

تحت رعاية معالي المهندس  
عبدالرحمن بن عبدالمحسن الفضلي  
وزير البيئة والمياه والزراعة

Under the Patronage of His Excellency  
Abdulrahman A. Al Fadley  
Minister of Environment, Water & Agriculture



6th

**WATER  
ARABIA**

Conference & Exhibition  
February 11, 12 & 13, 2020  
Al- Khobar, Saudi Arabia



مؤتمر و معرض  
**المياه  
العربي**  
السادس

١٣، ١٢، ٢٠٢٠ فبراير  
الخير، المملكة العربية السعودية

التقنيات المبتكرة لتحلية المياه ومعالجة مياه الصرف الصحي في  
إطار الثورة الصناعية الرابعة (IR 4.0)

Innovative Water & Wastewater Technologies in the  
Fourth Industrial Revolution (IR 4.0)



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Ministry of Environment Water & Agriculture  
Kingdom of Saudi Arabia المملكة العربية السعودية



التقنيات المبتكرة لتحلية المياه ومعالجة مياه الصرف  
الصحي في إطار الثورة الصناعية الرابعة (IR 4.0)

## Innovative Water & Wastewater Technologies in the Fourth Industrial Revolution (IR 4.0)



**H.E. Abdulrahman A. Al Fahdly**

Ministry of Environment, Water and Agriculture  
Kingdom of Saudi Arabia

وزارة البيئة والمياه والزراعة  
Ministry of Environment Water & Agriculture  
Kingdom of Saudi Arabia المملكة العربية السعودية



Water is a fundamental need not only to the well-being of human life but exceeds it as an overarching contributor to sustainability. According to UN Water 2019 report “Leaving no One Behind”, Fulfilling UN Sustainability Development Goal-6 of safe drinking water and sanitation for all can significantly contribute to achieving a wide spectrum of goals of the UN 2030 Agenda for Sustainable Development such as food, energy security, economic development, and environmental sustainability.

The Arab World, located mostly in the arid to hyper-arid regions of the world, is facing water scarcity exacerbated sectors. This situation can pose a threat to the economic development unless water resources are managed in a sustainable manner.

In April 2016, The Kingdom announced the historic development plan “Vision 2030” that includes a comprehensive set of strategic goals and reform strategies. The goals of the Vision 2030 will best be achieved with the support of a sustainable water resources management system.

The Kingdom has implemented various programs to achieve sustainable water resources management including: issuing and implementing the National Water Strategy 2030, preparing a new integrated water regulation, substantially reducing the irrigated area of high-water consumption agriculture, and installing water management projects such as the construction of 1000 new dams and groundwater well fields, increasing the seawater desalination capacity, expansion of water supply and sanitation networks, and wastewater treatment and reuse projects across the kingdom.

The private sector is a key partner in the implementation of National Water Strategy 2030 and the water and wastewater services. The Ministry has laid the foundations to attract private sector investments including: establishing the Saudi Water Partnership Company, setting the legal and institutional framework for an effective private sector participation, and supporting the private sector capacities.

In addition to the reforms in the sector and the new regulations and policies which will make the water sector more cost-effective and economically and environmentally sustainable, the sector can benefit from the innovations and advancements in technology. Technology can help in transforming the sector to be a “smart system” through developing national smart water grids, water smart building codes, real time transfer of remotely sensed data, and cost-effective and environmental friendly systems. These advancements can be based on business intelligence, satellite monitoring and collection of data, smart metering, and many more of what the technology innovations can bring every day. These advancements will help facilitate policy making and regulations, improve investment decisions, and identify losses in the system, which will all lead to the optimal use of the water resources and make the sector more attractive for the private sector engagement.

Finally, I wish the participants a very successful conference and the generation of useful scientific recommendations towards achieving sustainable water resources management in the Kingdom and the region.

Sincerely,

Ministry of Environment, Water and Agriculture, Kingdom of Saudi Arabia



**Abdulaziz Al-Shaibani, PhD**  
Conference Director  
Deputy Minister for Water Affairs  
Ministry of Environment, Water and Agriculture.  
Kingdom of Saudi Arabia

The Water Arabia 2020 Conference is an excellent opportunity to focus our collective efforts and discuss possible solutions to resolve critical water sustainability issues in Saudi Arabia and the Arab World. This Conference and Exhibition titled “Innovative Water and Wastewater Technologies in the 4th Industrial Revolution (IR 4.0)” will provide an exciting venue, to highlight innovative products and services from local and international companies and provide a collaborative environment in which government and industry representatives can move the region forward in water-based environmental technology and practice.

The Saudi government recognizes that water is a precious natural resource and is highly committed to manage and develop water resources in a rational, integrated and efficient way for current and future generations. This can only be achieved by applying good governance and best management practices to ensure that water is utilized in line with strategic national social and economic goals.

The Conference will open with three workshops on Tuesday, February 11, 2020. These workshops will provide basic and fundamental design concepts for Water Desalination and Wastewater treatment facilities. The workshops will also address technological advances, operation and maintenance, troubleshooting, reuse aspect of treated effluent, and this year, feature “Digital Solutions” to better manage water treatment systems. The attendees will receive continuing education credits for completing these workshops.

The conference will continue on February 12 and 13 with the three parallel technical sessions on Advanced Water Desalination Technologies, Wastewater Treatment Technologies, and Special Topics. Over forty specialized presentations are planned to be delivered by local, regional, and international speakers. The Conference has also welcomed the participation of college students and researchers from over ten local universities to showcase their achievements in water-related topics, through Poster Presentations. We welcome you to visit these posters and learn about the contributions of our future water engineers and scientists.

The organizing committee has been successful in bringing water professionals, industry leaders, and corporate managers to attend together in past conferences. With your support we look forward to continue this endeavor which will foster ongoing sustainable management of the water resources of Saudi Arabia and the world.

Sincerely Yours,

**Abdulaziz Al-Shaibani, PhD**  
Conference Director

التقنيات المبتكرة لتحلية المياه ومعالجة مياه الصرف  
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**Innovative Water & Wastewater Technologies  
in the Fourth Industrial Revolution (IR 4.0)**



Dear Water Professionals,

It is my great honor and pleasure to welcome you to the 6th biennial Water Arabia Conference and Exhibition. It has been a very fortunate and rewarding experience to work with the Ministry of Environment, Water & Agriculture, the Water Environment Federation, and the International Desalination Association to help make Water Arabia 2020 one of the premier events for water sustainability and governance in the Kingdom of Saudi Arabia. Water Arabia is the key event for the Saudi Arabian Water Environment Association (SAWEA), which is a member association of the international Water Environment Federation (WEF). SAWEA's mission is to provide technical education and training for water quality professionals who clean water and return it safely to the environment.

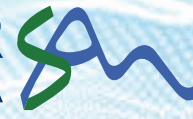
The importance of this Conference cannot be understated as we are responsible for managing the most essential resource for life, water. This Water Arabia Conference is a vital component in bringing together professionals from all over the world to help Saudi Arabia with meeting current and future water supply and quality requirements. Water Arabia will help policy makers, engineers, and scientists address both wide ranging and specific issues regarding local water and wastewater treatment. This includes managing the stresses of water supply and creating options for wastewater reuse. This Conference will help increase the ability of our professionals to spread awareness of these issues. Everyone who participates in this Conference will help make the world a better place. The knowledge you share and receive, as well as the collaboration with your peers, is a noble cause. The people in your community are counting on you to help ensure they and their families will continue to have access to clean and reliable water as well as a clean and safe environment free from sickness and disease.

I would like to thank His Excellency Abdulrahman A. Al Fadley, the Minister of Environment, Water & Agriculture, for his patronage and support of this extremely beneficial event. We also wish to recognize and give our sincere appreciation to all the Conference supporters; Saudi Aramco, WEF, International Desalination Association (IDA), the Japan Cooperation Center for the Middle East (JCCME), and the Imam Abdulrahman Bin Faisal University (IAU), and Prince Mohammad Bin Fahd University (PMU). Finally, thank you to the Saudi Arabian Water Environment Association, including all their members, the sponsors, exhibitors, workshop and technical session presenters, and, of course, all of you, the Delegates.

Best regards,



**Dr. Nabeel I. Al-Afaleg**  
Conference Chairman  
Executive Director, Community Services  
Saudi Aramco



## Workshops Tuesday, 11<sup>th</sup> February 2020

### O&M of Wastewater Treatment Plants

Location: Okaz Hall  
Facilitator:



**William Conner, SAWEA**

William is a licensed Professional Engineer and Board Certified Environmental Engineer in Water Supply and Wastewater. He has 35+ years of professional engineering experience with a focus on wastewater treatment, environmental, health and safety

as pertaining to operations in the petroleum, petrochemicals and specialty chemical industries.

21 of these years were in Saudi Arabia working for Saudi Aramco, EPD. Much of his career involved developing solutions to difficult wastewater treatment needs. He has a number of patents for wastewater treatment systems that provide enhanced biological treatment needed to meet complex wastewater treatment needs.

#### Agenda:

- 07:30 Registration
- 08:30 **Session A** - Basic Wastewater Treatment System Needs / Design.
- 10:00 Break
- 10:30 **Session B** – Typical Wastewater Treatment Systems used in Saudi Arabia.
- 11:30 Prayer/Lunch
- 13:00 **Session C** – Wastewater Treatment System Operations.
- 14:30 Break
- 15:00 **Session D** – Wastewater Treatment System Troubleshooting.
- 15:30 Workshop conclusion and Q&A Session

### Advances in Water Desalination Technologies

Location: Al-Diwan Hall  
Facilitators:



**Dr. Subhi Al-Jeshi,  
Water Treatment Specialist  
SAWEA**

Dr. Subhi Al-Jeshi is a water treatment specialist, Saudi Aramco retiree. He got his B. Sc in Chemical Engineering from KFUPM, Saudi Arabia, and PhD from the School of

Engineering and Physical Sciences, Herriot Watt University, Scotland, specialized in water Desalination. Subhi has 27 years of experience in water treatment and desalination field. His field experience included working in different industrial locations such as Saudi Petrochemical Company, SADAF, Ras Tanura Refinery and Berri Gas Plant in addition to working for one year for VEOLIA Water, UK, designing RO membrane plants. Currently Subhi works for Environmental Protection Department, in Dhahran providing technical support to all Saudi Aramco industrial facilities. Subhi has evaluated and introduced many new technologies to Saudi Aramco.



**Mohammed A. Al-Hajji,  
Water Treatment Specialist  
Saudi Aramco**

Mohammed is a water treatment engineering specialist currently working in the Utilities Systems Unit in Process and Control Systems Department of Saudi Aramco. He has 30

years of professional experience in different departments within Saudi Aramco. Out of which 25 years were spent in providing technical consultation support to Saudi Aramco water treatment facilities and capital projects. Has been involved in designing, construction and commissioning of several Water Treatment Plants. Has been involved in several troubleshooting and investigation tasks for RO plants, industrial steam boilers and water treatment programs. Mohammed is a board member of Saudi Arabia Water Environment Association (SAWEA) and a member of the technical committee for Water Arabia Conference.

#### Agenda:

- 07:30 Registration
- 08:30 Overview of membranes technology
- 09:00 Reverse Osmosis process, system design and operation
- 10:00 Break
- 10:15 Troubleshooting RO plants problems, scaling, fouling & membrane degradation
- 11:00 Analytical Tools for RO Membrane and Foulants Characterization
- 11:30 Prayer/Lunch
- 13:00 Overview of thermal desalination technologies
- 14:00 Troubleshooting thermal desalination technologies
- 15:00 Q&A session

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## Innovative Water & Wastewater Technologies in the Fourth Industrial Revolution (IR 4.0)

### Workshops

Tuesday, 11<sup>th</sup> February 2020

#### Japanese State-of-Art Technologies Introducing solutions to Saudi Water and Environment Demand

Location: Al-Dana Hall

Facilitator:  
Japan Cooperation Center for the Middle East



Japan Cooperation Center for the Middle East (JCCME) was founded in October 1973 as a non-profit incorporated foundation authorized by the Ministry of Economy, Trade and Industry (METI). JCCME continues to provide multifaceted assistance to Japanese companies. Specifically, JCCME promotes direct investment from Japan to the Middle East and North African (MENA) countries by providing information on the investment environment, and facilitating corporate missions to research local conditions critical to business, feasibility studies, and the establishment of joint ventures.

It is the wish of JCCME to contribute to building multilayered, solid relationships with the countries of the MENA region by matching the fertile technologies, know-how, capabilities, human resources, and facilities of Japanese business enterprises, which serve as bridges between the public and private sectors, with the great needs of these countries for economic diversification and infrastructure systems, based on a sound perception of those needs and due consideration to the political stability of each country.



### Agenda

#### 08:30 Opening Remarks

- 1) Japanese Ministry of Economy, Trade and Industry.  
**Ms. Miho Yoshihara**  
Infrastructure and Water Industry, Manufacturing Bureau
- 2) Saudi Arabian Water Environment Association  
**Mohammad H. Al-Abdulatif**, Past President

#### 08:40 The Latest Technologies for Membrane Based Desalination

- 3) "Successful SWRO Reference in Gulf, at Khafji"  
**Mr. Abdallah Alzyoud**, Toray Membrane Middle East LLC
- 4) "Development of Hollow Fiber  
Membrane for Brine Concentration"  
**Mr. Takahito Nakao**, Toyobo Co., Ltd."

#### 09:40 Break

#### 09:55 Sewage Treatment Technologies including Sludge Management

- 5) **Keynote Speech**  
Japanese Ministry of Land, Infrastructure,  
Transport and Tourism.  
**Mr. Natsuki Hisaoka**  
Sewage Department, Water and Disaster  
Management Bureau.
- 6) "What works for Saudi Arabia?  
A Japanese perspective on Wastewater Management".  
**Mr. Yosuke Matsumiya**  
International Division, Japan Sewage Works  
Assoc. (SJSWA)
- 7) "Development of onsite waste water treatment"  
**Mr. Masayuki Tsuge** Fuji Clean Co., Ltd.
- 8) "Optimize the use of RO Reclaimed Water by  
Energy Saving Wastewater Reclamation System  
with Membrane Technology"  
**Mr. Go Takeuchi**, Kobelco Eco-Solution Co., LTD

#### 11:30 Prayer/Lunch

#### 13:00 Sewage Treatment Technologies including Sludge Management

- 9) "Reliable Simulation Technology to Predict Membrane  
Bioreactor Performance based on the Advanced  
Fouling Model."  
**Mr. Hiroshi Hamada**  
Water Treatment Technical Department, Water Treatment  
Technical Section, Toray Industries, Inc

#### 13:30 Digital Solution for Plant Operation, Maintenance and Management

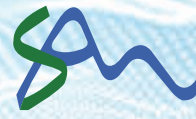
- 10) "Yokogawa Data Driven Modeling System for  
Optimization (DDMO) for the Wastewater  
Treatment plants"  
**Mr. Sumitava Sengupta**  
Yokogawa Middle East & Africa B. S. C
- 11) "Latest Water Leak Detection Method by Fuji Quatro  
Correlator"  
**Mr. Mitsutoshi Sato**, FUJI TECOM Inc.

#### 14:30 Closing Remarks

- 12) **Mr. Naoki Yoshida**  
Deputy Managing Director, Japan Cooperation  
Center for the Middle East (JCCME)

#### 14:35 Q & A and Networking

#### 15:30 Adjourn



## Opening Ceremony

Wednesday, 12<sup>th</sup> February 2020  
Al-Dana Hall

- 7:30 Registration
- 8:30 Holy Quran Recitation
- 8:45 Welcome Remarks



**Dr. Nabeel I. Al-Afaleg**  
Executive Director,  
Community Services  
Saudi Aramco



**H.E. Dr. Abdulaziz Al-Shaibani**  
Deputy Minister for Water,  
Ministry of Environment  
Water & Agriculture (MoEWA)



**John Trofatter**  
Board of Trustees,  
Water Environment Federation (WEF)

9:15 **Keynote Address**



**Mohamed Dahab**  
Past President,  
Water Environment Federation (WEF)  
“Water Scarcity in MENA Region”

9:30 **Official Opening Ceremony &  
Tour of Exhibition Hall**

12:00 **Prayer / Lunch**



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## Innovative Water & Wastewater Technologies in the Fourth Industrial Revolution (IR 4.0)

### Technical Program Wednesday, 12<sup>th</sup> February 2020

Technical Sessions			
Sessions	Advanced Water Desalination Technologies	Wastewater Treatment Technologies	Special Topics
Location	Al-Dana Hall	Okaz Hall	Al-Diwan Hall
Chairman	Mohammad Al-Hajji, Saudi Aramco	Mohammad Dahab, WEF	Assad Al-Khaldi, Saudi Aramco
Co-Chairman	Michael Kennedy, Saudi Aramco	Mohammad Y. Yagout, Saudi Aramco	Nidal Samad, Saudi Aramco
13:30	<b>"Identification and Characterization of Organic Material in Scale in Thermal Desalination Systems"</b> Troy N. Green, SWCC	<b>"Removal of heavy metal ions from Aqueous Solution by Adsorption on a Low-Cost Biomass"</b> Abdulaziz N. Amro, Taibah University	<b>"On Line Water Quality"</b> Mohamed Badran National Inspection & Technical Testing Co. Ltd. (FAHSS / TÜV NORD Saudi Arabia)
13:55	<b>"Utilization of 1st Pass RO Reject in Backwash for Multimedia Filters"</b> Mohammed A. Al-Mugahwi, Saudi Aramco	<b>"Novel bilayer nanofibrous membranes for heavy metal ions removal from wastewater"</b> Abdulaziz Assaifan, King Saud University	<b>SOURCE: Sunlight + Air = Water</b> Vahid Fotuhi, Zero Mass Water
14:20	<b>"(IR 4.0) 3D Printing For Sand Filters Laterals At SWID"</b> Rakan Wajdi Banna, Saudi Aramco	<b>"Removal of BTEX and Phenols from a Highly Saline Water Using a Pilot-Scale Advanced Electrochemical Unit"</b> Bassam Tawabini, KFUPM	<b>"Best Environmental Practices to Reduce the Impact of Unconventional Gas Development in Arid Environments"</b> Mansor Kashir, Saudi Aramco
14:45	Break		
15:15	<b>"Expanding the Envelope of Nonmetallic for High Pressure Applications"</b> Saud A. Abudaly, Saudi Aramco	<b>"Sustainable Circular Economy Approach to Optimize Biological Nutrient Removal Using Glycerol (Bio-Diesel by product) as a Carbon Substrate"</b> Sultan K. Salamah, Taibah University	<b>"Techno-economic evaluation of feasibility of solid waste recycling system from sewage treatment plant in oman"</b> Abdullah Said AL-Sadi, Majis Industrial Services S.A.O.C. – Oman
15:40	<b>"A Bench Scale Study Demonstrating Chloramine Disinfection Potential Using Liquid Ammonium Sulfate"</b> Lamees Alkhamis, Stantec	<b>"Toxic metals adsorption from water by recycling waste product"</b> Saidur R. Chowdhury, Prince Mohammad Bin Fahd University	<b>"Low CAPEX and 75% material savings with Thermoformed Tube Settler Solutions for Enhanced Sedimentation"</b> Pavel Sorejs BRENTWOOD
16:05			<b>"Abqaiq Plants Water Treatment Program Assessment"</b> Mohammad Alajaji, Saudi Aramco
16:30	Session Ends & Exhibition Closes		



## VIP Dinner

Wednesday, 12<sup>th</sup> February 2020  
Al-Dana Hall (By Invitation Only)

19:00 **Welcome Remark**

19:05 **Keynote Address**



**Dr. Wail S. Fallatah**  
Director, Center for Environment  
& Water, King Fahd University of  
Petroleum & Minerals

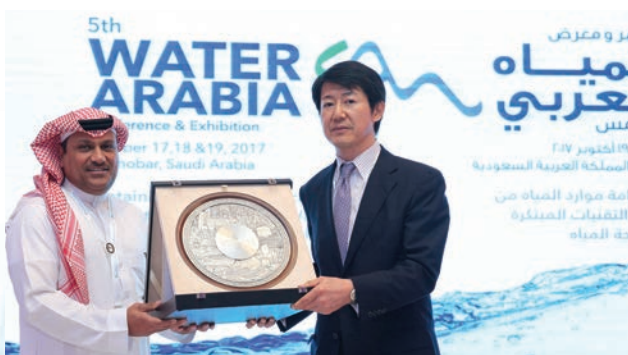


**Miho Yoshihara**  
Director, Project Coordination  
Office for Promotion of  
International Project,  
Infrastructure System and Water  
Industry, Manufacturing Bureau,  
Ministry of Economy  
Trade & Industry (METI), Japan

19:35 **Recognize Poster Contest Winners**

19:45 **Recognize Sponsors**

20:00 **Dinner**



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## Innovative Water & Wastewater Technologies in the Fourth Industrial Revolution (IR 4.0)

# Technical Sessions

Thursday, 13<sup>th</sup> February 2020

08:30	<b>Brave Blue World - A Documentary Film (Al-Dana Hall)</b> Brave Blue World is the first honest and hopeful documentary that will paint an optimistic picture of how humanity is adopting new technologies and innovations to re-think how we manage water.		
Technical Sessions			
Sessions	Advanced Water Desalination Technologies	Wastewater Treatment Technologies	Special Topics
Location	Al-Dana Hall	Okaz Hall	Al-Diwan Hall
Chairman	Dr. Ahmad Al Arifi, SWCC	Thamer Al-Mutairi, Saudi Aramco	Dr. Cevat Yaman, IABU
Co-Chairman	Mohammad Badruzzaman, Saudi Aramco	Nasser Rayan, Saudi Aramco	Ibrahim Nemer, Saudi Aramco
09:30	<b>“Ballasted Flocculation High Rate Sedimentation”</b> Ryan Arbuckle, WesTech Engineering, Inc	<b>“Efficiency of cerium modified palm oil fly ash in the catalytic ozonation of phenol”</b> Mustapha Babatunde Muhammed, KFUPM	<b>“Spatial Variability in the Physical and Chemical properties of Water in Al Asfar Lake, Al-Hasa Region, KSA”</b> Mohammed Benaafi, KFUPM
09:55	<b>“Autonomous Reverse Osmosis (Ro) Desalination System Powered By A Small Photovoltaic (Pv) System At An Isolated Greek Islet”</b> Vaggelis Brilakis, TEMAK	<b>“Solar Drying – Sustainable Biosolids Management”</b> Roland Mueller, Ciclo	<b>“Sinking Groundwater Cost of Energy at Saudi Arabia”</b> Ridha H. Abbas, Saudi Aramco
10:20	<b>“PURATE TECHNOLOGY IN THE INDUSTRY SYSTEMS”</b> Giorgio La Rosa, An Ecolab Company	<b>“A Novel Approach to Self-Optimizing Water Filtration Plants to Treat Municipal and Industrial Process Effluent for Water Re-use”</b> Guy Bolton, Alsuwaiket	<b>“Innovative approaches of exploiting economic benefits from wastewater sludge &amp; biosolids management”</b> Ghazi Ozair, Marafiq
10:45	Break		
11:00	<b>“Cetamine® – Film Forming Amine technology for improved boiler efficiency”</b> Königs Ingo, Kurita Middle East FZE	<b>“Sustainable Industrial Waste Water Treatment System for Reusing Purposes”</b> Faisal Al-Mutairi, Saudi Aramco	<b>“Hybrid Filtration – Sand Filters”</b> Abdul Qadir Jamaludin, Ciclo – Parkson
11:25	<b>“Chlorine Dioxide effectiveness on Microbial Corrosion-Case Study”</b> Mahmoud Alkahlout, Saudi Aramco	<b>“Containerized Water and Wastewater Treatment Tailored Solution”</b> Fahad A. Al-Khaldi, Fahad A. Alkhaldi & Partner Co. & Innovative Engineering Consulting	<b>Cluster Analysis Technique for the Evaluation of Temporal and Spatial Variations in Water Quality of Wadi Henifa</b> Mohab A. Kamal, King Saud University
11:50	<b>“Performance Improvement of MSF Systems”</b> Mohamed A. Antar, KFUPM	<b>“Kurita’s biofilm control agent for membrane systems: Kuriverter™ IK-110”</b> Königs Ingo, Kurita Middle East FZE	<b>“Strategic Water Supplies And Managed Aquifer Recharge”</b> Nauman Rashid, SUEZ Water Technologies & Solutions
12:15	<b>“New Seawater Antiscalant To Save Energy And Water Consumptions”</b> Giorgio La Rosa, An Ecolab Company	<b>“Optimal Industrial Water Recycling using Cooling Towers operating in hot climate.”</b> Mourad Boumaza, King Saud University	<b>“Taking the decanter technology to an entirely new level – Energy Conservation and Autonomous Decanters”</b> Baris Mutlu, Alfa Laval Middle East Ltd
12:40	Lunch and End of Water Arabia 2020		
13:45	Organizing Committee Meeting (by invitation)		

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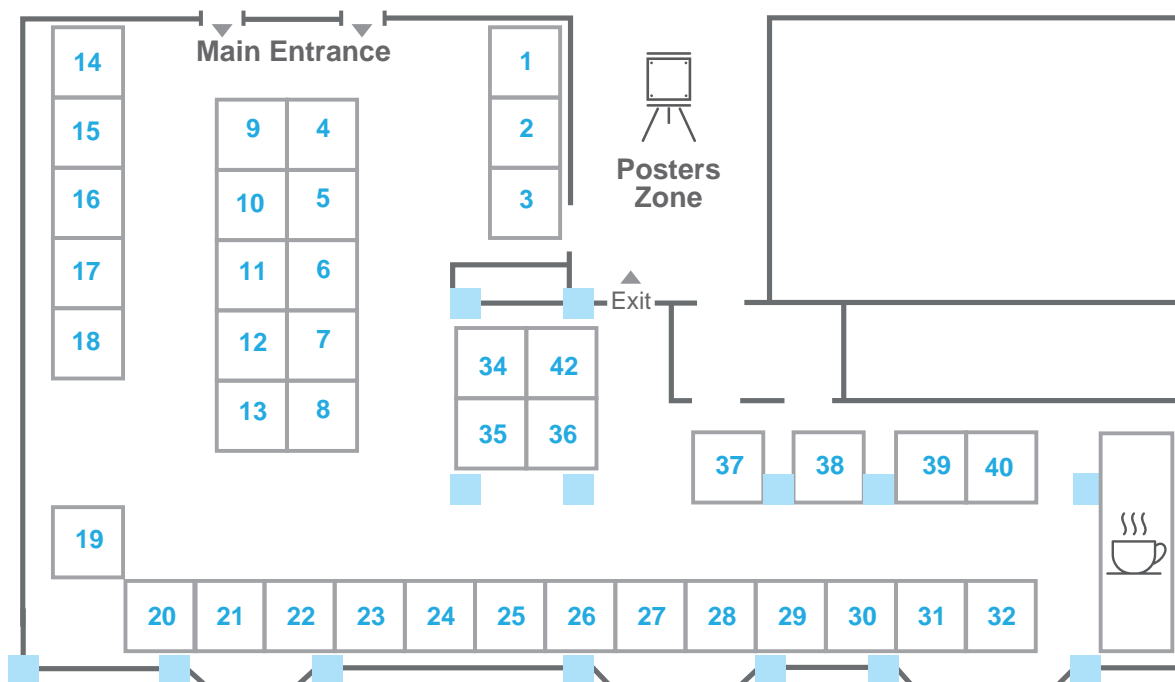
[info@aesarabia.com](mailto:info@aesarabia.com)

**AES**

## Stop by to see all the Posters.

<p><b>Water Sustainability for Designing of a Simple AutoSelf-cleaning Solar Panel System</b> M. Alrajhi, K. Alshamrani, M. Alzahrani, F. Alshamrani, K. Alhajri, Prince Mohammad bin Fahd University</p>	<p><b>The Conceptualized Design of Municipal Wastewater Treatment Plant in Al Jubail</b> F. Alhelal, M. Alahmadi, N. Alqahtani, and A. Alkhaldi, Prince Mohammad bin Fahd University</p>
<p><b>Promoting for Sustainability and Water Saving in an E-Bike Station Project</b> F. Alsaif, Alasal Colleges</p>	<p><b>Anaerobic Treatment Unit Design for Industrial Purposes</b> W. Al Mallouhi, N. Sheriff, S. Hasan, H. Al Radwan and M. Alotaibi, Prince Mohammad bin Fahd University</p>
<p><b>Synthesis of Potassium Ferrate (K<sub>2</sub>FeO<sub>4</sub>) and Application for Treatment Wastewater</b> B. Madkhali, H. Alanazi and R. Qindeel, King Saud University</p>	<p><b>Integrated Geological and Geophysical Study of Fresh and Saltwater Distribution within Coastal Sand Dune in Al-Khobar city, Eastern Saudi Arabia</b> M.Benaafi, A. Ashadi, A. Al-Mashhor, and M.Makkawi, King Fahd University of Petroleum and Minerals (KFUPM)</p>
<p><b>Microbial Fuel Cell for Sustainable Wastewater Treatment with Generation of Electricity under KSA Local Settings</b> Y. Al-Hassan, S. Mutlaq and Nuhu Dalhat Mu'azu a*, Imam Abdulrahman Bin Faisal University</p>	<p><b>Changing Public Perception of Treated Sewage Effluent Reuse for Strategic Sustainable Water Management in KSA</b> F. Al-Huwail, S. Al-Mutlaq and Nuhu Dalhat Mu'azu, Imam Abdulrahman Bin Faisal University</p>
<p><b>Treatment of Aqueous Selenocyanate anions using Electrocoagulation</b> Tariq, Vohra, Essa &amp; Habib-ur-Rehman, King Fahd University of Petroleum and Minerals (KFUPM)</p>	<h1>Water's Worth It.</h1>

## Exhibition Layout



# Thank you to all our Exhibitors

Abunayyan Group Booth: 34	 <b>أبونيان التجارية</b> ABUNAYYAN TRADING	Gulf Advanced Control Systems (GACS) Booth: 27	 <b>GACS</b>	Saudi Aramco Booths: 1, 2 & 3	 <b>أرامكو السعودية</b> saudi aramco
ABB Electrical Industries LTD Booth: 35		Imam Abdulrahman Bin Faisal University Booth: 32	 <b>جامعة الإمام عبد الرحمن بن فيصل</b> IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY	Siemens Water Solutions Booth: 6	 <b>SIEMENS</b> Ingenuity for life.
AES Arabia LTD Booths: 12 & 13	 <b>AES ARABIA LTD</b> Environmental Process Engineers	Toray Membrane Middle East LLC Booth: 10	 <b>TORAY</b> Toray Membrane Middle East LLC	Saline Water Conversion Corporation (SWCC) Booth: 19	 <b>المؤسسة العامة للحلية الجيولوجية</b> Saline Water Conversion Corporation
Alfa Laval Middle East LTD Booth: 8		 <p>Japanese Trade Delegation Booths: 22, 23 &amp; 24</p> <p><b>JCCME</b> <b>TORAY</b> <b>TOYOBO</b> <b>YOKOGAWA</b> Ideas &amp; Chemistry Co-Innovating tomorrow™</p> <p><b>FUJI TECOM INC.</b> <b>FujiClean</b> <b>TEC</b> Toward Clean Water... TEC International Co., Ltd.</p> <p>Keep the Earth Sky-blue <b>KOBELCO ECO-SOLUTIONS CO.,LTD.</b> <b>JSWA</b> Japan Sewage Works Association</p>			
Alwasail Booth: 7	 <b>الوسائل</b>	Krone Filter Solutions GmbH and Innovations System & Controls (ISAC) Booth: 21	 <b>KRONEFILTER.com</b> SOLUTIONS IN FILTRATION <b>ISAC</b>	SAWEA Lobby Area	 <b>الجمعية السعودية للمياه العذبة</b> Saudi Arabian Water Environment Association
Al Suwaiket Oil & Gas Booth: 15	 <b>AlSuwaiket</b> oil & gas	Linear Saudi Co. LTD Booth: 29	 <b>LINEAR KSA</b>	Torishima Service Solutions Booth: 9	 <b>TORISHIMA</b>
Al Hussaini Co. Booth: 11	 <b>مؤسسة الحسيني التجارية</b> Al-Hussaini Trading Est.	Ministry of Environment Water & Agriculture Booths: 36 & 42	 <b>وزارة البيئة والمياه والزراعة</b> Ministry of Environment Water & Agriculture Republic of Saudi Arabia - المملكة العربية السعودية	Technology Products & Services Co. LTD with Al Kuhaimi Booths: 16, 17 & 18	 <b>شركة الكحيمو للمنتجات المعدنية المحدودة</b> Al Kuhaimi Metal Industries Ltd.
ASCE & Estolat Booth: 14	 <b>ALESTOLAT</b> <b>EVOQUA</b> WATER TECHNOLOGIES <b>MEIDEN</b> Quality connecting the next	MMO-Tech Exclusive Distributor of Aquagroup Swiss GmbH Booth: 28	 <b>MMO-Tech.</b>	Al Hussaini Co. LTD Booth: 11	 <b>شركة المنتجات والخدمات التقنية</b> Technology Products and Services Co. <b>TPS</b>
Bisan Inc Booth: 20	 <b>BISAN</b>	NEPROPLAST Booth: 25	 <b>NEPROPLAST</b> Supporting the Best The Future شركة نيبرو بلاست	Tahiyah & Oxymem Booth: 37	 <b>تحلية</b> <b>OXYMEM</b>
BMS Factories Booth: 38	 <b>شركة غريبات للصناعة</b> <b>BMS FACTORIES</b>	Delmon Co. Ltd National Factory for Processing & Treating Minerals (MINTREAT) Booth: 26	 <b>دلمون</b> <b>DELMON</b> MINTREAT	Water Environment Federation Booth: 39	 <b>Water Environment Federation</b> "the water quality people"
Environmental Technology Co. (ETC) Booth: 30	 <b>ETC</b> ENVIRONMENTAL TECHNOLOGY COMPANY شركة إدارة تكنولوجيات البيئة	Union Pipes Industry Co. (UAE /KSA) Booth: 31	 <b>شركة الاتحاد لصناعة الأنابيب</b> Union Pipes Industry, Co.	Wetico (Water & Environment Technologies Co.) Booths: 4 & 5	 <b>WETICO</b> Water & Environment Technologies Co.

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### Majis Industrial Services

#### Every drop counts for industry

In the Gulf, scarce groundwater resources mean seawater is a fundamental part of our ecosystem, it is a key source of the water we drink, the water used to serve our homes and industry, and a vital input for industrial processes. Oman extracts about 19 million m3 of water per year while industrial and population demands have grown by 9.5% alone in the past year, so it is vital that businesses are able create sustainable long-term solutions.

The lack of naturally occurring desalinated water means access to water services in the region can often be energy intensive and costly. As society evolves, companies must evolve too. While many of Majis' services are regional in scope, this is quickly becoming a global problem. By driving change in the sector, Majis hopes to achieve harmony with nature, a practice that is fuelled by its three priority commitments; innovation sustainability and collaboration.

#### Innovation

Water services providers must remain vigilant in maintaining and updating services to benefit customers and clients. Conventional approaches are quickly becoming outdated due to rising demands for efficient water delivery as new technology is developed. Recently, Majis completed a project to upgrade its transmission pipelines beyond SOHAR Port and Freezone, expanding our reach to meet rising customer demand in Sohar Industrial Area. The expansion was completed without disruption to the surrounding environment and with zero impact on existing infrastructure. Investing in innovation should be a top priority when providing water solutions services to industry and consumers.

#### Sustainability

Environmentally friendly practices such as deploying renewable energy to support operations reduces energy consumption, therefore reducing costs to both the company and the customer, while minimising waste. At Majis' facility in Sohar, significant measures have been taken to improve efficiency with eco-friendly practices, including the establishment of a solar PV plant which will cut CO2 emissions by more than 1,400 tonnes each year. Majis has also implemented a scheme to plant at least 0.5 hectares of trees across concession areas per year, resulting in a substantial reduction to its carbon footprint.

#### Collaboration

Many companies are now recognising the benefits of partnerships. Over the last year, Majis has taken significant steps towards increasing collaboration with international partners. Such partnerships ensure the highest quality of service is maintained and facilitates cross-boundary ventures to take the company's operations to the next level. In 2019, Majis and TOSHIBA signed an OMR 3.27m agreement to introduce new technologies which will reduce energy consumption across its facilities at SOHAR Industrial Port. By searching further afield and identifying new technology partners, Majis stands as a regional pioneer in developing meaningful solutions to common challenges.

Majis Industrial Services has demonstrated its commitment to these ideals over the last year, and such a holistic approach is the key to ensuring responsible stewardship of the sector. As the Sohar region continues to grow, Majis will continue to focus on innovation, sustainability and collaboration for the long-term success of industry in the region.



# Thank you

**to all the Organizing Committee Members  
for all your hard work in putting together  
this 6<sup>th</sup> Water Arabia 2020**



## About WEF

Formed in 1928, the Water Environment Federation® (WEF®) is a not-for-profit technical and educational organization with 36,000 individual members and 75 affiliated Member Associations representing water quality professionals around the world. WEF and its Member Associations proudly work to achieve our mission of preserving and enhancing the global water environment®.

WEF and its global network of Member Associations (MAs) help provide water quality professionals with the latest in water quality education, training and business opportunities. WEF's diverse membership includes scientists, engineers, regulators, academics, plant managers and operators and other professionals working in the United States and around the world.

[www.wef.org](http://www.wef.org)

## About SAWEA

The Saudi Arabian Water Environment Association (SAWEA) is a non-profit organization founded on January 1, 2002 by a group of professionals working in Saudi Arabia in water and wastewater treatment.

SAWEA is a professional self-directed group, predominantly within Saudi Aramco. The main sponsors of the association are the Saudi Aramco Utilities & Facilities Services and Environmental Protection Departments. In addition, SAWEA is the official local chapter of the International Water Environment Federation (WEF), which is the largest water quality association in the world. Since January 1, 2002, SAWEA has held several successful conferences and exhibitions focusing on water environmental issues.

[www.sawea.org](http://www.sawea.org)

## About IDA

The International Desalination Association (IDA) is the leading global organization dedicated to desalination, desalination technology and water reuse. The hub of expertise, news and information and professional development for the worldwide desalination industry.

IDA serves more than 2,400 core members from 60 countries and reaches an additional 4,000 members from its worldwide network of Affiliate organizations. IDA is committed to the development and promotion of the appropriate use of desalination and desalination technology globally in water supply, water reuse, water pollution control, water purification, water treatment and other water sciences and technology.

[www.idadesal.org](http://www.idadesal.org)

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