & Strategic Partnerships, H2O Innovation*

14:15 - 14:35

Anderson Road Quarry Development Grey Water Treatment Plant -- A Triumph on Recycled Grey Water in Hong Kong Sar

- *Presenter: Mr. Colin Chan, Technical Director, Binnies Hong Kong Limited*

14:40 - 15:00

Application of LG New Generation Thin-Film Nanocomposite Membrane to Wastewater Treatment in a Steel Plant

- *Presenter: Ms. Lihua Wang, Technical Manager, LG Chem China Co. Ltd*

15:05 - 15:25

Biofilm Cleaner Improves Effluent WWRO Membrane Plant Operation

- *Presenter: Mr. Maqsood Fazel, Senior Research Chemist, Genesys International*

15:30 - 16:00 PM Break

16:00 - 16:20

Effect of RO Pretreatment Process to Minimize Brine Water when Reuse of Effluent from Public Wastewater Treatment Plant

- *Presenter: Dr. Soonbuhm Kwon, Head Researcher, K-water*

16:25 - 16:45

Nutrient Recovery from Brackish Groundwater with Monovalent Selective Electrodialysis and Nanofiltration

- *Presenter: Mr. Samuel Heath, Graduate Research Assistant, Massachusetts Institute of Technology (MIT)*

16:55 - 17:15

Smart-Ferti-Reuse - A Smart Decision Tool For Fertigation of Agricultural Crops: Assessment of Treated Water Quality

- *Presenter: Dr. Chrystelle Ayache, Project Manager, Veolia*

Day 2 Tuesday, 11 October 2022

THEATER 1

1.2 Brackish Plant Cases Studies and Process Improvements

Topic Chair:

- *Dr. Veronique Bonnelye, Technical Support Manager, SUEZ International*

Session Chairs:

- *Mr. Antonio Casañas, Senior Key Account Manager, DuPont Water Solutions*
- *Mr. Daniele Strongone, Business Manager, American Water Chemicals*

08:30 - 08:50

Sustainability and Cost of Water Savings Through New High Rejection FilmTec™BW30XHR PRO-440 Membrane For Seawater Desalination

- *Presenter: Dr. Guillem Gilabert Oriol, Technical Leader, DuPont*

08:55 - 9:15

The Influence of Feed Spacer in Reverse Osmosis Operation: A case Study with a New Development

- *Presenter: Mr. Alvaro Lagartos, Senior Application Engineer, LG Chem*

09:20 - 09:40

The Myalup-Wellington Story - Is Help on the Horizon for Western Australian Horticulture, Dairy and Beef Farmers?

- *Presenter: Mr. Daniel Visser, Technical Director - Water Treatment & Desalination, GHD*

1.3 Novel Approaches to Design and Operation

Topic Chair:

- *Prof. John H. Lienhard V, Professor, Massachusetts Institute of Technology (MIT)*

Session Chairs:

- *Mrs. Ursula Annunziata, President EDS, Executive Advisor at H2O Innovation*
- *Dr. Victor Monsalvo, Head of Eco-efficiency Area, Innovation and Technology, Aqualia*

09:45 - 10:15

A Leap Forward in RO Membrane Pressure Vessel Service Life, Performance, Safety & Reliability - A New Best Practice Guide

- *Presenter: Mr. Sean McCagh, Engineer, RO-TEG*

10:20 - 11:00 AM Break

11:00 - 11:20

Parallel High-Pressure Pumps for Energy Savings in Desalination

- *Presenter: Dr. Georg Herborg, Director of Innovation, Danfoss*

11:25 - 11:45

A Proposed Safe Design of the Reverse Osmosis System

- *Presenter: Mr. Simone Puzzo, Head of Water & Environmental Projects, ILF Consulting Engineers*

11:50 - 12:10

Advanced Rejuvenation Protocol with Chemical Agent for the Deteriorated RO Membrane

- *Presenter: Mr. Yoshiaki Ito, Research Manager, Mitsubishi Heavy Industries, Ltd.*

1.4 Intakes and Outfalls

Topic Chair:

- *Dr. Emilio Gabbrielli, International Water Advisor*

Session Chairs:

- *Mr. Steven Lam, Director, New Products Initiative, Gradiant*
- *Mr. Scott Murphy, General Manager QLD, Veolia Australia & New Zealand*

12:15 - 12:35

Proper Design of Intakes and Outfalls to Avoid Main Risks During Operation

- *Presenter: Mr. Eloy Pita, CEO, INCREA*

12:40 - 13:00
Relationship Between the Desalination Plant Intake Tunnel Condition, Intake Flow, and Shock Dosing

- *Presenter: Mr. Rongtao Liu, Operation Support Engineer/ Environment Manager, Adelaide Desalination Plant*

13:05 - 14:30 Lunch Break

1.5 Planning for Major City, State and Country Desalination Upgrades

Topic Chair:

- *Dr. Emilio Gabbrielli, International Water Advisor*

Session Chairs:

- *Mr. Steven Lam, Director, New Products Initiative, Gradiant*
- *Mr. Scott Murphy, General Manager QLD, Veolia Australia & New Zealand*

14:30 - 14:50
Seawater Intakes Prefiltration for Resilient Projects

- *Presenter: Mr. Lars Späth, Head of Global Water Segment WPS, Passavant-Geiger GmbH*

14:55 - 15:15
Desalination Responses for Greater Sydney Planned During the 2017-2020 Drought

- *Presenter: Mr. Francois Neser, Senior Associate, Jacobs*

15:20 - 15:40
First Stage Tseung Kwan O Seawater Desalination Plant -- The New Strategic Water Source for Hong Kong

- *Presenter: Mr. Patrick Chun Yuen Mak, Resident Site Engineer, Binnies Hong Kong Limited*

15:40 - 16:00 PM Break

16:00 - 16:20
Greater Sydney Water Strategy - Toward Greater Drought Resilience

- *Presenter: Dr. Dennis Cho, Principal Process Engineer, Jacobs Group Australia*

16:25 - 16:45
Here, There or Everywhere: A Comparison of Centralised and Decentralised Desalination Schemes
- *Presenter: Ms. Rebecca Argento, Process Engineer, GHD*

16:50 - 17:10
RO: History, Benefits & Limitations
- *Presenter: Dr. Val Frenkel, Vice President, GRELEY and HANSEN*

17:15 - 17:35
State of Desalination In Pakistan - Recent Trends and Future Prospects
- *Presenter: Mr. Jawwad Ahmed, Business Development Manager in Prime Chemicals Corporation (Pvt) Ltd.*

THEATER 2

2.1 Potable Water Reuse Studies and Projects

Topic Chair:
- *Mr. Jim Lozier, VP, Global Tech Leader for Desalination, Jacobs*

Session Chairs:
- *Dr. Mohammad Wakil Shazad, Deputy Programme Leader, Northumbria University*
- *Dr. Heike Glade, Head of Research Group, University of Bremen*

08:30 - 08:50
Beenyup Advanced Water Recycling Plant Stage 2: Construction, Commissioning and Integration with Stage 1
- *Presenter: Ms. Lisa Chan, Innovation & Improvement Manager, SUEZ*

08:55 - 9:15
Implementing Direct Potable Reuse for the City of Los Angeles
- *Presenter: Mr. Greg Wetterau, Vice President, CDM Smith*

09:20 - 09:40
Direct Potable Reuse Combining Tertiary Effluent with Seawater Reverse Osmosis: An Opportunity for a Synergy
- *Presenter: Mr. Alvaro Lagartos, Senior Application Engineer, LG Chem*

09:45 - 10:15

10:20 - 11:00 AM Break

11:00 - 11:20
Innovative Potable Reuse AWTF Puts Wrd of Southern California Closer to Water Independence

- *Presenter: Mr. Mark Donovan, North American Water Treatment & Desalination Lead, CHD*

11:25 - 11:45
Innovative Process to Produce Drinking Water from Wastewater for Small & Isolated Communities

- *Presenter: Dr. Philippe Sauvignet, Industrialization Manager, Veolia*

11:50 - 12:10
Jourdain: Paving the Way Towards Planned Indirect Potable Reuse in France

- *Presenter: Mr. Yvan Poussade, Product Owner - Water Reuse, Veolia*

12:15 - 12:35
Satisfying PRW Stakeholder Expectations -- Lessons for Engineers and Project Leaders

- *Presenter: Mr. Andrew Layson, Senior Principal Water Engineer, Jacobs*

12:40 - 13:00
Small-Scale and Household Methods to Remove Salinity & Hardness from Drinking Water - A Case Study of Abyek Qazvin

- *Presenter: Dr. Mohammad Alizadehfard, CEO in OSMOTEC*

13:05 - 14:30 Lunch Break

14:30 - 14:50
The Beenyup Advanced Water Recycling Plant -- Australia's First Large Indirect Potable Reuse Plant

- *Presenter: Mr. Keith Andes, Pacific Rim Technical Manager, Nitto Hydranautics*

4.4 Cutting Edge Research in Desalination and Renewable Energy

Topic Chair:

- *Mr. Kevin Price, Principal, AWTT, LLC*

Session Chairs:

- *Mr. Alistair Munro, Founder and CEO, Ryse Energy*
- *Mr. Ties Venema, Group Vice President & Managing Director S3C, H2O Innovation*

14:55 - 15:15

A Multifunctional Osmotic Battery for Desalination and Grid Energy Storage

- *Presenter: Dr. Qianhong She, Assistant Professor, Singapore Membrane Technology Centre (SMTC)*

15:20 - 15:40

Life Hyreward Project: Hybrid System for Renewable Energy Production from Desalination Brine

- *Presenter: Ms. Patricia Terrero, R&D Manager, Sacyr Water*

15:40 - 16:00 PM Break

16:00 - 16:20

Robust Control and Experimental Validation of a Direct Drive Photovoltaic Electrodialysis Desalination System

- *Presenter: Mr. Jonathan Bessette, Graduate Research Assistant, Massachusetts Institute of Technology*

16:25 - 16:45

Wave-Powered Desalination: A Sustainable Way to Increase Resilience to Water Scarcity

- *Presenter: Ms. Camille St-Pierre, Commercial Manager, Oneka Technologies*

16:50 - 17:10

Experience with the New Flex Rotary Energy Recovery Device

- *Presenter: Mr. Beat Schneider, Director Global Desalination, Flowserve*

17:15 - 17:35

Low Temperature Process Studies for Spent Desalination Membranes

- *Presenter: Dr. Prasad TL Gupta, Senior scientific officer, BARC*

THEATER 3

9.2 Thermodynamics of Thermal Systems

Topic Chair:

- *Mr. Thomas Altmann, EVP - Innovation & New Technology, ACWA Power*

Session Chairs:

- *Dr. Mohammad Wakil Shazad, Deputy Programme Leader, Northumbria University*
- *Prof. Seungkwan Hong, Professor, Korea University*

08:30 - 08:50

Computational Fluid Dynamics Modeling of a Novel Multi-Effect Membrane Distillation System

- *Presenter: Mr. Rishabh Srivastava, PhD Scholar, Indian Institute of Technology Gandhinagar*

08:55 - 9:15

Energy Recovery in Thermals Desalination Systems: A Way Forward to Improved Comprehensive Performance

- *Presenter: Mr. Muhammad Ahmad, PhD Student in Northumbria University*

09:20 - 09:40

Pilot Testing of Advanced MED Technolgy for Seawater Desalination

- *Presenter: Prof. Abdel Nasser Mabrouk, Senior Scientist, Qatar Environment and Energy Research Institute*

09:45 - 10:15

An Innovative Self-Cleaning Floating Solar Still for Low-Cost Water Desalination in Remote Areas

- *Presenter: Mr. Milad Mohsenzadeh, PhD Candidate, The University of Melbourne*

10:20 - 11:00 AM Break

11:00 - 11:20

Heat-Driven Direct Reverse Osmosis for Emergency Seawater Desalination Powered by Solar Thermal Energy

- *Presenter: Dr. Peter Godart, Postdoctoral Associate, MIT*

11:25 - 11:45

Solar Thermal High Efficiency-High Recovery Multi Effect Hybridized with Nanofiltration-Membrane Distillation Emets

- *Presenter: Mr. Leon Awerbuch, CEO, International Desalination Consulting Associates Idca*

6.1 Advances in Membrane Chemistry and Efficiency

Topic Chair:

- *Prof. HK Shon, Professor in School of Civil and Environmental Engineering, University of Technology Sydney*

Session Chairs:

- *Mr. Hoon Hyung, President, LG Water Solutions*
- *Prof. Seungkwan Hong, Professor, Korea University*

11:50 - 12:10

3D-Printing of Desalination Device with Anti-Fouling Nanocellulose Membrane

- *Presenter: Dr. Liang Ying, Research Engineer, National University of Singapore*

12:15 - 12:35

A New Generation of Multi-Capillary PES Membrane

- *Presenter: Mr. Christian Staaks, Leader Application Development, DuPont*

12:40 - 13:00

Aminated Silica Grafted Carbon Nanotube-Based Membranes for Oily Wastewater Treatment

- *Presenter: Ms. Mariam Ouda, PhD Student, Khalifa University*

13:05 - 14:30 Lunch Break

14:30 - 14:50

Autopsies and Hydraulic Tests to Detect Main Problems of Reverse Osmosis Elements

- *Presenter: Dr. Joan Antoni Salvadó, Researcher, ACCIONA Agua*

14:55 - 15:15

Desalination and Anti-Biofouling Performance of Graphene and Iron Nanoparticle Coated Membranes

- *Presenter: Mrs. Julia Madueño, Student, Instituto Tecnologico de Sonora*

15:20 - 15:40

Development of Anti-Fouling High Pressure RO and Application to ZLD Process

- *Presenter: Mr. Tomotsugu Miyabe, Chief Researcher, Nitto Denko Corporation*

15:40 - 16:00 PM Break

16:00 - 16:20

Development of Hollow Fiber Asymmetric Membrane for Osmotically Assisted Reverse Osmosis (OARO) Applicable to Brine Concentration and Its Long-Term Experimental Study

- *Presenter: Mr. Takahito Nakao, Senior Engineer, Toyobo Co., Ltd.*

16:25 - 16:45

Next-Generation Membranes: Printing Polyamide Thin-Film Composite Membranes Using Electrospray Technique

- *Presenter: Mr. Shiyang Huang, Ph.D. candidate, University of New South Wales*

16:50 - 17:10

Novel Perforated-Pillar Spacer for Fouling Mitigation and Enhanced Hydrodynamics in Spiral Wound Modules

- *Presenter: Dr. Sarah Kerdi, Research Scientist, KAUST*

17:15 - 17:35

Desalination of Seawater and High Salt Waters to Potable Water by Salt Repellent Technique

- *Presenter: Mr. Gopinath Rani, Head of Innovation & Technology, Desaline Water Co.*

THEATER 4

10.1 Pretreatment Processes Including Media Filtration, Ultrafiltration and other Methods

Topic Chair:

- *Mrs. Lindsey Brown, Australian Market Leader - Water, GHD*

Session Chairs:

- *Ms. Naomi Jones, Integrated Design Director, McCarthy Building Companies*
- *Mr. Patrick Buchta, EMEA Technical Service &Development Leader, DuPont*

08:30 - 08:50

AOM Characterization and Removal Efficiency Using Various SWRO Pretreatment Techniques

- *Presenter: Dr. Mohammed Al-Namazi, Deputy Executive Director in DTRI, Saline Water Conversion Corporation*

08:55 - 9:15

Best Value Solutions for Desalination Pretreatments: Towards Enhanced Flotation

- *Presenter: Ms. Caroline Barbé, Desalination Process Engineer, SUEZ*

09:20 - 09:40

Breakthrough Solution Against Biofouling at Maspalomas I Desalination Plant Demonstrates the Efficiency of DuPont™ B-Free™ Pre-Treatment

- *Presenter: Dr. Guillem Gilabert Oriol, Technical Leader, DuPont*

09:45 - 10:15

Case Study: The Use of a Novel Antiscalant to Prevent Iron Fouling in a Brackish Water RO System

- *Presenter: Mr. Daniele Strongone, Business Manager, American Water Chemicals*

10:20 - 11:00 AM Break

11:00 - 11:20

Commissioning in Times of Corona: Remote Assistance over Four Time Zones and 11,000 Km Distance

- *Presenter: Mr. Frans Knops, Product Manager, Pentair*

11:25 - 11:45
Innovative Concept for Ultrafiltration Systems: Integration of Ultrafiltration Cartridges and Strainer in a Single Vessel. Case Study: Barge 150,000 m3/d

- *Presenter: Ms. Marta Otegui Martínez, Engineering & Quality Director, Fluytec*

11:50 - 12:10
Multibore® In-Out Ultrafiltration Replacement for Horizontal Membrane Systems Relation Between Pulse Bubble Aeration and Cake Layer Fouling Removal in Submerged Membrane Systems

- *Presenter: Mr. Jan Radel, Technical Manager, DuPont Water Solutions*

12:15 - 12:35
Relation Between Pulse Bubble Aeration and Cake Layer Fouling Removal in Submerged Membrane Systems

- *Presenter: Dr. Elham Radaei, Senior Water Engineer, KBR*

12:40 - 13:00
Robustness and Efficiency of an Integrated Flotation-Filtration Pretreatment for Seawater Desalination

- *Presenter: Mr. Jorge Malfeito-Sanchez, R&D Director Water, ACCIONA*

13:05 - 14:30 Lunch Break

14:30 - 14:50
Submerged UF Membranes Pre-Treatment at the Adelaide Desalination Plant Vs SWRO Projects at Tuas In Singapore

- *Presenter: Mr. Huw Lazaredes, Applications Development Manager, DuPont*

14:55 - 15:15
The Initiatives of Operation Excellence of Pretreatment System in Ras Al Khair SWRO Plant

- *Presenter: Dr. Byungsung Park, Senior Desalination Expert, Saline Water Conversion Corporation*

15:20 - 15:40
Umm Al Houl SWRO Plant Ultra-Daf® Optimization for Turbidity Removal

- *Presenter: Mr. Javier Artal Gonzalez, Plant Manager, ACCIONA*

15:40 - 16:00 PM Break

16:00 - 16:20
Validation of AFM Filtration Media for Pretreatment of the RO Process in Alicante Desalination Plant

- *Presenter: Mr. Rafael Candel, RO Manager, SACYR AGUA*

16:25 - 16:45
Washable Microfiber Disc Filter for Pretreatment

- *Presenter: Mr. Seokho Choi, CEO, PurifiedU*

16:50 - 17:10
The Perils of Using Chloramines for Pretreatment of Water Reuse RO

- *Presenter: Mr. Mohannad Malki, Technical Director, American Water Chemicals*

10.2 Risks to Pretreatment Efficiency such as Harmful Algae Blooms

Topic Chair:

- *Mrs. Lindsey Brown, Australian Market Leader - Water, GHD*

Session Chairs:

- *Ms. Naomi Jones, Integrated Design Director, McCarthy Building Companies*
- *Mr. Patrick Buchta, EMEA Technical Service &Development Leader, DuPont*

17:15 - 17:35
Biofouling Risks Control by Reducing the Environmental Footprint and Optimising RO Plant Performance

- *Presenter: Mr. Harry Polman, Managing Director, H2O Biofouling Solutions B.V.*

Day 3 Wednesday, 12 October 2022

THEATER 1

5.1 Emerging Technologies in Desalination and Water Reuse

Topic Chair:

- *Prof. David Warsinger, Assistant Professor, Purdue University*

Session Chairs:

- *Dr. Jaichander Swaminathan, Research Assistant, Massachusetts Institute of Technology (MIT)*
- *Mr. Antonio Casañas, Senior Key Account Manager, DuPont Water Solutions*

08:30 - 08:50

A Comparison of Membrane-Based Brine Concentration Systems: An Analysis of OARO and LSRRO

- *Presenter: Dr. Andrew Bouma, PhD, Massachusetts Institute of Technology (MIT)*

08:55 - 9:15

Batch Reverse Osmosis Pilot Demonstration and Commercial Applications

- *Presenter: Dr. Quantum Wei, Co-founder, Harmony Desal*

09:20 - 09:40

Development of Forward Osmosis Membrane with Cellulose Triacetate Hollow Fibers for Enhancement of Desalination Performance

- *Presenter: Mr. Yuki Miura, Manager, TOYOBO CO., LTD.*

09:45 - 10:15

Dynamic Modelling of Membrane Distillation for the Reduction of Cost of Water by Using Optimal Control Methods

- *Presenter: Mr. Bart Nelemans, Director, Aquastill B.V.*

10:20 - 11:00 AM Break

11:00 - 11:20

Electromagnetic Field as a Tool in Enhancing Water Desalination Processes

- *Presenter: Dr. Emad Alhseinat, Assistant Professor, Khalifa Uinversity*

11:25 - 11:45

High Recovery Membrane Brine Concentration

- *Presenter: Dr. Omkar Lokare, NPI Manager, Membrane Systems, Gradiant Corp.*

11:50 - 12:10

Manipulation of Ion and Water Permeabilities Across Salt Rejecting Membranes Using Magnetic Fields

- *Presenter: Prof. Jonathan Brant, Professor, University of Wyoming*

12:15 - 12:35

Multi-Barrier Process Purification for Contaminants of Emerging Concern Removal

- *Presenter: Mr. Alejandro Sturniolo, Global Head of Water Reuse & Strategic Partnerships, H2O Innovation*

12:40 - 13:00

New PX, Pressure Exchanger, Energy Recovery Device: Improving and Optimizing Performance Over the PX-Q300 for Greater Energy Saving

- *Presenter: Mr. David Kim-Hak, Sr Director of Product, Energy Recovery Inc.*

13:05 - 14:30 Lunch Break

14:30 - 14:50

Membrane Design of a Subsea Desalination System

- *Presenter: Mr. Borja Blanco, CEO, Aqua Advise*

14:55 - 15:15

Rewaise - A Smart Water Ecosystem for a Sustainable and Efficient Water Cycle in Europe

- *Presenter: Dr. Victor Monsalvo, Head of Eco-efficiency Area, Innovation and Technology, Aqualia*

15:20 - 16:00 PM Break

16:00 - 16:20

Validation of Recycled UF Membranes for RO Pretreatment Process

- *Presenter: Ms. Patricia Terrero, R&D Manager, Sacyr Water*

16:25 - 16:45

Toward the Validation of the World´S Largest MDC Technology for Low Energy Drinking Water Production

- *Presenter: Dr. Victor Monsalvo, Head of Eco-efficiency Area, Innovation and Technology, Aqualia*

16:50 - 17:10

Stand-Alone, Portable Desalination System Based on Ion Concentration Polarization

- *Presenter: Dr. Junghyo Yoon, Postdoctoral Associate, Massachusetts Institute of Technology (MIT)*

17:15 - 17:35

Membrane Based Brine Concentration Solutions and Concentrated Brine Reuse Experiences

- *Presenter: Mr. Eugenio Páez, Head of Urban Water & Wastewater Treatment, TYPSA*

17:40 - 18:00

BIM and the Lifecycle Digitization, the Steps Towards the Future

- *Presenter: Mr. Ignacio Garcia, BIM Project Manager, Aqualia*

THEATER 2

7.2 Environmental Impact Assessments

Topic Chair:

- *Ms. Naomi Jones, Integrated Design Director, McCarthy Building Companies*

Session Chairs:

- *Dr. Christine Kleffner, Research Associate (Postdoc), TH Köln*
- *Mrs. Ursula Annunziata, President EDS, Executive Advisor at H2O Innovation*

08:30 - 08:50

Climate-Smart Engineering Package for Seawater Desalination Facilities -- CSSDF: Ultimate Climatic Security on Earth

- *Presenter: Dr. Shigehisa Hanada, Research Associate, Toray Industries, Inc.*

08:55 - 9:15

Desalination Brine Discharges on the Model Mediterranean Seagrass Posidonia Oceanica: Implications for Stress Biology Research and Biomonitoring

- *Presenter: Mr. Fabio Blanco-Murillo, PhD Student, University of Alicante*

09:20 - 09:40

Multi-Criteria Analysis for Sustainable Development of Desalination Plants in Chile

- *Presenter: Dr. Ivan Sola, Postdoctoral Researcher, University of Alicante*

09:45 - 10:15
Positive Futures as Decision-Support Tools for Urban Water Planning
- *Presenter: Ms. Varsha Sivagurunathan, Postgraduate Student, The University of New South Wales*

10:20 - 11:00 AM Break

11:00 - 11:20
A Thermodynamic Platform for Evaluating Energy Efficiency of Multifarious Desalination Processes
- *Presenter: Prof. KIm Choon NG, Professor, KAUST*

11:25 - 11:45
Membrane Autopsy and Targeted Cleaning with Specialty Cleaners
- *Presenter: Dr. Amit Sankhe, Product Development Manager, PWT Chemicals*

11:50 - 12:10
Digital Services Applied to Desalination Plants: Process Guidance, Problem Detection, Operating Point Optimization
- *Presenter: Mr. Jean-Baptiste Thubert, CTO, Veolia Water Technologies*

11.1 Big Data and Data Monitoring in Desalination

Topic Chair:
- *Dr. Tony Fane, Professor, University of New South Wales*

Session Chairs:
- *Dr. Antonella De Luca, Head of Competence Center Environmental Solutions,Omya*
- *Mr. Juan Miguel Pinto, Director, Sales and Strategy, Americas, Energy Recovery*

12:15 - 12:35
Designing Digital for Desalination Delivery
- *Presenter: Dr. Jesus Ortiz, Business Development Manager, ACCIONA Agua*

12:40 - 13:00
An AHP Model to Select Remineralization Process in the Desalination Industry
- *Presenter: Mohsen Al-Salmi, CEO, Shuaibah Water and Electricity Company*

13:05 - 14:30 Lunch Break

14:30 - 14:50
Plant Performance Optimization Using Smartopstm

- *Presenter: Dr. Jia Shin Ho, NPI Scientist, Gradiant International Holdings*

14:55 - 15:15
Transforming the Digital Space of Desalination Through the DuPont WaterApp, the FT-Norm PRO and the Enhanced Digital Tools

- *Presenter: Dr. Guillem Gilabert Oriol, Technical Leader, DuPont*

15:20 - 15:40 PM Break

12.1 Recovery of Minerals from Seawater

Topic Chair:

- *Mr. Felix Wang, VP of Marketing, Gradiant Membrane Systems*

Session Chairs:

- *Mr. Greg Wetterau, Vice President, CDM Smith*
- *Eng. Nikolay Voutchkov, President, Water Globe Consultants, LLC*

16:00 - 16:20
Circular Processing of Seawater Brines from Saltworks for Recovery of Valuable Raw Materials (Searcularmine): Project Update

- *Presenter: Ms. Delia Pastorelli, Process Engineer, SUEZ*

16:25 - 16:45
Investigating the Salt Crystallization Phenomena of Red Sea and Arabian Gulf SWRO Brines by Solar Evaporation

- *Presenter: Mr. Ammar Alnumani, Researcher, Saline Water Conversion Corporation (SWCC)*

16:50 - 17:10
Investigating the Potential For Closed Circuit Reverse Osmosis (CCRO) to Reduce Concentrate Flows on a Future Inland Water Reuse Application

- *Presenter: Mr. Christian Sanders, Environmental Engineer, CDM Smith*

17:15 - 17:35
Pilot Scale Demonstration of Desalination of Acid Mine Drainage Water From an Australian Coal Mine

- *Presenter: Mr. Neil Palmer, Chief Technology Officer, Osmoflo*

17:40 - 18:00
Salt-Mine: Mineral Extraction from Seawater Desalination Brine and Seawater Greenhouse Farming

- *Presenter: Dr. Pawel Krzeminski, Researcher, Norwegian Institute for Water Research (NIVA)*

THEATER 3

12.3 Novel Treatment Processes for Resource Recovery

Topic Chair:

- *Mr. Felix Wang, VP of Marketing, Gradiant Membrane Systems*

Session Chairs:

- *Mr. Greg Wetterau, Vice President, CDM Smith*
- *Eng. Nikolay Voutchkov, President, Water Globe Consultants, LLC*

08:30 - 08:50
A Long-Term Simulation Model under Super/Hyper/Ultra Salinity and High Hydraulic Pressure Condition for CTA Hollow Fiber Membrane Module for Brine Concentration Application

- *Presenter: Mr. Shohei Goda, TOYOBO CO., LTD.*

08:55 - 9:15
Brine Management from Desalination Plants for Salt Production Utilizing High Current Density Electrodialysis-Evaporator Hybrid System: A Case Study in Kuwait

- *Presenter: Dr. Bader Al-Anzi, Faculty member in Kuwait University, Visiting Professor in University of Alberta*

09:20 - 09:40
Lithium Recovery from Hypersaline Brines: Enhancing Selectivity and Optimizing Energy Consumption

- *Presenter: Mr. Danyal Rehman, PhD Candidate, MIT*

09:45 - 10:15
Modeling and Simulation for the Use of Pervaporation in Treating the Brine from Seawater Reverse Osmosis Desalination Process

- *Presenter: Mr. Abdullah Albiladi, Researhcer in DTRI, Saline Water Conversion Corporation*

10:20 - 11:00 AM Break

11:00 - 11:20
Modeling, Optimization and Control of Convection-Enhanced Evaporation System (CEE) for Brine Volume Reduction

- *Presenter: Prof. Natasha Wright, Assistant Professor, University of Minnesota*

11:25 - 11:45
Novel Nanofiltration Remix Process and Water Recovery Leading to Minimum Liquid Discharge (MLD)

- *Presenter: Mr. Leon Awerbuch, CEO, International Desalination Consulting Associates Idca*

11:50 - 12:10
Novel Polymer Composite Evaporator Tubes for Brine Concentration: Heat Transfer, Wetting and Scale Formation

- *Presenter: Dr. Heike Glade, Head of Research Group, University of Bremen*

12:15 - 12:35
RO Brine Treatment and Desalination by Modified EDR and LPRO

- *Presenter: Dr. Mohammad Alizadehfard, CEO, OSMOTEC*

12:40 - 13:00
Sea4value: Novel Technologies in Seawater Desalination to Extract Minerals and Metals from Seawater Brines

- *Presenter: Dr. Victor Monsalvo, Head of Eco-efficiency Area, Innovation and Technology, Aqualia*

13:05 - 14:30 Lunch Break

14:30 - 14:50

Sustainable Minimum Liquid Discharge for Inland Desalination

- *Presenter: Dr. Rick Stover, Vice President of Technology, Gradiant*

12.2 Recovery of Minerals from Industrial Brines

Topic Chair:

- *Mr. Felix Wang, VP of Marketing, Gradiant Membrane Systems*

Session Chairs:

- *Mr. Greg Wetterau, Vice President, CDM Smith*
- *Eng. Nikolay Voutchkov, President, Water Globe Consultants, LLC*

14:55 - 15:15

Lithium Recovery from Hypersaline Salt-Lake Brine with Selective Nanofiltration and Electrodialysis

- *Presenter: Mr. Zi Hao Foo, Ph.D. Candidate, Massachusetts Institute of Technology*

15:20 - 16:00 PM Break

16:00 - 16:20

Successful Field Demonstration of a New High Recovery Semi-Batch Reverse Osmosis Technology

- *Presenter: ohn Korpiel, Principal Engineer at Veolia Water Technologies*

8.1 Project Delivery Models for Big-Desal

Topic Chair:

- *Dr. Veronique Bonnelye, Technical Support Manager, SUEZ International*

Session Chairs:

- *Mr. Antonio Casañas, Senior Key Account Manager, DuPont Water Solutions*
- *Ms. Naomi Jones, Integrated Design Director, McCarthy Building Companies*

16:25 - 16:45
Membrane Loader for the Reverse Osmosis Membrane Replacement at Gold Coast Desalination Plant

- *Presenter: Mr. Jonathan Jo, Process Engineer, Veolia Australia New Zealand*

16:50 - 17:10
The Importance of Shared Management to Promote Access to Water in the Brazilian Semi-Arid Region: Programa Água Doce

- *Presenter: Dr. Emilio Gabbrielli, International Water Advisor*

17:15 - 17:35
Collaborative Contracting: A Decade of Operating in an Alliance Contract Model

- *Presenter: Mr. Bradd Hamersley, Alliance Manager, Southern SeaWater Alliance*

17:40 - 18:00
Redefining a Desalination Business Model to Achieve Zero Potential for Environmental Impact

- *Presenter: Mr. Robert Garner, Director (Water Supply), NEOM*

THEATER 4

3.6 Coal Industry Wastewater

Topic Chair:

- *Dr. Rick Stover, Vice President of Technology, Gradiant Membrane Systems*

Session Chairs:

- *Dr. Ahmad Al Amoudi, Director General, Desalination Technologies Research Institute (DTRI)*
- *Mr. Victor Verbeek, ANZ Regional GM, Toray Membrane Australia*

08:30 - 08:50
Advanced Wastewater Treatment System Using Multiple Membrane Processes and Chemicals

- *Presenter: Mr. Bharat Dharamwani, GM - South Asia, Toray Industries, Inc.*

08:55 - 09:15
Continuous Batch Reverse Osmosis at Industrial Scale
- *Presenter: Mr. Saravana Perumal Shanmukham, Director, S P Elements*

09:20 - 09:40
Effects of Antiscalants and Cleaning Agents in Membrane Distillation for Brine Concentration
- *Presenter: Dr. Heike Glade, Head of Research Group, University of Bremen*

09:45 - 10:15
High-Pressure Membrane Processes with Energy Recovery: New Perspectives for Efficient Brine Concentration
- *Presenter: Dr. Christine Kleffner, Postdoc, TH Köln*

10:20 - 11:00 AM Break

11:00 - 11:20
Innovative Brine Concentration Membranes to Lower the Cost of MLD/ZLD Treatment
- *Presenter: Dr. Tina Arrowood, Research Scientist, DuPont Water Solutions*

11:25 - 11:45
Novel Antiscalant to Inhibit Ultra-High Calcium Sulfate Scale Formation in High Stress Conditions
- *Presenter: Mr. Dave Rose, Technical Development Specialist, Italmatch Chemicals*

11:50 - 12:10
Pre-Treatment Requirements for Produced Water Treatment Using FO-MD Hybrid System
- *Presenter: Dr. Muhammad Saqib Nawaz, Postdoctoral Research Fellow, KAUST*

12:15 - 12:35
Pretreatment of Seawater Desalination Brines with Nanofiltration for Brine Concentration and Mining
- *Presenter: Mrs. Mariana Figueira, PhD student, Universitat Politècnica de Catalunya (UPC)*

12:40 - 13:00
Shifting the Economics of ZLD By Using Energy Recovery Devices
- *Presenter: Mr. Simon Bae, Technical Manager, Energy Recovery, Inc*

13:05 - 14:30 Lunch Break

14:30 - 14:50
The UF-FO-MD Hybrid System for Resources Recycle from Wastewater Using SWRO Brine as FO Draw Solution

- *Presenter: Dr. Sheng Li, Water Expert, DTRI, Saline Water Conversion Corporation*

14:55 - 15:15
Overview of Reverse Osmosis Silica Scaling and Management

- *Presenter: Prof. Stephen Gray, Executive Director, Institute for Sustainable Industries and Liveable Cities, Victoria University*

15:20 - 16:00 PM Break

9.1 Long Term Case Studies

Topic Chair:

- *Mr. Thomas Altmann, EVP - Innovation & New Technology, ACWA Power*

Session Chairs:

- *Dr. Mohammad Wakil Shazad, Deputy Programme Leader, Northumbria University*
- *Prof. Seungkwan Hong, Professor, Korea University*

16:00 - 16:20
Developing a New and Novel Antiscalant as a Targeted Approach to Maintaining Thermal Plant Performance

- *Presenter: Mr. Dave Rose, Technical Development Specialist, Italmatch Chemicals*

16:25 - 16:45
Israel as a Model for Environmentally Responsible Desalination

- *Presenter: Mrs. Miriam Brusilovsky, Technical Director -Assets at IDE Technologies and Media Manager at Israeli Desalination Society*

1.1 Seawater Plant Cases Studies and Process Improvements

Topic Chair:

- *Mr. Miguel Angel Sanz, Director of Strategic Development, SUEZ International*

Session Chairs:

- *Dr. Giancarlo Barassi, Desalination and Reuse Market Manager, Aquatech Int*
- *Mr. Guillaume Clairet, Chief Operating Officer, H2O Innovation*

16:50 - 17:10

Seawater RO Desalination Process: A Cost-Effective Solution for Potable Water Scarcity

- *Presenter: Mr. Ghulam Mustafa, Saline Water Conversion Corporation*

17:15 - 17:35

Boosting Permeate Production without Compromising on Sec: 60% Recovery and Beyond in SWRO

- *Presenter: Mr. Haytham Ahmed, Engineering Manager, Fluid Equipment Development Co. - (FEDCO)*

17:40 - 18:00

Tecno- Economic Evaluation of Magnesium Replenishment Options After Desalination

- *Presenter: Dr. Antonella De Luca, Head of Competence Center Environmental Solutions, Omya*

Day 4 Thursday, 13 October 2022

THEATER 1

1.1 Seawater Plant Cases Studies and Process Improvements

Topic Chair:

- *Mr. Miguel Angel Sanz, Director of Strategic Development, SUEZ International*

Session Chairs:

- *Dr. Giancarlo Barassi, Desalination and Reuse Market Manager, Aquatech International*
- *Mr. Guillaume Clairet, Chief Operating Officer, H2O Innovation*

08:30 - 08:50

A Pilot Study of Low-Energy Seawater Desalination with Innovative Membranes and Pretreatment Systems

- *Presenter: Dr. Jungbin Kim, Postdoctoral researcher, Korea University*

08:55 - 9:15

20 Years of Data from 500 Seawater Membrane Autopsies

- *Presenter: Ms. Nuria Peña, Laboratory Manager, Genesys Membrane Products*

09:20 - 09:40

Application of New Technologies for Energy Savings in Desalination

- *Presenter: Mr. Francisco Jimenez-Castellanos, Global RO Application Manager, Danfoss*

09:45 - 10:15

Comparison and Evaluation of Centralized & Decentralized Systems for Nuweibaa SWRO Desalination Plant - Case Study

- *Presenter: Mr. Amr Seoudy, CEO & Founder, Water Treatment Consulting Office (WTCO)*

10:20 - 11:00 AM Break

11:00 - 11:20
Control of SWRO Membrane Biofouling Through Removal of Planktonic Colloidal Biofilms Coming from RO Pretreatment and Rotary Energy Recovery Device

- *Presenter: Prof. Harvey Winters, Professor, Fairleigh Dickinson University*

11:25 - 11:45
High Recovery Reverse Osmosis Water Challenging

- *Presenter: Mr. Juan de Beristain, Regional Sales Manager Latin America, Fluid Equipment Development Co. (FEDCO)*

11:50 - 12:10
Energy Optimization and Management Of Mega Sea Water Reverse Osmosis (SWRO) Desalination Plants

- *Presenter: Dr. Yehuda Shevah, Consultant, Independent*

12:15 - 12:35
Dry Seawater Reverse Osmosis Elements

- *Presenter: Dr. Maria Angeles Perez, TS&D Specialist, DuPont Water Solutions*

THEATER 2

11.2 Artificial Intelligence in Desalination

Topic Chair:

- *Dr. Tony Fane, Professor, University of New South Wales*

Session Chairs:

- *Dr. Antonella De Luca, Head of Competence Center Environmental Solutions,Omya*
- *Mr. Juan Miguel Pinto, Director, Sales and Strategy, Americas, Energy Recovery*

08:30 - 08:50
A Theoretical Deep Neural Network Framework for Mapping Biofouling with Hydrodynamic Parameters

- *Presenter: Dr. Adnan Qamar, System Modeling and Data Specialist, KAUST*

08:55 - 09:15
Artificial Intelligent in Designing Water Desalinization Plant
- *Presenter: Mr. Essam Albishi, Head of Artificial Intelligence, Saline Water Conversion Corporation*

09:20 - 09:40
A Machine Learning Deployment to a Large Middle East Sea Water Reverse Osmosis Plant to Save Energy
- *Presenter: Dr. Mike Dixon, CEO, Synauta*

09:45 - 10:15
Data-Driven Digital Tool for Smart Ro Membrane Management in a Large Scale Seawater Desalination Plant
- *Presenter: Ms. Marie Gaveriaux, Digital Product Owner, Veolia Water Technologies*

10:20 - 11:00 AM Break

11:00 - 11:20
Digitization of a Novel HDH System: An AI Framework to Optimize and Guide the Technology Development
- *Presenter: Prof. Bahman Abbasi, Assistant Professor, Oregon State University*

11.3 Digital Twins in Desalination

Topic Chair:
- *Dr. Tony Fane, Professor, University of New South Wales*

Session Chairs:
- *Dr. Antonella De Luca, Head of Competence Center Environmental Solutions, Omya*
- *Mr. Juan Miguel Pinto, Director, Sales and Strategy, Americas, Energy Recovery*

11:25 - 11:45
Pre-Commissioning Digital Twin for Optimising Operation and Knowledge Transfer of Tseung Kwan O Desalination Plant
- *Presenter: Mr. Chaim Kolominskas, Manager - EVS Water, Envirosuite*

11:50 - 12:10

Process Simulation for Design and De-Risking of a Complex Mine and Power Station Water Re-Use and Brine Project

- *Presenter: Dr. Matthew Brannock, Technical Director - Water & Brine Process, GHD*

12:15 - 12:35

The Barrel: The Next Generation of Desalination Plants

- *Presenter: Mr. Jean-Baptiste Thubert, CTO, Veolia Water Technologies*

THEATER 3

2.5 New Treatment Techniques for Water Reuse

Topic Chair:

- *Dr. Domingo Zarzo, Innovation and Strategic Projects Manager, Sacyr Water*

Session Chairs:

- *Dr. Monica Boodhan, Lecturer, the University of Trinidad and Tobago*
- *Mr. Alejandro Sturniolo, Global Head of Water Reuse & Strategic Partnerships, H2O Innovation*

08:30 - 08:50

Clarification of RO Biofouling Mechanism and Development Of New PVDF UF Membranes for RO Pretreatment

- *Presenter: Dr. Shigehisa Hanada, Research Associate, Toray Industries, Inc.*

08:55 - 9:15

Evaluating And Visualizing the Effect of Membrane and Feed Spacer in Biofouling Development Through FilmTec™ Fortilife™ Director Tool

- *Presenter: Dr. Guillem Gilabert Oriol, Technical Leader, DuPont*

09:20 - 09:40

High Recovery Water Treatment for Non-Potable Reuse Using an Integration of Ion Exchange and Reverse Osmosis

- *Presenter: Mr. Will McLean, Business Development Coordinator, Clean TeQ Water*

09:45 - 10:15

Implementing DesalitecTM Soar CCRO to Increase Efficiency and Reliability in Wastewater Reuse

- *Presenter: Mr. Korneel Caron, Business Development Manager DesaliTec™, DuPont*

10:20 - 11:00 AM Break

11:00 - 11:20

Investigating the Potential for Closed Circuit Reverse Osmosis (CCRO) to Reduce Concentrate Flows on a Future Inland Water Reuse Application

- *Presenter: Mr. Christian Sanders, Environmental Engineer, CDM Smith*

2.6 Virus and Bacteria Removal Including Log Credit Techniques

Topic Chair:

- *Mr. Jim Lozier, VP, Global Tech Leader for Desalination, Jacobs*

Session Chairs:

- *Dr. Mohammad Wakil Shazad, Deputy Programme Leader, Northumbria University*
- *Dr. Heike Glade, Head of Research Group, University of Bremen*

11:25 - 11:45

RO and NF Membranes Performance Monitoring in Water Reuse Applications by Continuous Measuring of Adenosine Triphosphate

- *Presenter: Mr. Luis Navarro, Business Development Manager, Hach*

3.1 Environmental Issues in the Mining Industry

Topic Chair:

- *Mr. Borja Blanco, CEO, Aqua Advise*

Session Chairs:

- *Mr. Roberto Mangano, Managing Director, ILF Consulting Engineers Abu Dhabi*
- *Prof. Long Ngheim, Professor, Director of the Centre for Technology in Water and Wastewater, University of Technology Sydney*

11:50 - 12:10
A Novel Ion Exchange and Encapsulated Bacteria System for Complete Nitrate Removal

- *Presenter: Mr. Will McLean, Business Development Coordinator, Clean TeQ Water*

12:15 - 12:35
Solution Alternatives Study for Fouling MBR Membranes in an Industrial Wastewater Treatment Plant Ice Cream Factory

- *Presenter: Mrs. Mercedes Calzada Garzón, Technical Specialist, Sacyr Agua*

THEATER 4

4.1 Zero Liquid Discharge and Drine Concentration Techniques

Topic Chair:

- *Mr. Neil Palmer, Chief Technology Officer, Osmoflo*

Session Chairs:

- *Mr. Devesh Sharma, CEO, Aquatech International*
- *Mr. Victor Verbeek, ANZ Regional GM, Toray Membrane Australia*

08:30 - 08:50
Analytical Study of a Low-Grade Solar Heat Based Thermal Compressor Actuating a Novel Off-Grid Water Desalination

- *Presenter: Prof. Bahman Abbasi, Assistant Professor, Oregon State University*

08:55 - 9:15
Innovative Solar Driven Tri-Hybrid Cycle for Future Sustainability

- *Presenter: Dr. Mohammad Wakil Shazad, Deputy Programme Leader, Northumbria University*

4.2 Improvements for Hybrid Renewable Projects

Topic Chair:

- *Mr. Kevin Price, Principal, AWTT, LLC*

Session Chairs:

- *Mr. Alistair Munro, Founder and CEO, Ryse Energy*
- *Mr. Ties Venema, Group Vice President & Managing Director S3C, H2O Innovation*

09:20 - 09:40

Application of Artificial Neural Network to Model Hydrogen Production from Wastewater by Dark Fermentation Process

- *Presenter: Mr. Ahmad Hosseinzadeh, University of Technology Sydney (UTS)*

09:45 - 10:15

Energy and Water without Carbon: Integrated Nuclear Power and Large-Scale Desalination at Diablo Canyon

- *Presenter: Dr. Andrew Bouma, PhD, Massachusetts Institute of Technology (MIT)*

10:20 - 11:00 AM Break

11:00 - 11:20

Noble Approach for Net Zero Carbon Emission Desalination Configuration Facilitated in Hydrogen Production

- *Presenter: Mr. Youngwook Yoo, Senior Water Expert, Saudi Water Conversion Corporation (SWCC)*

11:25 - 11:45

Predictive Time-Variant Photovoltaic-Electrodialysis: A Novel Design Using Machine Learning and Control Theory

- *Presenter: Ms. Grace Connors, Lead Test Engineer, Charm Industrial*

4.3 Mega Projects Using Renewable Energy

Topic Chair:

- *Mr. Kevin Price, Principal, AWTT, LLC*

Session Chairs:

- *Mr. Alistair Munro, Founder and CEO, Ryse Energy*
- *Mr. Ties Venema, Group Vice President & Managing Director S3C, H2O Innovation*

11:50 - 12:10

Analysis of Solar Thermal Driven Membrane Distillation System Developed for Desalination in Different Conditions

- *Presenter: Ms. Yingfei Huang, Ph.D. Candidate, University of New South Wales*

12:15 - 12:35

Dakhla Desalination Plant Intended for Irrigation and Drinking Water Supply Using Renewable Energy

- *Presenter: Dr. Lahcen Hasnaoui, Hydro Advisor*

05 AWARDS

Industry and Sustainability Awards

IDA is delighted to announce that, at this year's World Congress Gala event in Sydney, held on Wednesday, Monday October 10, 2022, we will honor the efforts of selected companies, organizations, and even cities with outstanding industry and sustainability awards. The nomination period for these awards is now open. Those who challenge themselves to innovate and meet the increasing demands for municipal and industrial water needs, will be acknowledged for their exceptional contributions. These awards reflect the diversity of contributions present in the water community. From municipalities to corporations, these award categories recognize the varied ways in which the global community is tackling water scarcity in order to ensure a future in which clean water and sanitation are universal.

The Awards are open to IDA members and nonmembers.

Industry and Sustainability Awards Committee

Meet the I &S Awards Committee members. The Industry and Sustainability Awards acknowledges leaders throughout the water reuse industry and this year's winners are selected by the I&S committee members using a weighted percentage score process. Our committee members bring a vast amount of experience in the water sector We thank all of you for your participation in this important and prestigious presentation at our World Congress.

Professor DucLong Nghiem

Director

Centre for Technology in Water & Wastewater, University of Technology Sydney

Dr. Michael R. Markus, P.E., D.WRE, BCEE, F.ASCE

General Manager

Orange County Water District

Dr. Jantje Johnson

Founder and Chief Technology Officer

Orangeboat, LLC.

Dr. Gonzalo Delacamara

Director

Centre for Water & Climate Adaptation, IE University

Mr. Randy Truby

Consultant

R L Truby & Associates

Sustainability Awards

07

The Most Resilient City

The city has created infrastructures and best practices for a community that can thrive and adapts to climate change and water scarcity.

08

Most Innovative Water-Energy Nexus Project

The project that bridges the gap and capitalizes on the synergies between its community's water and energy needs.

09

Best Implementor of UN Sustainability Development Goal 6 Water for All (SDG6)

The company that ensured availability and sustainable management of water and sanitation for all.

10

Best Corporate Social Responsibility Project

The company that utilized desalination or water reuse technology to improve the lives of a community by creating a regenerative water economy to be Water Positive.

Industry Awards

01

Best Public-Private Partnership

The company exemplifies collaboration with a public utility.

02

Most Innovative Utility

A national or local utility that brings innovation to secure clean and fresh water for their consumers.

03

Best Private Company (Global)

The company makes an overall contribution to water sustainability using non-conventional water resources, to be Water Positive, in its region.

04

Most Innovative Company

The company that executed the project we all wish we had thought of and employed a breakthrough technology enhancing the desalination process.

05

The Most Progressive Disruptive Policy in Water Reuse

The project is moving the needle in the public sector to support and grow water reuse implementation.

06

Best Performing Company in Water Reuse

The company has exemplified efficiency, best-in-class technology, and operations to earn the highest quality plant performance.

Technical Paper Awards

At each World Congress, IDA gives awards for the best oral and written papers presented as part of the Technical Program in five categories. Winners are selected by members of the World Congress Awards Committee, using a weighted percentage score. These awards are presented at the Closing Luncheon.

State-of-the Art

Best 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 that is significant for the global industry.

Innovation

Best paper that presents an innovative desalination or water reuse technology that has reached the commercial stage, is not yet considered to be widely adopted but is likely to become a game-changer for the industry.

Research and Development

Best 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 which could lead to impactful discoveries or technologies once at maturity.

Environment and Sustainability

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

Young Leader

Best paper presented by a member of the IDA Young Leaders Program demonstrating scientific originality relevant and important to the fields of desalination and/or water reuse.

Special Awards

Presidential

The Presidential Awards are conferred upon individuals and organizations whose work on behalf of IDA and the desalination industry demonstrate outstanding achievement, leadership and vision. The awards will be bestowed by the IDA President, Mr. Carlos Cosin.

Lifetime Achievement

IDA's Lifetime Achievement Award recognizes outstanding achievements and contributions to our industry. All IDA Lifetime Awardees receive a commemorative plaque and lifetime access to attend all IDA events at no registration fee.

Emerging Leader Achievement Award

Introduced in 2011, this award is given to one member of the IDA Young Leader's Program whose contribution to the desalination and water reuse industry has shown a track record of positive leadership and originality.

Delegate-Voted Awards

Delegates at the World Congress cast their votes for winners in the following four categories via the mobile app:

- Best Moderator
- Best Session Chairman
- Best Presenter
- Best Poster

06 IDA LEADERS SUMMIT

October 11, 2022

The effects of climate change, combined with the ever-growing demand for clean water across the globe, underscore the urgency of sustainable water solutions. We must chart resilient water solutions and enlist the global community in this mission.

The Leaders Summit takes us one step closer to addressing such solutions. Bringing into dialogue executives from various sectors including finance, legal, project development, public and private utilities, industrial water users, and technical solution providers, the Summit will provide a common space for meaningful conversations to happen. Addressed topics include how to be Water Positive, ESG Criteria and Ensuring Water Sector PPPs fit the 2030 UN Agenda, how water will drive hydrogen, capturing the value of water, how to innovate the water sector, net zero and water positive goals for industry, the looming water crisis and the effect on food security, and the water-energy-food nexus.

Schedule

09:00 - 09:15 **Welcome Remarks**

- Ms. Shannon McCarthy, IDA Secretary General
- Mr. Carlos Cosin, IDA President and CEO of Almar Water Solutions

09:15 - 09:30 **Keynote: Addressing the Energy-Water Nexus**

- H.E. Eng. Ahmed Mohammed Belajar Al Rumaithi, Under Secretary for the Department of Energy, Abu Dhabi, UAE

09:30 - 10:30 **Panel 1: The Looming Water Crisis and the Effect on Food Security**

Moderator: Dr. Gonzalo Delacamara, Director, IE Centre for Water & Climate Adaptation

Panelists:

- Dr. Adam Loch, Senior Lecturer and ARC DECRA Fellow with the Centre for Global Food and Resources, University of Adelaide, South Australia
- Mrs. Katrina Donaghy, CEO of Civic Ledgers, Australia
- Mr. Adam Wilson, CEO, Essential Services Commission of South Australia (ESCOSA)

10:30 - 11:00 Refreshment Break

11:00 - 12:00 **Panel 2: ESG Criteria and Ensuring Water Sector PPPs fit the 2030 UN Agenda**

Moderator: H.E. Eng. Khaled Al Qureshi, CEO, SWPC, Saudi Arabia
Co-Moderator: Dr. Tariq Nada, Vice President, ACWA Power Water CTS, Saudi Arabia

This panel brings developers, regulators, and lenders together to discuss the outcomes and success stories of PPP projects in the water sector and how this model has helped meet ESG criteria. World-class investors are conscious of the importance of sustainability to the success of long-term projects, which PPP projects are.

Panelists:
- Mr. Robert Bryniak, CEO, Golden Sands Management Consulting, UAE
- Mr. Roch Cheroux, CEO, Sydney Water, Australia
- Mr. Paul Sciuto, CEO, Monterey One Water, USA
- Mr. Jose Diaz Caneja, CEO, Acciona Agua, Spain

12:00 - 13:00 **Panel 3: The Future of Clean Energy through Green Hydrogen is Non-conventional Water**

Moderator: Mr. Carlos Cosin, IDA President, CEO Almar Water Solutions, Spain

While solar and wind are well established in the renewable energy mix with significant market share, Hydrogen is now taking an innovative step towards opening a new path as a clean, local, and efficient energy source with commercial viability. Clean water is a critical resource for the electrolysis process, and it will (no doubt) take a distinct role in redefining the energy, mobility, and other vital sectors by producing green Hydrogen.

Panelists:
- H.E. Eng. Ahmed Mohammed Belajar Al Rumaithi, Under Secretary, Department of Energy, Abu Dhabi, UAE
- Dr. Juan Carlos de Pablo, Global Expert

13:00 - 14:30 **Lunch**

14:30 - 15:15 **Panel 4: Capturing the Value of Water**

Moderator: Mr. Gavin Van Tonder, Water Head, NEOM, Saudi Arabia

Panelists:
- Mr. Johnny Obeid, Vice President, Veolia Water Technologies, MENA
- Dr. Hu Fleming, Partner, Upwell Water, USA

15:15 - 15:30 **Keynote: H.E. Eng. Abdullah Ibrahim Al-Abdulkarim, Governor of SWCC, Saudi Arabia**

15:30 - 15:45 **Refreshment**

15:45 - 16:00 **IDA Talk: Future of Industrial Water**
Mr. Devesh Sharma, CEO, Aquatech International, USA

16:00 - 16:15 **IDA Talk: Building an Innovative Future**
Mr. Marshall Davert, Head of Innovation, Stantec

16:15 - 16:30 **IDA Talk: The Red Book**
Mr. Eduardo Orteau, Counsel, Gómez-Acebo & Pombo Abogados, SLP, Spain

16:30 - 17:15 **Panel 5: Net Zero and Water Positive Goals for Industry**

Moderator: Mr. Fady Juez, Managing Director, Metito, UAE
Co-Moderator: Mr. Alejandro Sturniolo, Global Head of Water Reuse & Strategic Partnerships, H20 Innovation, Canada

The global community's dedication to ESGs has reached new levels. Industry represents a key stakeholder in this process and the growing commitment to reach net zero carbon and water positivity is a daily conversation. But....can this really be done? Join panelists represnting industrial water to discuss the various challenges and approaches to achieving this very important target.

Panelists:
- Mrs. Sandy Fabritz, Director, Water Strategy,Freeport-McMoRan, USA
- Mrs. Eva Jalon, CEO, Sacyr Water, Spain
- Mrs. Marta Verde, CEO, GS Inima Environment, Spain

17:15 - 17:30 **Closing Remarks: Outgoing and Incoming IDA Presidents**
Mr. Carlos Cosin, CEO, Almar Water Solutions, Spain

18:30 - 20:30 **Cocktail Reception (Invite Only), Zephyr Bar - Hyatt Regency Sydney**

07 EXHIBITION

The World's Most Extensive Desalination and Water Reuse Exhibition

The IDA World Congress is the most extensive desalination and water reuse exhibition globally. It's where world-leading private and public companies share the latest innovations in technologies, equipment, projects, and knowledge about desalination, water reuse, and advanced water treatment. And it's the best place for networking opportunities with stakeholders and professionals from the water sector.

Be part of the global innovation discussions for the future of water at the IDA 2022 World Congress and connect with the international water community! Registration is now open.

Space larger than 18 sqm is considered space only. Please follow the links below to book a 9 or 18 sqm shell scheme or a couple of 9 sqm options. You may also book advertising opportunities through our World Congress website wc.idadesal.org. For all other exhibition inquiries, please email exhibits@idadesal.org.

Why You Should Exhibit:

- Maximize your visibility among the more than 1,200 delegates from around the globe
- Expand your knowledge of current and future desalination, water reuse, and renewable energy technologies
- Collect qualified leads
- Reinforce relationships with your existing customers
- Meet and educate prospective customers
- Network with colleagues from around the world

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Saline Water Conversion Corporation (SWCC)


الشركة السعودية لشراكات المياه
Saudi Water Partnership Company


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Commitment to a Cleaner Environment


DUPONT


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Dubai Electricity & Water Authority


DÜCHTING
PUMPEN


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LG Chem


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weg

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ACCIONA

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www.acciona.es

Our goal in ACCIONA is to lead the transition towards a low-carbon economy, bringing technical excellence and innovation to all of our projects to design a better planet. We are committed to contributing to the economic and social development of the communities in which we operate.

At ACCIONA we are championing a different way of doing business that promotes the welfare of society and the planet, going beyond economic interests. We invest in sustainable projects that make the world a better place, by making a positive contribution to society and to the planet, providing sustainable solutions to the most urgent issues such as global warming and water scarcity.

Water is one of the natural resources most affected by the current rate of use and deterioration of resources. A shortage will soon become a global problem on a global scale. We always act under sustainable development criteria, from a perspective of good use, conservation and renewal of water to meet the current needs of our society, without compromising those of future generations.

Our recent milestones includes the SWRO Plant of RAF 3 and UHP in Qatar, The SWRO of Jebel Ali in UAE, Los Merinos WWTP in Ecuador or the Collahuasi SWRO in Chile.

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ACWA Power

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We are a leading private developer, investor and operator of 65 power generation and water desalination projects in operation, construction and advance development with an overall estimated portfolio size of SAR 253.4 billion at project cost as of 9 March 2022. As a proud Saudi national champion, we play a central role in the Kingdom's energy transition, all the while carrying Saudi Arabia's flag globally in 12 countries on three continents.

Our unique “Develop-Invest-Operate-Optimize” business model encompasses the entire lifecycle of an asset. We develop projects, invest in them, operate them, and continually look into how we can optimize their financial structures to allow us to allocate and extract returns across the lifecycle of the asset.

Our overall strategy is to be at the forefront of energy transition by delivering reliable and responsible power, desalinated water and green hydrogen at low cost in the Kingdom of Saudi Arabia, the wider GCC and attractive high-growth markets based on a de-risked and contracted business model.

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Almar Water Solutions

Madrid, Spain
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www.almarwater.com

Almar Water Solutions is a leading company in the development of non-conventional water infrastructure and water production, treatment, and sales services for both the municipal and industrial sectors. The company specializes in the development, promotion, financing, design, and operation of infrastructures, covering a wide range of solutions from seawater and brackish water desalination to reuse, purification, wastewater treatment, and distribution networks. For further information, visit almarwater.com.

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American Water Chemicals

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www.membranechemicals.com

American Water Chemicals® (AWC) was created in 1993 by a group of membrane desalination experts in response to the demand for more reliable membrane treatment chemicals and services. Over the years, our unique understanding of water chemistry has earned us a worldwide reputation for resolving complex operational issues. AWC® has become renowned as one of the most trusted suppliers of membrane chemicals for RO/NF systems. Our goal is to enable our customers to meet their increasing water production demands, cope with concentrate disposal restrictions, and reduce their energy consumption through the use of our membrane antiscalants, cleaning chemicals and biocides.

133

Andritz

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www.andritz.com

Megacities such as Atlanta, Barcelona, Beijing, Dubai, Hong Kong, and Singapore already rely on leading-edge ANDRITZ water management technologies when it comes to a safe and affordable potable water supply to cover urban needs for millions of people.

ANDRITZ is not only a world-leading OEM in the hydropower sector but has also been building pumps and separation equipment for more than 170 years. In fact, our flexible packages covering seawater intake, pumping, screening, and dewatering help dozens of major cities worldwide to continuously safeguard their water supply at significantly lower operating costs. Our reliable technologies support all stages in the entire process chain. We provide the complete pump portfolio, sludge and brine treatment systems, and technical support for efficient and economic desalination, especially for Reverse Osmosi (RO) plants to convert seawater into potable water or use it for irrigation or industrial purposes. Depending on the level of salinity and the temperature, corrosion-resistant technologies are available starting from gray cast iron and extending to Duplex and Super Duplex steel.

Our quality and high-efficiency products, as well as our understanding of customer requirements, have made us a preferred partner for pumping and separation solutions worldwide. We offer everything from a single source – from development work, model tests, engineering design, manufacture, and project management, to after-sales service and training, as well as a vast portfolio of Industrial IoT solutions for optimized overall plant operation.

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Aqseptence Group

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www.aqseptence.com

Our company is headquartered in Germany's Aarbergen, with our brands Passavant®, Geiger® and Noggerath®. Our Water Processing Solutions division supplies and design-builds made-to-measure automated screening machines for the filtration of debris at:

- Seawater/river water intakes for thermal power plants (nuclear, gas and coal-fired power plants)
- Desalination plants and industrial and potable water systems

We protect pumps and downstream processes, such as condenser tubes, from the carry-over of debris. More than 2,000 highly sensitive plants worldwide (Greenfield and Brownfield) are equipped with our machines. Our cathodic protection systems stand for the longest lifetimes and have corrosion resistance in seawater.

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Arflu

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www.arflu.com

The company is structured into five different divisions, Petrochemical, Gas, Water, Energy & Marine. Arflu, incorporated in 1988, designs and manufactures a wide range of Industrial Valves such as Ball, Gate, Globe, Check, Plug and special products like Dual Expanding Plug, Rising Stem Ball, Desalination Plug & Control valves.

The aim of Arflu in the development of their products is customer and market satisfaction through tailor design, high quality products and careful service.

Arflu is a company with great capacity to adapt to the needs of both the market and clients and it is in continuous growth with multiple offices around the world. We take special care in pre and post sales with customer service.

7

Avista

San Marcos, California USA
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www.avistatech.com

Avista™ is a global brand of Kurita focused on membrane treatment solutions for reverse osmosis (RO) systems, microfiltration/ultrafiltration (MF/UF) and multimedia filtration (MMF).

A global line of Avista membrane chemicals includes Vitec™ antiscalants, RoClean™ membrane cleaners, Kuriverter™ IK biocides, Kuriverter™ AC chlorine scavengers, and RoQuest™ coagulants.

Regionally available Avista lines include AvistaClean™ MF cleaners, RoCide™ biocides, and AntiChlor Chlorine Scavengers, among others.

All Avista membrane chemicals are compatibility tested in accordance with key protocols accepted by the industry's leading manufactures.

Our globally expanded technical support and laboratory capabilities include, Avista™ Advisor™Ci chemical dosing software, Avista Black Box monitoring device, Avista Membrane Autopsy with Chromatic Elemental ImagingSM, and Avista OSCAR off-site cleaning and restoration.

To truly make an impact, Kurita formed the Avista™ Center of Excellence, a global leadership team focused on membrane treatment research and development and technical training to drive more innovative and cost-effective solutions.

Avista membrane treatment solutions help to determine the right membrane chemicals to achieve peak system performance and operator confidence.

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Beaudrey

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www.beaudrey.com

Beaudrey specializes in the design, fabrication and installation of seawater intake screens for all types of desalination plants (SWRO, MSF, MED). Beaudrey stop gates, trash rakes, traveling band screens, drum screens, microstrainers, pressure-line strainers, debris filters and continuous tube-cleaning systems have been supplied to over 80 countries worldwide and is leader in the Middle East. Most use materials are 316L, Duplex and SuperDuplex stainless steel.

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ENGINEERING TOMORROW

Danfoss A/S

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Danfoss is a global leader in mechanical and electronic innovations that help save energy. Around the world and across a broad spectrum of industries and applications, our many solutions make modern life easier and enable our customers to pursue their own journeys towards decarbonization.

As part of the Danfoss Group, Danfoss High Pressure Pumps is a fast-growing division that designs and produces energy-efficient high-pressure pumps and energy recovery devices. Together with Danfoss frequency converters, our innovative products help provide an increasingly thirsty world with fresh water through seawater reverse osmosis with industry-leading energy efficiency and reliability for unparalleled OPEX and TCO.

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DMW CORPORATION

DMW Corporation

Japan
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www.dmw.co.jp

Since its foundation in 1910, DMW CORPORATION has been a trusted leader in the design and manufacture of Pumps, Fans and Blowers for the oil and Gas industry specializing in one-of -a-kind solution for industry-leading companies all over the world.

Building upon 110 years of experience and expertise, DMW CORPORATION has harnessed the strength of its innovative capabilities to create the Energy Recovery Device DeROs® for Reverse Osmosis Desalination plants. *DeROs® is the DMW CORPORATION registered products.

DeROs® is environmentally friendly isobaric multi cylinder type energy recovery device for SWRO plants featuring high efficiency, low pulsation, low noise, extremely low mixing/over-flush rate.

DeROs® can follow a wide range of changes in desalination capacity. As a result, it can maintain freshwater production even when the RO membrane is being cleaned. Additionally, DeROs® is a robust energy recovery device, is not a high-speed machine, and the risks of wears and failures are very low. Also, DeROs® can be started without controlling by inverter, and that can reduce the initial and running costs.

There are three types available, S, 2L and 3L, and DeROs® can respond to any customer's request for capacity and flow rate.

DMW CORPORATION is the manufacture of Pumps, so that it is very convenient for Users as it can be handled at the single source, and DMW can bring out the best performance of each ERD and pumps as the manufacture of Pumps over 110 years.

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Dryden Aqua

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Dryden Aqua manufacture the Activated Filter Media AFM® and is one of the largest manufacturer of glass filtration media providing sustainable and cost-effective media filtration solutions for the water, wastewater treatment and desalination markets.

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DÜCHTING PUMPEN

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www.duechting.com

Customized Solutions –No exception but our standard. DÜCHTING PUMPEN is an -in 3th generation privately owned -company with the headquarter in the Ruhr Area in Germany. With 80 years of experience in the field of advanced centrifugal pumps for use in the desalination reverse osmosis industry, flue gas desulphurisation industry, mining and chemical pigment industry. DÜCHTING PUMPEN offers the right solution for almost every application where the transport of liquids plays a role. The portfolio of DP mainly comprises the production of single-stage and multi-stage centrifugal pumps. Our motto “Customized Solutions –No exception but our standard” forms the basis of our sophisticated range of products. The capabilities of our company in the design, manufacture, testing and commissioning of our products is highly respected in the industries we serve. Our reputation is built on a sustainable corporate policy, efficiency, reliability, innovation and customer after-sales service. The roundabout 120 DP staff-members are committed to excellence, team spirit and commitment to the company and its products.

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DuPont Water Solutions

Luzern, Switzerland
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www.dupontwaterslutions.com

Since the 1940s, DuPont Water Solutions has been an innovator in water separation technologies, expanding and growing along the way. Today, DuPont Water Solutions offers the most complete portfolio of industry leading products available, along with a team that is second to none.

As a global leader in sustainable separation and purification technologies, DuPont is helping customers across industries and countries make real progress in ways that not only improve productivity, efficiency, and profitability, but also reduce waste, energy consumption, and environmental impact.

DuPont Water Solutions brings a tremendous depth and breadth of resources to the table, and we invite you to join us. We are here to make your progress our promise, and are positioned to meet your needs in every region of the world.

For some, it's water. For us, it's possibility. Possibility Flows With Us.

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Ebro Armaturen

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www.ebro-armaturen.com

EBRO ARMATUREN, headquartered in Hagen, Germany, is one of the world's leading manufacturers of industrial valves, actuators and automation technology. With our international network of production plants, subsidiaries and representatives we are always close to the customer. Excellent expertise combined with high-quality products makes us an internationally acknowledged partner of the machine and plant engineering sector. As an owner-managed family business we stand for quick decision-making, high individual responsibility, continuity and sustainable investments in research and development. We offer customized solutions for almost every individual application. By developing and producing our own actuators, we can guarantee an optimal matching with the valves. Furthermore, we are able to react flexibly and quickly to special market requirements for offering individually developed solutions to our clients. Under the umbrella of the Bröer Group our product range is broadened by high-class knife gate valves produced by our Swedish subsidiary Stafsjö Valves AB, one of the leading suppliers in this sector. Worldwide more than 900 employees in 29 countries stand behind the Bröer Group. In the 2018 financial year a turnover of 158 million euros was generated.

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Energy Recovery

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www.energyrecovery.com

Energy Recovery, Inc. (ERII) is an energy solutions provider to industrial fluid flow markets worldwide. Energy Recovery solutions recycle and convert wasted pressure energy into a usable asset and preserve pumps that are subject to hostile processing environments. With award-winning technology, Energy Recovery simplifies complex industrial systems while improving productivity, profitability, and efficiency within the oil & gas, chemical processing, and water industries. Energy Recovery products save clients $2 billion (USD) annually. Headquartered in the Bay Area, Energy Recovery has offices in Dubai, Houston, Madrid, and Shanghai.

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Envirosuite

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www.envirosuite.com

Envirosuite helps businesses who are seeking answers on managing the environment in which they operate. We're forward thinking and strive to be world class, leading the way for our customers who want to operate intelligently in order to accelerate a sustainable future between their business, environment and people.

Envirosuite has been at the forefront of environmental intelligence solutions since 1990 and today is the global leader with capabilities across air, noise, water and vibration. We have offices across five regions, home to more than 250 staff – all ready to bring the power of environmental intelligence to the world.

Drawing on our extensive knowledge of software development and the water industry, our EVS Water product suite helps water utilities and operators improve processes and provides actionable insights to address major operational challenges.

Plant Optimiser - enabling plant operators monitor and optimise the performance of their water treatment, desalination and industrial water treatment facilities in real time

Plant Designer - helping designers develop process designs more efficiently
SeweX - assisting sewer network operators in managing odours and corrosion proactively and efficiently

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Flowserve

Madris, Spain
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www.flowserve.com

Flowserve manufactures and services fluid motion control solutions for the world's toughest, most critical applications.

Our history began over 200 years ago, and today Flowserve employs more than 15,000 associates in 300-plus locations around the world, including over 180 quick response centers that provide aftermarket parts and services to customers.

We are continually evolving our desalination technology to support the needs of our customers. Our products and services can optimize energy efficiency and reduce carbon emissions, helping make your next desalination project even more sustainable.

Count on the expertise of Flowserve for your fresh water needs.

We offer:

- A complete, integrated flow control portfolio:
  1. Pumps
  2. Energy Recovery Devices
  3. Valves
  4. Mechanical Seals
- End-to-end Internet of Things (IOT) solution, RedRaven
- Unparalleled design and operational excellence
- Extensive engineering and technical resources
- Global presence with localized support
- Educational services
- ...and more

Through our unmatched combination of products, engineering and aftermarket services, we help our customers achieve tangible business results: lower operating costs, optimized performance, prolonged equipment life, mitigated risks and higher productivity.

Draw on our industry expertise to help address your most pressing challenges while reducing expenses, minimizing risk and maximizing performance.

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Fluytec Filtration Technologies

Vizcaya, Spain
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Email: i.galindez@fluytec.com
www.fluytec.com

FLUYTEC, specialized in water filtration, is a Spanish Engineering and Manufacturing company with +40 years of history and more than 30 million m3/day of installed capacity worldwide. We are specialized in RO Pretreatment Filtration & Ultrapure Water. Complementary products, consumables and accessories are also part of Fluytec's portfolio.

FLUYTEC has developed a wide range of products, technologies and solutions that considers a complete water filtration spectrum & ultra-pure water production that covers from Macrofiltration to Ultrafiltration, EDI & EDR among others:

- Macrofiltration: Basket & Bag Filter Housings / Self Cleaning Filters (Motorized) / No Motors Self Cleaning Filters / Filtering Nozzles (for Sand & Multi-Media Filters).
- Microfiltration: Cartridge Filter Housings for different configurations: Traditional cartridges, High Flow. (From 1 HF cartridge up to +500 traditional cartridges per housing).
- Ultrafiltration: Customized Factory Built UF Skids & Proprietary Patented Technologies: c-UF (Continuous Ultrafiltration) & i-UF (UF and Strainer integrated).
- Ultrapure Water: EDI & EDR Products and systems.
- Other complementary products: Static Mixers, Filtering / Collecting Nozzles, Flexible Grooved Couplings, Filtering Cartridges.
- All our housings are available in different materials: FRP-GRP/ PVC/ Stainless Steel / Carbon Steel Coated.

This complete range of products, technologies and solutions make us the ideal partner for any kind of project that foresees Reverse Osmosis technologies for water treatment in the fields of Desalination, Oil & Gas, Power Generation and Industrial among others.

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GRADIANT™
NEW POSSIBILITIES FOR WATER

Gradiant

Woburn, Massachusetts USA
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www.gradiant.com

Gradiant is a global solutions provider and developer of cleantech water projects for advanced water and wastewater treatment. Gradiant's end-to-end solutions and technology expertise enable sustainable and cost-effective treatment of the world's most importantwater challenges.

With a full suite of robust and proprietary technologies, powered by the top minds in water, Gradiant serves its clients' mission-critical operations in the world's essential industries. We are committed to sustainable clean water treatment technologies, with expertise in water reuse, resource recovery, and brine concentration for minimum and zero liquid discharge (MLD / ZLD).

Clients choose Gradiant for our exclusive and unmatched technical solutions; flexible delivery models for project development and financing; global strength with local expertise; and our passion to translate R&D innovations into commercial solutions. Our inspiration comes from our customers–how we can best address their unique needs and situations.

Gradiant was founded at the Massachusetts Institute of Technology (MIT) to create and deploy sustainable water treatment solutions for meaningful change in our environment,society, and economy. Today, with over 400 employees, Gradiant operates from its headquarters in Boston and Singapore and offices across ten countries.

At Gradiant, we create New Possibilities for Water for our clients and the communities they serve to ensure a safer and more promising tomorrow.

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GS Inima

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www.inima.com

Positioned as one of the companies with the largest number of plants in terms of concessions, GS Inima is a world benchmark in the water sector. It acts in all phases of the projects in which it participates: Design, Technology, Construction, Financing, Operation and Maintenance, whether using seawater and brackish water or industrial and urban wastewater.

Leader in desalination by reverse osmosis, GS Inima is among the world's most important desalination companies and is a pioneer with the world's first desalination plant built in 1968.

GS Inima relies on geographic diversification and cultural business integration, within a framework of social and environmental responsibility. We are a leading company maintaining a strong position in the water treatment industry worldwide with more than 200 completed water projects in 10 countries on 4 continents.

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H2O Innovation Group Companies

Quebec, Canada
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www.h20innovation.com

From our founding more than 20 years ago, innovation is what has driven the organization. H2O Innovation is a complete water solutions company focused on providing best-in-class technologies and services to our customers. Our activities rely on three pillars: i) Water Technologies & Services (WTS) applies membrane technologies and engineering expertise to deliver equipment and services to municipal and industrial water, wastewater, and water reuse customers, ii) Specialty Products (SP) is a set of businesses that manufacture and supply a complete line of specialty chemicals, consumables and engineered products for the global water treatment industry, and iii) Operations & Maintenance (O&M) provides contract operations and associated services for water and wastewater treatment systems. Through innovation, we strive to simplify water.

H2O Innovation provides public works management services and operations assistance for water and wastewater treatment plants to municipalities, government organizations and businesses across North America. Our areas of expertise include operating Water and Wastewater treatment plants, managing Public Works departments and maintaining Collection and Distribution systems. We provide the highest quality, client-focused contract operations in the industry, which is proven by our track record of award-winning partnerships with over 600 facilities spanning 13 states and one Canadian province. The synergies between the O&M group and our sister businesses (Water Technologies & Services, and Specialty Products) allow our highly skilled team to add value to the services we offer our clients. Through synergy and innovation, we simplify water.

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H. Butting GmbH & Co. KG

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Since 30 years BUTTING has been supplying corrosion resistant and pressure resistant stainless steel pipes, pipe equipment and prefabricated piping components made from special alloys for sea water desalination plants all over the world. We offer our customers a wide range of services, from the production of pipes and prefabrication right through to site supervision and support. By our expertise and highest quality standards we can offer our customers perfect service and cost efficiency. The production of stainless steel pipes has always been our core competence. In addition, we offer extensive prefabrication of stainless steel pipelines according to models, isometric drawings and piping plans. By extensive prefabrication and further processing of our pipe at our works we are able to optimise the quality of the pipelines and offer products ready for installation at reasonable prices. Advantages to the customers will pay off:

- Savings in terms of space and staff on site
- Reduced installation time
- Improved product quality
- Reduced extent of testing
- Reproducibility

Our expertise in forming, welding, machining and materials technology, as well as quality assurance guarantee our customers the supply of first class products. BUTTING is a reliable.

121 HUBERT
water treatment installations

Hubert Water Treatment Installations

Netherlands
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Hubert is active in design and engineering, manufacturing, installation and service of equipment for water intake applications and water purification. Over the years, our engineered products and technical expertise have enabled Hubert to become a major player on the global markets for water treatment.

Within Hubert we recognize two groups:

First Screening systems for water intakes: intake systems for cooling, process and drinking water applications.

Water intake systems are used for mechanically clean water extracted from the sea, rivers or lakes. Mechanical cleaning removes entrained (floating) coarse and fine debris with screens or sieves. This protects the downstream process stages from buildup, clogging and abrasion.

Water intake screening systems are used for pre-filtration and/ or filtering of :

- cooling water for conventional and nuclear power plants, oil and gas applications and chemical plants.
- raw or process water for potable water plants, desalination plants, drainage channels, firefighting channels, irrigation offtakes and for a variety of industrial production processes.

A water intake system can be composed of sluice gates and stoplogs, coarse screens, (micro) drum screens and travelling band screens.

Second Waste Water treatment: high quality sub-installations for municipal and industrial waste water treatment plants.

Hubert supplies equipment found on most water treatment plants, such as aeration systems, clarifier and thickener machinery for treatment and removal of primary, secondary and stabilized sludge.

134 HUBERT
water treatment installations

Hydrolox

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www.hydrolox.com

Hydrolox® represents a new paradigm in filtration media by delivering a product with dramatically improved filtration efficiency, an inherent ability to promote surface dust collection, lower pressure drop over time, and reduction in pulse cycle times. Typically, a choice must be made between filtration efficiency and air permeability.

123 Ingeteam

Ingeteam

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www.ingeteam.com

Indar, Ingeteam Group, is a leading power conversion Partner for its customers: energy generation (generators for wind, hydro, internal combustion, steam & gas), marine electric propulsion (motors & generators), industrial drives (motors), submersible water pumping (motor pump sets), E-Mobility (electric motors) and grid services (synchronous condensers). Its offering encompasses one stop solutions for those sectors backed by strong R&D and Engineering capabilities. Buy addressing the challenges that our Customers face within different sectors Indar provides sustainable and efficient innovation.

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Italmatch Chemicals

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www.italmatch.com

Italmatch Chemicals is a leading innovative chemical group that provides solutions to satisfy the most demanding applications in lubricants, plastics, water, and oil & gas markets.

Treatment of water is in our heritage. With the Dequest® brand, we introduced the world to phosphonate chemistry. Dequest® phosphonates have been the product of choice for antiscalants, dispersants, corrosion inhibitors, and chelants in various applications for many years. Through the Belclene® brand, we introduced polymaleic acid scale prevention polymers to the global water treatment industry. Today, these world-class brands sit together within Italmatch and our specialty water management additives are used throughout the world across industries from agriculture to personal care, from detergents to geothermal, and from mining to desalination. Advances in desalination technology over recent years have meant desalination systems have become a more cost-efficient and sustainable way of addressing the huge demand for fresh water today. Residential, industrial, agricultural, and commercial users are just some of the many who need access to clean, potable water which, in our world, invariably means utilizing water from saline sources. In many cases, desalination plants removing salt and other minerals from seawater, or brackish water, as well as bacteria and other deposits, require chemical treatment to assure optimal operation.

Italmatch's chemical range offers solutions to optimize pretreatment systems, control foam, enhance tube wetting and prevent scale build-up on heat transfer surfaces and reverse osmosis and nanofiltration membranes. Italmatch Advanced Water Solutions product line includes:

- Flocon® and Dequest® SPE ready to use antiscalants and membrane cleaners for reverse osmosis and nanofiltration applications.
- Albrivap® and Belgard® antiscalants for thermal desalination (MED and MSF)
- Albrivap® and Belite® range of antifoams
- Qualipol and Qualifloc liquid emulsion polymers and specialty acrylamide-free grades For more information on Italmatch

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Jacobs
Challenging today.
Reinventing tomorrow.

Jacobs

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www.jacobs.com

At Jacobs, we deliver impactful global solutions to create a more connected, sustainable world — from intelligence to infrastructure, cybersecurity to space exploration. Our 55,000 employees across 40 countries work every day, challenging the expectations of today to reinvent the way we'll all live tomorrow.

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Kyowakiden Industry Co.,Ltd.

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Kyowakiden Industry Co., Ltd. has been consistently operating in three areas of “Water, Electricity & Energy and O&M” for as long as nearly 70 years since its founding in 1948. Especially as a leading water treatment plant manufacturer, Kyowakiden has solved water related issues by providing optimal water treatment machines and system such as desalination plant, wastewater treatment plant and sewage treatment machines for society and industries. Kyowakiden group have local manufacturing factories in China and Vietnam. Kyowakiden has built Japan's largest seawater desalination system and has been operating it for over 15 years. And Kyowakiden proposes pressure retarded osmosis (PRO) system as a new energy using brine of seawater desalination plant. Kyowakiden conducted the world's first long-term demonstration of the PRO system on a pilot scale and can reduce 10% electricity of seawater desalination plant. The PRO system reduces power consumption in seawater desalination plants and reduces marine stress caused by brine.

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Latania

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Lantania is an international contractor, that brings together the experience and technical resources of companies with almost 90 years of history in the water,energy, infrastructure and building construction markets.

Lantania Desalination is the new branch of Lantania dedicated to the engineering, procurement, construction, operation and maintenance of desalination plants worldwide.

The company makes reality desalination projects, providing solutionsbased on innovative, sustainable technologies that solve problems of water scarcity in areas with deficits, respecting, at the same time, the natural environment where they are located.
Its knowledge of the desalination market and business, together with its multidisciplinary international position, allow Lantania to tackle large projects and provide the most efficient and competitive alternative.

Lantania has a multidisciplinary team, specialists in desalination,with an average experience of over 15years,whichintegratesthe latest technological advances into its designs,in all phases of the process, which allow it to offer the most optimal option tour clients.

A good example of this is the desalination plant that Lantania is currently developing in Saudi Arabia, Jubail 3A, with a capacity of 600,000 m3/d. It is one of the largest in the world by reverse osmosis, whose design has made it possible to optimize energy consumption and cost investment.

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LG Chem

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LG Chem manufactures NanoH2O™ seawater and brackish water reverse osmosis (RO) membrane elements based on the innovative and exclusive Thin-Film Nanocomposite (TFN) technology. TFN technology improves membrane performance by embedding benign nanoparticles on the membrane surface and increases flux by 20% without compromising salt rejection.

NanoH2O™ seawater RO membranes deliver industry-leading salt rejection and 20% more flow compared to conventional RO membranes. These benefits significantly reduce the cost of desalination while producing superior water quality. In the past three years, LG Chem has accumulated more than 3,000 million liters per day (MLD) in contracted capacity for seawater desalination projects, placing NanoH2O™ at the top for most awarded and preferred technology.

NanoH2O™ brackish water RO membranes are also widely used and accepted by major utilities and industrial end-users worldwide. The TFN technology coupled with intrinsic anti-fouling properties provides reliable durability, energy savings, and a lower total cost of plant ownership.

Partner with LG Chem, strengthen your RO system performance and become an industry leader in the water treatment field. E-mail waterinfo@lgchem.com today or refer to one of the regional contact information.

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Metito

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Metito is a global leader and provider of choice for total intelligent water management solutions with operations covering three business areas: design and build, specialty chemicals, and utilities.

With over 60 years of experience, the Group provides customized, comprehensive and advanced solutions across the full spectrum of its industry; from clean to dirty water; desalination and re-use; industrial solutions (up to hyper pure water); investing into water and wastewater assets; and structuring both Greenfield and Brownfield schemes under project finance structures. The Group also provides custom alternative energy development and management solutions for utilities and corporations looking to uphold sustainable operations through generating clean, emissions-free energy.

Metito successfully developed and executed thousands of projects across the world earning it the trust of market leaders and a reputation for professional excellence. The Group was the first to introduce the reverse osmosis technology for desalination outside the USA in 1972 and the first to pioneer concession contracts with private entities under Build Own Transfer (BOT), Build Own Operate (BOO), and Build Own Operate Transfer (BOOT) schemes in the Middle East, and under Public Private Partnership (PPP) agreements for bulk surface water supply concessions in Sub Saharan Africa.

Metito also pioneered the trend for mega seawater desalination plants in Egypt launching the largest plant in 2018; Al Yosr with a capacity 80,000m^3/day which was then followed by the largest desalination plant in Egypt to date; Al Galala with a capacity 150,000m^3/day. Metito is also now executing the design, supply, construction, operation, and maintenance of El-Hamam agricultural wastewater treatment plant with a capacity of 7.5 million m3/day, the largest of its type in the world. The treated water will irrigate up to 2.2 million acres feddans west of the Nile Delta area.

Metito endeavours to utilize its world-class global knowhow to provide millions of people across the globe access to clean and safe water. The Group is at the forefront of the water and wastewater industry with an impressive project portfolio that includes more than 3000 projects in more than over 50 countries managed by over 4000 experienced and talented employees worldwide in strategically located operational offices.

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Mutlaq Al-Ghowairi Contracting Co.

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The past two years have been challenging for the construction industry, because of COVID-19. However, since MGC has been a successful player within the construction industry for more than 40 years, we managed to overcome most of these challenges. Our core DNA remained the same, and we maintained our values and identity.

Today, MGC offers a wide range of services in different fields, such as distribution networks, treatment plants, pump stations, support facilities, water tanks, and reservoirs.

MGC's plan for 2022 is mainly focused on diversifying the business and entering into the investment and PPP business to develop megaprojects for significant clients such as SWPC, SWCC, and NWC through JV with international partners. For that, MGC has established a new company named Buhur. For Investment (BFI) to manage such efforts.

Further, MGC is planning to enter into the O&M business, which has enormous potential for growth in the Kingdom. We also plan to get involved in desalination plants in Saudi. MGC has started discussing this field with international firms with expertise and skills. If we agree on the terms and conditions with international firms, we will agree on future projects. Additionally, as an EPC contractor, we are planning to enter into a Consortium and bid for more significant projects such as desalination plants, water transmission lines, and sewage treatment plants. Diversification will drive our short- and medium-term growth. MGC is also exploring the possibility of acquiring new industrial units to sustain our growth and maintain the supply chain.

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Nanostone Water

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At Nanostone Water, we believe in economically solving the world's water needs. Our mission is to provide a new generation of reliable, robust ceramic UF membranes, that provide long term predictable performance at the lowest total cost of ownership for our water treatment customers.

Nanostone Water is a membrane solutions company with a ceramic ultrafiltration module product line designed specifically for water and wastewater treatment applications. Headquartered in Waltham, MA, the company has ceramic manufacturing operations in Halberstadt, Germany.

We have a unique technology for nanoparticle ceramic coatings and a patented ceramic membrane module design. The nanotechnology coatings provide a tight pore size distribution in the ultrafiltration range with high strength and high water permeability.

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Osmoflo

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Osmoflo is a progressive water treatment company that provides tailored, turn-key water and water recycling/reuse solutions across the industrial, resources and municipal sectors globally. Osmoflo isthe largest Australian based designer and builder of desalination projects, with a world class facility at our headquarters at Burton in Adelaide's northern suburbs, but with offices across Australia, as well as in the UAE and India.

Osmoflo have an enviable track record of providing successful, affordable, high technology water solutions dating back to its inception in 1991. Water is life and everyday water treatment systems are vital to the wellbeing of thousands of people around the world. Since establishment Osmoflo has specialised in design, build, operation and maintenance of over 500 reverse osmosis, desalination and membrane filtration plants. A complete project solution from inception to operation is supported by technical expertise to keep your plant fully operational, combined with our flexible purchase options. This means we can tailorthe rightsolution for you. Our plants are located around the world at remote mine sites, oil and gas fields, power stations, city breweries, townships and coal seam gas fields – wherever there's a need for drinking, process, high purity or recycledwater.

Osmoflo's shareholder is Japan's HitachiZosen Corporation, who partners with us to pursue projects across the globe. HITZ facilitates access to their global network, provides specific project support and delivers the additional commercial capability that enables Osmoflo to be the international water companies capable of delivering very large projects it is today.

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Protec-Arisawa

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Protec Arisawa, belonging to Arisawa group, world leaders in the design and manufacture of Fiber Reinforced Plastic Pressure Vessels for membrane filtration systems. We have three production sites located on three different continents and over 40 years of experience in filament winding, Protec Arisawa is your supplier of choice when it comes to selecting high-quality pressure vessels with leading technology.

Our mission is to satisfy our customers' needs with excellent quality in product and service, offering competitive, personalized, and innovative solutions. We build on our experience our «Know How» and our technology.

Our vision is to become the unquestionable supplier/partner, with high technological qualification considered the first purchase option.We are the trusted partners of our clients.

Our values are to work as a committed team, dedicated with enthusiasm and responsibility. We maintain an open attitude to learn, always trying to improve our current knowledge. Flexibility and transparency in communication are essential values in Protec Arisawa.

We hold the Highest Quality Product Available. Our products are expected to last the entire life of the RO system. When you select PROTEC™ products, you get the best RO Vessels in the worldwide market.

We are committed to Operational Excellence and First Time Quality as our R&D Team provides the best Technical Support as well as a huge degree of Customization. We are the reference for Customer Care & After Sales Assistance. We also display a supple and adaptive Lean time Production Line to meet the most urgent time demands.

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Rolled Alloys

Singapore
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Rolled Alloys is dedicated to serving the desalination industry as we supply material for a multitude of chloride concentrations. Our comprehensive inventory includes commodity stainless, lean to super duplexes, 6% molybdenum alloys, and more highly alloyed nickel products that allow us to meet the needs of these demanding environments.

Our staff of metallurgists and engineers are readily available to assist you in accessing the potential performance of an alloy based on the chloride content of a water source. They can provide valuable information and field experience to aid you in the process of selecting an appropriate alloy for your project.

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ROPV

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It all began in 1984, Harbin ROPV Industrial Co., Ltd set out with a single vision- become a global leader in the FRP pressure vessel and water treatment solutions. We focus on innovation and technology to deliver a broad range of water treatment applications worldwide.

Over the past 20 years, we've made major strides in realizing our vision and ROPV has emerged as a world class manufacturing company. Our engineering group is composed of member of the prestigious, government sponsored China FRP Design Institute.

ROPV has been engaged in the development and manufacture of FRP pressure vessels and OEM products for over 20 years, and is the largest and the most experienced pressure vessel manufacturer in the Asia/Pacific Region. ROPV offers a full-line of 2.5", 4", 8", 16" and 18" pressure vessels, covering all major industry system and application requirements with the maximum operation pressure of 1200PSI and multiple side port configurations up to 4".

ROPV continues to innovate by developing numerous registered patents related to our manufacturing process and product designs. We've successfully developed a number of OEM products for UF, EDI, large diameter membranes, and emerging water treatment technologies, and is certified by various international-standard-setting bodies.

Today, have an established local presence, at the same time ROPV is realizing a broader vision of being a major contributor of water treatment applications technology globally.

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Ruhrpumpen

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Ruhrpumpen is an innovative and efficient pump technology company that offers highly-engineered and standard pumping solutions for the oil & gas, power generation, desalination, industrial, chemical and water markets.

We offer a broad range of centrifugal and reciprocating pumps that meet and exceed the requirements of the most demanding quality specifications and industry standards such as API, ANSI, ISO and Hydraulic Institute.

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Sacyr

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As a global group dealing in infrastructure, services and industrial projects, Sacyr constitutes a sustainable and profitable enterprise with over 30 years' experience and a footing in the five continents.

Over 37,000 employees capable of turning challenges into opportunities, committed as they are to a future that seeks to improve our cities, enhance the environment and better our daily lives.

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Stantec

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Many of the world's most innovative engineers and scientists have come together in Stantec's Water business because they view a community's interaction with water a bit differently—as a single holistic system rather than as unconnected networks divided by jurisdictional boundaries. Our team provides a new path towards water sustainability with innovative solutions that allow for the reuse and conservation of this precious resource. Working throughout the hydrologic cycle, we use innovative solutions to make sure the appropriate quality and quantity of water is where it should be and available when it's needed. Our experts lead their fields and guide our work with scientific rigor, an innovative spirit, and a vision for growth. Every day, we help communities improve their water efficiency and protect their water resources for future generations.

Stantec trades on the TSX and the NYSE under the symbol STN. Visit us at stantec.com/water or find us on social media.

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Sulzer

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As a global leader in pump design, Sulzer is recognized for delivering excellent product quality and performance reliability for the most critical applications in desalination. With our experience and proven technology, we help you to operate your plants more efficiently. We share our expertise and create enduring and economical solutions. Sulzer primarily focuses on pumps for the reverse osmosis processes, but we also serve the distillation area. We are a full-line pump supplier for medium-to-large reverse osmosis plants. We provide pumps for seawater intake, pretreatment, high-pressure membrane feed, energy recovery device boosting, and product water transport. Our customers benefit fromgetting all pumps from one supplier, and we make sure to optimize the desalination process using Sulzer quality pumps and know-how. Sulzer also delivers products such as pumps, mixers, compressors and other aeration products for applications within cleanwater, municipal and industrial wastewater.

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المؤسسة العامة لتحلية المياه المالحة
Saline Water Conversion Corporation (SWCC)

Saline Water Conversion Corporation

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The Saline Water Conversion Corporation (SWCC) is a Saudi governmental institution mandated and entrusted with seawater desalination and the delivery of desalinated water to various regions of the Kingdom of Saudi Arabia and beyond. SWCC was established in 1974 as an independent governmental institution of a legal personality.

Vision - Global leadership and excellence in water desalination industry.

Mission - To best meet customer needs of desalinated water more efficiently and reliably at the lowest possible cost and the highest economic return, while effectively invest in and motivate human resources, develop desalination industry, contribute to economic and social development and comply with safety and environmental standards.

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الشركة السعودية لشراكات المياه
Saudi Water Partnership Company

Saudi Water Partnership Company

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The resolution of the Council of Ministers No. 494 dated 5/8/1438H extended the scope of the work of the Company as the Principal Offtaker of water to include the purchase of desalinated, purification, treated and untreated water in addition to co-generation, and the Minister of Finance provides the credit support to the Company to support its financial solvency of the signing of long-term purchase contracts within the framework of the principles stated in the Council of Ministers Resolution No. (181) dated 9/6/1425H, in accordance with the terms and conditions set by the Minister of Finance, the transfer of ownership of the company in full to the Government, with the agreement on corporate governance and contracted projects. The Ministry of Finance owns fully (100%) the Saudi Water Partnership Company and the Company's capital is SR (100,000,000) One Hundred Million Saudi Riyals.

Company Objectives:

- Tendering of plants and projects of desalination, water purification, sewage water treatment and co- generation for the private sector (i.e., IWP, IWPP, STP).
- Tendering of water storage tanks projects.
- Tendering of projects for the construction of dams for the purpose of providing drinking water.
- Tendering of water Transmission System network for all types of water.
- Purchase and sale of water (desalinated, purification, treated, and untreated) and electricity and the conclusion of the necessary agreements.
- Purchase the fuel needed to achieve its purposes.

Earlier, following the Resolution 5/23 of Supreme Economic Council, the company was established as a Limited Liability Company (LLC) in 2003, owned 50% each by Saline Water Conversion Corporation and Saudi Electricity Company, where the main purpose of the establishment of the company was to purchase water and electricity from private sector projects and sale of water to Saline Water Conversion Corporation and electricity to Saudi Electricity Company.

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Talis Group – Belgicast

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TALIS is a global provider of premium valves and other solutions for water flow control. With a varied range of products, we offer comprehensive solutions for the entire water cycle.

Our experience, innovative technology, global expertise and individual consultation process, form the basis for developing sustainable solutions for the efficient handling of the vital resource “water”. With over nine strong brands and 28 entities TALIS is the largest supplier of valve technology and first choice when it comes to water valves and services for the whole water cycle BELGICAST, as part of TALIS Group, is a leading valve manufacturer for desalination, covering the needs of valves of the Desalination plants, from Seawater Intake and Pretreatment to Reverse Osmosis units, Post-treatment and brine discharge.

BELGICAST is specialized in Butterfly and Check valves and has supplied the largest desalination plants in the world.

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Tecval Valves

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Since 1982 TECVAL designs, manufactures and sells its own line of valves and fittings under the quality system ISO 9001:2015.

We have over 30 years of experience in components and solutions for desalination and fluid handling solutions in the highest quality standard. Our products include: Ball Valves, Needle Valves, Manifolds and Instrumentation Valves, Double Block and Bleed Vales, Check Valves and Fittings.

Our product range (Dimensions: 1/8" up to 4"/ Pressures: 50, 105, 210, 420, 760 bar) includes the following materials: Superduplex (1.4410/1.4501); Duplex (1.4462) and AISI-316L (1.4404).

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TORAY
Innovation by Chemistry

Toray

Australia & New Zealand Region
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www.toray.com

Toray Industries, Inc., founded in 1926 as a rayon manufacturer, consistently pursues to diversify and globalize its technology offerings as a basic materials provider. In addition to fiber and textile products, Toray creates cutting-edge and high value-added products including films, fine chemicals, plastic resins, electronics & information-related products, carbon fiber composite materials, pharmaceutical and medical products, and solutions for the water treatment and environmental fields. Today, Toray operates in 26 countries through a total of 275 affiliated companies and subsidiaries worldwide.

In the field of Environment and Engineering, Toray offers high-quality water treatment membrane technologies and technical support:

- Reverse Osmosis (RO) - ROMEMBRATMToray began its membrane development program in 1967, starting with cellulose acetate membranes. Toray now offers a full scope of cross-linked plyamide composite membranes manufactured in KSA, Japan, Korea, China and the USA.
- Nanofiltration (NF) - CSMTMToray offers nanofiltration membrane products with polyamide and piperazine membrane base for applications requiring selective ion removal.
- Ultrafiltration (UF) - TORAYFILTMToray's PVDF hollow-fiber membrane modules effectively remove suspended solids and microorganisms and boast as one of the most durable fibers in the industry.Membrane Bioreactor (MBR) - MEMBRAYTMToray's MBR modules integrate PVDF MF technology for durability and high permeability.

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Torishima Pump Mfg. Co., Ltd.

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Founded in 1919 in Japan, Torishima is celebrating its 100th anniversary this year. We are an engineered pump company committed to providing innovative and reliable pumping solutions worldwide. Particularly Seawater Desalination, we have supplied pumps for RO, MED, and MSF processes for over 40 years. There are now over 2,000 pumps operating in desalination plants worldwide. We are also a world leader in supplying pumping equipment for the water and wastewater industry. We do not only supply the pumps, but design, install, and commission the complete pumping stations. As a premier engineered pump supplier, we are capable of providing the highest quality aftermarket service. Our service bases are located in Dubai and the KSA on top of sales/projects offices across the Middle East. Our innovative service solutions can enhance performance and increase the lifespan of pumps, other equipment, and plants. This allows operators to maximize efficiency, reduce maintenance costs and conserve energy.

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Toyobo

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Toyobo was founded in 1882 as a textile company when it began its spinning and textile business. We continued to adaptto the changingneeds of thetimes, utilizing our core technologies in polymerization, modification, processing and biotechnologyto expand ourbusiness fields anddevelop high performanceproducts. Toyobo has innovativemembrane technologies andan extensive recordof accomplishments overmore than 30years of experience.We have beenproviding cellulose triacetate (CTA) -hollow fine fiber (HFF) RO membranefor seawater desalination.Our CTA HFFRO membrane hasa large membranesurface area and excellent resistance to biofouling and chlorine and continues to enable stable operations at our customers' facilities. Thanks to these merits, TOYOBO is the largest RO membraneprovider in theKSA and oneof the Top 3 in the GCC. Toyobo, in a joint venture with ITOCHU, established ArabianJapanese Membrane Company,a manufacturing andsales company of RO membrane.Through AJMC is our hubto provide highquality RO membranes and full technical services in the GCC and MENA region. Furthermore, Toyobo has developed an innovative Forward Osmosis (FO) / Brine Concentration (BC)membranes that willsuit a widerange of applications.

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Veolia

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www.veoliawatertechnologies.com

SIDEM, a Veolia Water Technologies subsidiary, is dedicated to large desalination projects, providing expert services in design, engineering, procurement, commissioning, operation and maintenance.

Headquartered in Paris, SIDEM relies on its regional offices in UAE, Saudi Arabia and India to provide local commercial support, engineering services and resources in field activities. SIDEM is the world leader in terms of installed desalination capacity, thermal and membrane technologies combined.

Veolia Water Technologies specializes in water treatment solutions and provides the complete range of services required to design, deliver, maintain and upgrade water and wastewater treatment facilities for industrial clients and public authorities. Our portfolio of proprietary technologies features everything from online diagnostic solutions to evaporation and crystallization, water reuse, product recovery, energy-producing sludge treatment, laboratory-grade water and mobile water services. Veolia group is the global leader in optimized resource management.

With nearly 171,000 employees worldwide, the Group designs and provides water, waste and energy management solutions that contribute to the sustainable development of communities and industries. Through its three complementary business activities, Veolia helps to develop access to resources, preserve available resources, and to replenish them.

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WEG

Madrid, Spain
Contact: Jesus Rivas
Email: rivasj@weg.net
www.weg.net

WEG is a global company regarded as one of the world's leading manufacturers of efficient electric motors, automation, power transmission, renewable resource technologies, solar, wind power generation and distribution equipment.

Global solution with electric machines and automation for industries and energy systems.

Aware of the growing importance of renewable energy resources for the world, WEG has invested in technological innovations in several segments that bring efficient and eco-friendly solutions to the planet.

WEG solutions stand out for the efficiency and flexibility of their electrical and mechanical design, adapting to the most demanding customer requirements in different applications, with a full range of products for the water industry.

08 OUTBACK THEATER

Outback Theater Schedule

Sponsored by OSMOFLO

Day 1 Monday, 10 October 2022

14:00 - 15:00 IDA - WRA Panel

Water Reuse: Moving Toward the Future of Water Management

Whether it is irrigation, industrial cooling, or drinking water, today's technology allows us to treat any water source to a quality suitable for any use. This panel will explore the steps to launch a successful water reuse project, including the decision path for communities, piloting, design and facility start-up. Learn about the use of membrane technology to allow potable and non-potable reuse, examples of innovative projects, and the evolution of purified recycled water for drinking around the world.

Moderator: Mr. Paul Sciuto, General Manager, Monterey One Water

Panelists:

- Mr. Michael Bourke, Director of Business Development, Wigen Water Technologies
- Mrs. Danielle Francis, Manager Liveable Communities, Water Services Association of Australia
- Mr. Greg Wetterau, Vice President, CDM Smith

15:00 - 15:30 The Future of Water NEOM

15:30 - 16:00 Refreshment Break

16:00 - 17:30 IDA R&D Committee

IDA Innovation Forum

Moderators:
- Dr. Victor Monsalvo, Aqualia,
- Mrs. Olga Sallangos, Caramondani Desalination Plants

Selection Committee:
- Dr. Emilio Gabbrielli, Independent Consultant
- Mr. Rob Garner, Director (Water Supply) at ENOWA - NEOM
- Prof. John H Lienhard V, MIT
- Mr. Kevin Price, Independent Consultant
- Dr. Miriam Balaban, Secretary General at European Desalination Society
- Dr. Jauad El Kharraz, Executive Director, ICREE
- Dr. Masura Kurihara, Toray

Day 2 Tuesday, 11 October 2022

08:30 - 09:30 A Circular Future for Water

09:30 - 10:30

10:30 - 11:00 Coffee Break

11:00- 11:30

11:30 - 12:30 Leading Sustainable Desalination Now

12:30 - 13:00

13:00 - 14:30 Lunch Break

14:30 - 15:00 Aquatech

15:00 - 15:30 Nanostone Water Innovative Ceramic Membrane Technology in Water Treatment Applications — nanostone water

15:30 - 16:00 Refreshment Break

16:00 - 16:30 WATER CORPORATION

16:30 - 17:30 YLP Forum — IDA YLP Young Leaders Program

Day 3 Wednesday, 12 October 2022

08:30 - 09:30 Trends in Desalination Technology, is RO Mature Enough? Do we Have Another Sustainable Technology in the Horizon? — ACWA POWER

09:30 - 10:00 tedagua

10:00 - 10:30 Challenging New Ways to Manage Water — ALMAR WATER SOLUTIONS

10:30 - 11:00 Coffee Break

11:00 - 13:00 SWCC: The Journey Beyond — المؤسسة العامة لتحلية المياه المالحة Saline Water Conversion Corporation (SWCC)

13:00 - 14:00 Lunch Break

14:00 - 15:00 Innovation in Desalination — METITO

15:00 - 15:30 Refreshment Break

15:30 - 16:30 Dams Development under the PPP Model & Future SWPC Projects — الشركة السعودية لشراكات المياه Saudi Water Partnership Company

16:30 - 17:30 Mutlaq Al-Ghowairi Contracting Co.

17:30 - 18:30 Membership Meeting

Day 4 Thursday, 13 October 2022

08:30 - 09:00 Innovation to Tackle the Water Tariff Inflation

09:00 - 10:00 **Panel 1 : Let's Hear from the Leading Water Reuse Facilities of the World**

Moderators:
- Mr. Guillaume Clairet, H2O Innovation, Canada
- Mr. Ufuk Erdal, Arcadis, USA

Panelists:
- Mr. Hubertus Cox, Los Angeles Sanitation District, USA
- Dr. Marcio José, Aquapolo Ambiental, Brazil
- Mr. Paul Sciuto, Monterrey One, USA
- Mr. MOH, Tiing Liang, PUB, Singapore

10:00 - 10:30 LG Chem

10:30 - 11:00 Coffee break

11:00 - 12:00 **Panel 2: Addressing Global Membrane System Safety Reliability**

Pressure Vessel technology utilizing FRP with flexible grooved end couplings became the industry standard in the early 1980s. These systems, like those today, used stainless steel manifolds with tight tolerance support frames to form reverse osmosis skids. In those early days, Pressure Vessel Service Life was estimated to be 15 to 20 years.

Today, tens of thousands of membrane pressure vessels and interfacing connections throughout the desalination industry from 20 Bar (300 PSI) to 83 Bar (1200 PSI) are reaching a critical period where many may be nearing the end of their service life. While the facilities they are installed in may continue operation for many years without issue, many facilities have pressure vessels that have seen 30 years of service.

For End Users whose pressure vessels are already exceeding the expected service life, guidance is required regarding an appropriate approach to the replacement decision, given the consequences of operating under an increased risk of age-related catastrophic failures. In addition, and actually more alarming, the industry has now had several catastrophic pressure vessel failures, not from age, but from lack of proper maintenance.

This panel discussion will contain End Users, System Integrators, Consultants along with Pressure Vessel and Coupling Suppliers to discuss the current state of the industry and to clearly identify the challenges ahead for the membrane system industry. We welcome you to join in the conversation.

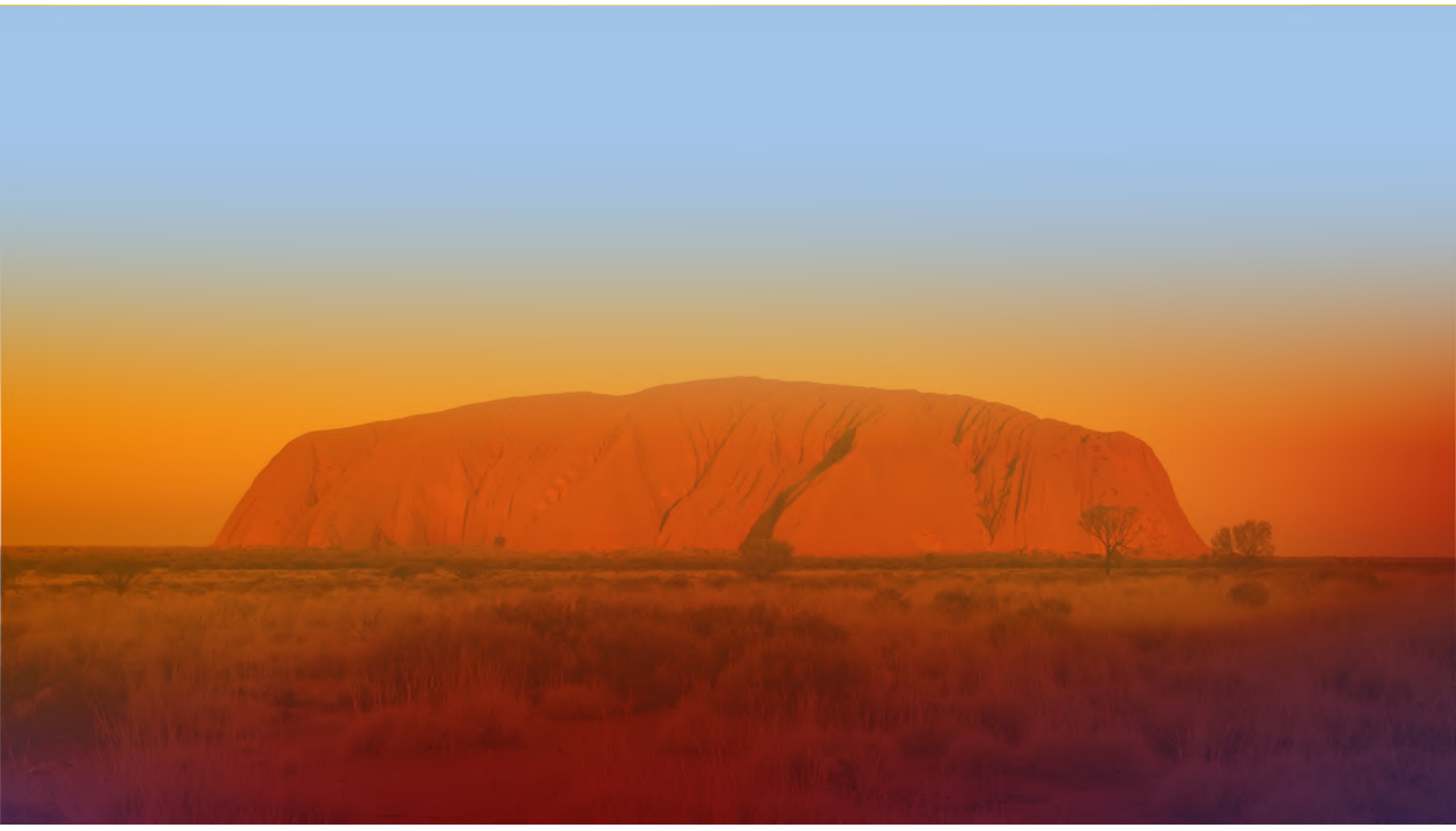
Moderator: Mr. Doug Eisberg, Vice President of Sales, Avista Technologies, Inc.

Panelists:

- Sharon McNeil, Water Corp
- Con Sikallos, Jacobs
- Mark Donovan, GHD
- Sean McCagh, RO-TEG
- Guillaume Clairet, H20 /Piedmont
- Miriam Brusilovsky, IDE Technologies
- Olivier Bedague, Arisawa/ Protec

12:00 - 12:30 OriginWater 碧水源

13:00 - 14:00 Lunch break



09 INNOVATION FORUM

SPONSORS

The IDA Innovation Forum, new to the World Congress, is specifically designed to introduce new and innovative solutions from universities, research centers, technology developers, and start-up companies to major organizations in the water and energy sectors, venture capitalists, developers, and investor's. This new event at the World Congress will be held on Monday, October 10, 2022.

The agenda of the Innovation Forum will be presented soon.

10 YLP ROUND TABLE

The IDA Young Leaders Program was officially launched at the 2009 World Congress in Dubai. The goals of this exciting initiative are to help promote opportunities in the industry, support career advancement, and provide a forum for communication and the exchange of ideas among young professionals and the industry at large. The YLP is open to any IDA member 35 years of age or under.

Schedule

Tackling SDG Goals

DR. MONICA BOODHAN

At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, water and sanitation, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. join us in this discussion.

Wave to Water Technologies

MR. DRAGAN TUTIC

Learn about the latest advcements and how wave powered desalination is pushing for new standards of sustainability.

Energy Efficiency

MS. ZAINA NASER

Let's discuss about the energy efficiency and inefficiencies in Desalination and how to reduce the carbon footprint.

Brine Mining

MR. RORY WEAVER

Open discussion on technical and economic feasibility of brine mining, stimulated by progress in Saudi Arabian pilot aimed at extracting high purity sodium chloride for the chlor-alkali industry.

Next Generation Desal

MR. QUANTUM WEI

Join me for a round table discussion on how the next generation of desalination systems may solve SDG6.

Thermal Desalination

DR. MOHAMMAD WAKIL SHAZAD

At this round table we will discuss about state-of-the-art thermal desalination and their hybrids with other processes to improve overall perfromance. Panel will also shed light on performance evaluation of integrated desalination plants when operated with assorted form of energies.

Biofouling in Membrane Systems

DR. GUILLEM GILABERT ORIOL

Biofouling is one of the biggest pain points in desalination. Let's discuss how to prevent, mitigate and deal with biofouling.

Building your Personal Brand for Career Growthl

DR. GIANCARLO BARASSI

Let's discuss your plan short, mid and long term. What actions have you taken that will have a positive impact towards your career growth? What seems to work what doesn't. Let's share our experiences with one another.

The Role of Chemicals in Desalination

MR. DANIELE STRONGONE

Next generation of chemicals leading to environmentally friendly desalination and higher plant availability.

Remineralization

DR. ANTONELLA DE LUCA

Let's review the importance of minerals in drinking water and new techniques for remineralization.

AI and Machine Learning

MR. DEVESH BHARADWAJ

Artificial intelligence enables operational teams at treatment facilities to do more with less. By pairing operators with AI, facilities are able to get predictive performance analysis and actionable recommendations on things like where to adjust a set point to lower energy consumption or when is the best time to service an asset, like conducting a membrane cleaning. AI empowers teams with the latest plant data so they can make better operational decisions, reducing risks and costs, as well as a plant's overall carbon footprint.

Life in Academia

DR. ABUSHABAN

Finishing your PhD there may be many paths. Academia is one. Learn more about this transition.

11 CO-LOCATED EVENTS

Sydney Desalination Plant Tour

An essential component of Sydney's water supply resilience supplying up to 250 megalitres per day of drinking water (15% of Sydney's water needs), the Sydney Desalination Plant was built between 2008 and 2010 in response to the millennium drought and operated successfully for two years. With water storage dams recovering to high levels, a decision was made to place the plant in a state of long term preservation ready to respond to the next drought. In late 2015 a tornado hit the plant causing extensive damage, and requiring thorough inspection and reinstatement to its pre-storm condition. This was completed successfully in late 2018. In January 2019, after seven years of preservation, the plant was successfully restarted and continues to be available to assist the supply of water to Sydney's customers. A tour of the Sydney Desalination Plant provides a unique insight to a large scale reverse osmosis plant that has faced many challenges that include full operations to deep preservation and the recovery from extensive tornado damage.

SPONSOR SYDNEY DESALINATION PLANT

Please visit wc.idadesal.org on how to register or contact us at registration@idadesal.org.

IDA 2022 WORLD CONGRESS

SYDNEY, OCTOBER 9 - 13, 2022

CHARTING RESILIENT WATER SOLUTIONS

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