International Specialty Conference on Innovation Driven Desalination

This conference is organized by the International Desalination Association (IDA) and the Desalination Technologies Research Institute (DTRI) of the Saline Water Conversion Corporation (SWCC) under the patronage of the Ministry of the Environment, Water and Agriculture of the Kingdom of Saudi Arabia.

Featuring the Innovative Spirit of the Desalination Industry

Over the past ten years, innovation in desalination has led to a direct offset of clean water supply in water-scarce situations. Forward-looking utilities worldwide consider the implementation of desalination to secure water supply for both municipal and industrial use. This conference features cutting-edge technologies and science that make desalination affordable and environmentally sound.

Purpose of this Conference

Throughout the 3-day conference, delegates will learn about the latest trends in desalination technology and science aimed to minimize costs, energy, chemicals, and environmental impacts associated with desalinated water production. This conference will also provide an in-person forum for the exchange of transformative ideas and disruptive innovation science.

The scope of the conference encompasses both innovations in science and technology and the operation of desalination plants. This landmark new event aims to capture the latest achievements and future industry trends in the transformation towards breaking the energy, environmental and cost barriers towards affordable desalination. A site visit to the Shoaiba Magnesium Permeate Enrichment Facility is offered on Wednesday, June 1, 2022.

Conference Venue and Time

The conference venue is the Ritz Carlton Hotel in the City of Jeddah, Saudi Arabia. The conference dates are May 30-June 1, 2022. Recommendations for hotel accommodations near the conference venue will be provided at a later date.
DAY 1 Monday, May 30th  Morning Session

08:00-08:30 Welcome Remarks
◊ H. E. Governor of the SWCC Eng. Al-Abdulkarim
◊ President of DTRI, Dr. Al-Amoudi
◊ President of IDA, Mr. Carlos Cosín
◊ Secretary General of IDA, Ms. Shannon McCarthy

Theme 1.1: Breaking the Cost and Energy Barriers of Desalination

Session 1.1.1 – Innovation for Desalination Cost Reduction

08:30-09:00 Innovative Backwashing System of Dual Media Filter
Authors: Mr. Park Byungsung; Mr. Abutaleb Abdulrahman; Eng. Nikolay Voutchkov; Dr. Al Amoudi Ahmed, SWCC, KSA
Presenter: Mr. Park Byungsung, SWCC, KSA

09:00-09:30 Optimized Seawater Pretreatment for Biofouling Control at SWRO Plant
Author and Presenter: Mr. Harry Polman, H2O Biofouling Solutions B.V., Netherlands

09:30-10:00 Clean-In-Place System For Cartridge Filters In Ras Al-Khair Power and Desalination Plant
Author and Presenter: Mr. Abdulrahman Abutaleb, SWCC, KSA

10:00-10:30 Abqaiq Plants (RO) Water Treatment Plant Enhancement
Author and Presenter: Mr. Mohammed Almugahwi, Saudi Aramco, KSA

10:30-11:00 Coffee Break

Session 1.1.2 – Energy and Carbon Footprint Reduction Technologies

11:00-11:30 Carbon Footprint of Desalination Processes and the Way Towards Green Desalination System
Author and Presenter: Mr. Youngwook Yoo, SWCC

11:30-12:00 Modulation Techniques Applied to Medium-voltage Variable Speed Drives - SHE and OPP
Authors: Mr. Adriano Dias; Mr. Rafael Nardelli; Mr. Joable Alves, WEG Automation, Spain
Presenter: Mr. Adriano Dias; Mr. Joable Alves, WEG Automation, Spain
12:00–13:00   Lunch Break

Afternoon Session

**Theme 1.2: Advances in Membrane Science and Technology**

**Session 1.2.1 – Innovation in Membrane Technology**

13:00-13:30   Robust Carbon Nanotube/Polyamide Nanocomposite RO Modules with Antifouling Performance for Green Seawater Desalination

*Authors:* Dr. Juan Luis Diaz Fajardo; Mr. Aaron Morelos Gomez; Mr. Rodolfo Cruz Silva; Mr. Norihiro Takeuchi; Mr. Takuya Hayashi; Mr. Kenji Takeuchi; Mr. Morinobu Endo, Shinshu University, Japan

*Presenter:* Dr. Juan Luis Diaz Fajardo, Shinshu University, Japan

13:30-14:00   Chlorine Resistant, Antifouling TFC-RO Membranes with Vacuum UV Irradiation

*Author:* Prof. Marwa Shalaby; Prof. Heba Abdallah; Mr. Ralph Wilken; Mr. Ahmed Shaban National Research Centre, Egypt; Fraunhofer Institute for Manufacturing Technologies and Advanced Materials (IFAM), Germany

*Presenter:* Prof. Marwa Shalaby, National Research Center, Egypt

14:00-14:30   New Concept of a Salt free-EDM

*Authors:* Dr. Abdulsalam Alhadidi; Mr. Winod Bhikhi; Mr. Ronny van Engelen, Fujifilm, Netherlands

*Presenter:* Dr. Abdulsalam Alhadidi; Fujifilm, Netherlands

14:30-15:00   Coffee Break

**Session 1.2.2 – Digitalization of Desalination**

15:00-15:30   Digital Twin of an Innovative, Low Energy and More Sustainable Subsea SWRO Plant

*Authors:* Mr. Alexander Fuglesang, FSubsea AS, Norway, Mr. Abdullah Albiladi, SWCC, KSA

*Presenter:* Mr. Alexander Fuglesang, FSubsea AS, Norway

15:30-16:00   An Intelligence Collaborative Diagnosis Support System for Desalination Plant PLCs

*Author:* Mr. Khalid Alsaiif, Mr. Abdullah Alghamdi, SWCC, KSA

*Presenter:* Mr. Khalid Alsaiif, SWCC, KSA
DAY 2  
Tuesday, May 31st  
Morning Session

Theme 2.1: Innovation in Desalination Facility Design and Operation

Session 2.1.1 – Experience with Design and Operation of Innovative Technologies

08:00-08:30  The Effectiveness of Ceramic Ultrafiltration as a Pretreatment for SWRO at Tuas Spring, Singapore
Authors: Mr. Ali Kalantar; Mr. Gilbert Galjaard; Mr. Jonathan Clement; Mr. Isaac Ng; Mr. Michael Shaw; Mr. Jonathan Pressdee, Nanostone Water Inc., USA
Presenter: Mr. Ali Kalantar, Nanostone Water Inc., USA

08:30-09:00  Shoaiba NF-MG Plant - Operational Strategy
Authors: Dr. Ihm, Seungwon; Dr. Al-Amoudi, Ahmed S.; Mr. Nikolay Voutchkov; Mr. Youngwook Yoo; Dr. Yaser Al-Jehani; Mr. Khalid Al-Shaikh; Dr. Farroque, A. Mohammed, Saline Water Conversion Corporation, KSA
Presenter: Dr. Seungwon Ihm, Saline Water Conversion Corporation, KSA

09:00-09:30  The UF-FO-MD Hybrid System for Resources Recycle from Wastewater Using SWRO Brine as FO Draw Solution
Authors: Dr. Sheng Li; Mr. Mohammed Namazi, Saline Water Conversion Corporation, KSA
Presenter: Dr. Sheng Li, Saline Water Conversion Corporation, KSA

09:30-10:00  The Importance of Centrifugal Pump in Desalination Process and Its Recent Challenges
Author: Dr. Iqbal Moujdin, Dr. Totah Husam, King Abdulaziz University, KSA
Presenter: Dr. Totah Husam, King Abdulaziz University, KSA

10:00-10:30  Coffee Break
# Session 2.1.2 – Latest Developments of High Recovery Desalination

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<td>10:30-11:00</td>
<td>High Recovery Reverse Osmosis Water</td>
<td>Mr. Haytham Abdelfatah, FEDCO, USA</td>
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<td>11:00-11:30</td>
<td>High Recovery Seawater Reverse Osmosis Using &quot;Loose RO&quot; in the Final Stage</td>
<td>Dr. Christopher Fellows, SWCC; Dr. Moe Neil, SUEZ-WTS, France; Dr. Moe Neil, SUEZ-WTS, France</td>
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<td>11:30-13:00</td>
<td>Lunch Break</td>
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## Afternoon Session

### Theme 2.2: Green Desalination Technologies and Brine Management

#### Session 2.2.1 – Concentrate Management, Brine Mining and ZLD

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<td>13:00-13:30</td>
<td>Sea4Value Development and Validation of Novel Technologies to Extract Minerals and Metals from Seawater Brines</td>
<td>Dr. Naiara Hernández, Dr. Juan Arévalo, Dr. Frank Rogalla, Dr. Víctor Monsalvo, Aqualia, Spain</td>
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<td>13:30-14:00</td>
<td>Energy Recovery Device Deployed in a Ultra-high Pressure Reverse Osmosis ZLD Application: A Case Study</td>
<td>Mr. Erik Tynes; Mr. David Kim-Hak, Energy Recovery, USA</td>
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<td>14:00-14:30</td>
<td>Approach Towards Green Desalination</td>
<td>Mr. Fritz Alt, Saline Water Conversion Corporation, KSA</td>
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<td>14:30-15:00</td>
<td>Coffee Break</td>
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Session 2.2.2 – Out-of-the Box Desalination Technologies

15:00-15:30 Pilot Testing of Advanced MED Technology for Seawater Desalination And Brine Treatment
Author and Presenter: Dr. Mabrouk, Abdelnasser, Qatar Environment and Energy Research Institute, HBKU, Qatar

15:30-16:00 World ´s Largest Microbial Desalination Cell Pilot Plant for Low Energy Brackish Water Desalination and Wastewater Treatment
Author and Presenter: Dr. Juan Arévalo, Aqualia, Spain

16:00-16:30 Innovative Technique for Enhancing the Performance of Emerging Water Desalination Processes
Authors: Mr. Emad Alhseinat, Mr. Randa Ibrahim; Mr. Alibi Kilybay; Mr. Ibrahim Mustafa; Mr. Faisal Al Marzooqi; Khalifa University; DEWA, UAE
Presenter: Mr. Emad Alhseinat, Khalifa University, UAE

DAY 3 Wednesday, June 1st Morning Session

Theme 3.1: Road-mapping of Desalination Innovation
Session 3.1.1 – Future Desalination Technology Trends

08:00-08:30 Innovation Trends in the Desalination Industry
Author and Presenter: Eng. Nikolay Voutchkov, SWCC, KSA

08:30-09:00 On the Gaps and Needs to Achieve Ultrahigh Pressure Reverse Osmosis
Author and Presenter: Dr. Arian Alawad, Pacifica Water Technologies, USA

09:00-09:30 Thermodynamic and Energy Analysis of Hypersaline Desalination
Authors: Mr. Kinnari M. Shah; Mr. Ian H. Billinge; Dr. Xi Chen; Mr. Hanqing Fan; Mr. Yuxuan Huang; Mr. Robert K. Winton; Dr. Ngai Yin Yip, Columbia University, USA
Presenter: Dr. Ngai Yin Yip, Columbia University, USA

09:30-10:00 Innovative System for Selective Extraction of Valuable Compounds from Desalination Brines
10:00-10:30  Coffee Break

Session 3.1.2 – Road-mapping of the Future of Desalination

10:30-11:00  Role of Integrated Membrane Systems in Enhancing Desalination Capacity of KSA and the Need for a Desalination Development Roadmap
   Author: Prof. Mohammed Albeirutty, King Abdulaziz University, KSA
   Presenter: Prof. Mohammed Albeirutty

11:00-11:30  Water Desalination and Reuse In Saudi Arabia: Current Status and Future Outlook
   Authors: Dr. Ahmad Bamasag; Dr. Al Amoudi, Ahmad; Mr. Omar Bamaga; Mr. Eydhah Almatrafi, KSA
   Presenter: Dr. Ahmad Bamasag, KSA

11:30 – 12:00  Closing Ceremony

12:00 - 13:00  Lunch Break

13:00 - 17:00  Visit of Shoaiba Desalination Plant with Magnesium Enrichment Facility
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Innovation Driven Desalination

May 30-June 1, 2022
Ritz-Carlton Hotel, Jeddah
Saudi Arabia