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

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

Attended by
H.E. Eng. Mansour Helal Al-Mushaiti
Deputy Minister of Environment, Water and Agriculture

بحضور معالي المهندس
منصور بن هلال المشيطي
نائب وزير البيئة والمياه والزراعة

5th WATER ARABIA Conference & Exhibition

مؤتمر و معرض المياه العربي الخامس

October 17,18 &19, 2017
Al-Khobar, Saudi Arabia

١٧، ١٨، ١٩ أكتوبر ٢٠١٧
الخبر، المملكة العربية السعودية

Sustaining Water Resources Through Innovative and Reliable Water and Wastewater Treatment Technologies

استدامة موارد المياه من خلال التقنيات المبتكرة لمعالجة المياه

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H.E Abdulrahman A. Al Fadley
Minister of Environment, Water and Agriculture
Kingdom of Saudi Arabia

The Arabian Gulf, one of the driest parts of the world, is facing increasing water scarcity challenges. The Arabian Peninsula is the poorest in the world in terms of fresh and renewable water resources per capita as the statistics indicate that countries of the region have a little more than 240m3 per capita of fresh and renewable water resources. Water scarcity in the region is further worsened by the imbalance between the limited water resources and the rapidly growing demands due to rapid population growth, economic development, environmental considerations, climate change and weak institutional, policy and regulatory frameworks.

It is, therefore, necessary to develop innovative technologies and policies to rationalize consumption, increase efficiency of use, reduce water losses and develop conventional and non-conventional water resources to ensure sustainability. The inability of conventional freshwater sources to meet the ever-increasing demand in several countries of the region has led to the adoption of more non-conventional water resources as integral components of the water resources of several Arab states. Desalination and wastewater reuse are the most prominent among these.

Thus, the 5th Water Arabia Conference and Exhibition will be organized by the Saudi Society for the Water Environment at Meridian Hotel in Al-Khobar during the period from 17-19 October 2017 under the theme "Sustaining Water Resources through Innovative and Reliable Water and Wastewater Treatment Technologies" as one of the tools to introduce the latest developments in the field of desalination and water recycling technologies. The main purpose of this Conference is to bring together researchers, business leaders, investors, contractors, suppliers, manufacturers, and senior decision-makers from around the globe who are interested in portraying and/or exploring new technological innovations and opportunities in the field of water desalination and distribution and wastewater treatment and reuse options with the aim of exchanging knowledge and expertise exploring opportunities for collaboration and partnership for sustainable water resources and services.

The Conference will highlight particular areas of promising technological innovations as well as features a large-scale accompanying exhibition of the newest technology and developments in the fields of water and wastewater treatment. The Conference will also include a Poster Contest and opportunity for university students to present research results in these fields.

The Ministry of Environment, Water and Agriculture (MoEWA) welcomes all delegates, sponsors, exhibitors, presenters and students from the region and globally to participate in this stimulating conference in a most conductive atmosphere.

Sincerely,

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

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

H.E. Dr. Faisal Sultan Al-Subaie
Conference Director
Deputy Minister for Water Affairs
Ministry of Environment Water and Agriculture
Kingdom of Saudi Arabia

The Water Arabia 2017 Conference is an excellent opportunity to focus on our collective efforts and to propose possible solutions to resolve critical water sustainability issues in Saudi Arabia and the Arab World.. This Conference and Exhibition has been designed to provide capacity building, to highlight innovative products and services from local and international companies and to provide a collaborative platform, in which government and industry representatives can discuss sustainability issues with an emphasis on water.

The Saudi government recognizes that water is our most precious natural resource and is highly committed to manage and develop water resources in a rational, integrated, efficient, and sustainable way for the benefit of current and future generations. This shall 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 government has already implemented plans to provide service delivery compatible with a high standard of living for the growing population. The Ministry emphasizes the respect of priorities concerning environment, safety and public health, and the importance of public awareness regarding the value of water for citizens. The Ministry encourages conservation of this precious resource in all fields of daily life.

One of the top priorities of the Ministry is the modernization of water-related services to the level of international standards and expanding the infrastructure of water and wastewater to cover the entire Kingdom. During the last five years, a large number of water infrastructure projects, worth billions of Saudi Riyals, has been completed. These projects include the installation of new desalination plants, the upgrade of drinking water and wastewater treatment facilities, and of transmission networks.

Specific areas that we seek to improve include reuse of treated wastewater for agriculture, municipal, and industrial sectors and the development of highly energy-efficient methods of water desalination using renewable energy.

The organizing committee looks forward to welcome water professionals, industry leaders, and corporate managers at this conference, which will help in a sustainable management of the water resources of Saudi Arabia and the Arab World.

Sincerely Yours,

Dr. Faisal Sultan Al-Subaie

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Dr. Abdullah O. Al-Baiz
Conference Chairman
Vice President, Engineering Services
Saudi Aramco

Dear Water and Wastewater Professionals,

With great pleasure and enthusiasm, I welcome you to the 5th biennial Water Arabia Conference and Exhibition. It has been a rewarding experience to work with the Ministry of Environment, Water & Agriculture, the Water Environment Federation, the International Desalination Association, and the Imam Abdulrahman Bin Faisal University, to plan and organize Water Arabia 2017, one of the major events of the Saudi Arabian Water Environment Association. The importance of this conference is in addressing the water challenges of the Kingdom, which is located in one of the most arid regions on Earth.

Water Arabia 2017 stresses the critical need to increase awareness about the water scarcity level in the region. All individuals should be involved in water conservation at home, at work, and in communities. Industry and government should work together to strategically plan and implement water conservation strategies, to meet the growth in both our population and economy.

This year's conference will start with two workshops on Tuesday, October 17, 2017. The workshops will provide design fundamentals for Water Desalination and Wastewater treatment. These workshops will also address operation, maintenance, troubleshooting, and the reuse aspect of treated effluent. Engineers and other professionals who need continuing education credits, will receive credits for completing these workshops.

In conclusion, I would like to thank His Excellency Mr. Abdulrahman A. Al Fadley, the Minister of Environment, Water & Agriculture, for his patronage and support of this worthwhile event. We also wish to recognize and appreciate the efforts of the organizing committee members, sponsors, exhibitors, technical presenters, and delegates.

Best Regards,

Dr. Abdullah O. Al-Baiz

Workshops
Tuesday, 17 October 2017

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 Principals of Operation.
10:00	Break
10:30	Session B – Applying Wastewater Treatment Principals of Operation to Design.
11:30	Prayer/Lunch
13:00	Session C – Wastewater STP Normal Operations, Preventive Maintenance & Troubleshooting.
14:30	Break
15:00	Session D – Applying Wastewater Treatment Principals of Operation to Problem Solving.
15:30	Workshop conclusion and Q&A Session

Advances in Water Desalination Technologies

Location: Al-Dana Hall

Facilitators:
Dr. Subhi Al-Jeshi, Saudi Aramco

Dr. Subhi Al-Jeshi is a water treatment specialist in Saudi Aramco. He received his BS 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 17 years of experience in water treatment and desalination field. Currently Subhi works for Consulting Services Department, in Dhahran providing technical support to all Aramco industrial facilities for more than 12 years. Subhi has evaluated and introduced many new technologies to Saudi Aramco.

Mohammad Al-Hajjy, Saudi Aramco

Mr. Al-Hajjy is currently serving as an environmental engineer for the Saudi Aramco Environmental Protection Department. Previous position with Saudi Arabian Basic Industries Corporation. His BS in Chemical Engineering is from KFUPM Saudi Arabia. His MS in Environmental Engineering is from Colorado State University in USA.

Agenda:

07:30	Registration
08:30	Overview of membranes technology principles
09:30	Reverse Osmosis (RO) process, system design and operation
10:00	Break
10:30	Troubleshooting RO plants problems, scaling/fouling
11:30	Prayer/Lunch
13:00	New emerging membrane technologies; Forward Osmosis, membrane distillation
14:00	Overview of thermal desalination technologies
14:30	Break
15:00	Troubleshooting thermal desalination technologies
15:30	Q&A session

Opening Ceremony

Wednesday, 18 October 2017

Al-Dana Hall

7:30 Registration

8:30 Holy Quran Recitation

8:45 Welcome Remarks

Dr. Abdullah O. Al-Baiz
VP Engineering Services
Saudi Aramco

H. E. Eng. Mansour H. Al Mushaiti
Deputy Minister of Environment,
Water and Agriculture

9:15 Exhibition Opening Ceremony & Tour

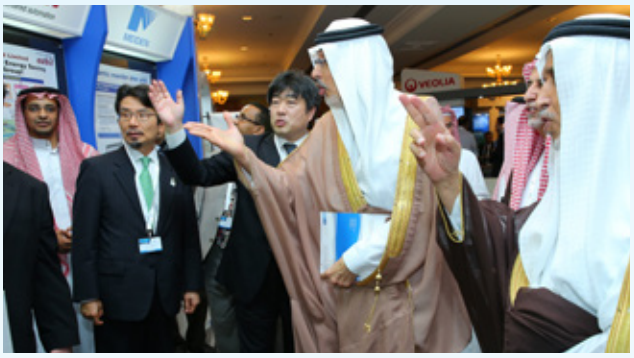
12:00 Prayer / Lunch

13:00 Opening Keynote Session

Dr. Mohamed Dahab
Past President of
Water Environment Federation

13:20 Break

13:30 Technical Sessions



Technical Sessions
Wednesday, 18 October 2017

Sessions	Advanced Water Desalination Technologies	Wastewater Treatment Technologies	Special Topics
Location	Al-Dana Hall	Okaz Hall	Al-Diwan Hall
Chairman	Dr. Corrado Sommariva	Dr. Mohamed Dahab	Dr. Mansor Kashir
Co-Chairman	Dr. Subhi Al-Jeshi	Michael Kennedy	Ibrahim Al-Nemer
13:30	**"RTR Desalination Plant: A Journey to Operational Excellence"** Sanad Beaiji, Saudi Aramco	**"Versatile Tertiary Filtration Solutions for Water and Wastewater Treatment"** Toby Sedgwick, Alfa Laval	**"A Novel Approach in Estimating and Managing the Groundwater Resources in the Kingdom of Saudi Arabia"** Dr. Martin Keller, Ministry of Environment, Water & Agriculture
13:55	**"Desalination in Saudi Arabia: Changing the Game"** Mohammed Al-Dhafiri, Advanced Water Technology Company	**"Upgrading Conventional Activated Sludge with Innovative MABR"** Majd Hamdallah, GE Water & Process Technologies	**"How Best Management Practices Reduce the Impact of Unconventional Gas Development in Water Resources"** Dr. Mansor Kashir, Saudi Aramco
14:20	**"Improvement of Multi-Effect Desalination Systems: Optimizing the Use of Vapor Compression"** Prof. Mohammed Antar, KFUPM	**"Ammonia Nitrogen Monitor HC-200NH"** Kinta Sekiguchi, HORIBA Company	**"The Safe and Secure Application of Modern Plastic Piping Systems for Water and Wastewater"** Mark Jarrett, Georg Fischer Piping Systems
14:45	Break		
15:15	**"Desalination MSF Unit in Jeddah Refinery"** Muhammad W. Riaz, Saudi Aramco	**"Anaerobic Membrane Bioreactor Followed by Reverse Osmosis Filtration: A Novel Solution for Resource Recovery in Food Industry Wastewater"** Petr Horeck, Veolia Company	**"A Field Study Evaluating the Delivery and Performance of Injected Liquid Activated Carbon for Remediation of Groundwater"** Rick McGregor, Institute Remediation Services
15:40	**"Evaluation of a Chlorine Dioxide (ClO2) Generation System for the Disinfection of RO Product Water at the SWCC Jubail Plant"** Dr. Mohammed Mahmoodur Rahman, SWCC	**"Integrated UF + RO Application in Chemical Wastewater Reuse"** Safiya Alsogair, Dow Saudi Arabia	**"Solar Water Purifier"** Norah Alquwaie, Newcastle University
16:05	**"Restoring Design Production Capacity of the RTR MSF"** Hassan Abu Al-Saud, Saudi Aramco	**"JAZAN IGCC Wastewater System for Sustainable Industrial Reuse"** Ali Salman Al-Wadani, Saudi Aramco	**"Pump Energy Saving"** Hideki Kanno, EBARA Company
16:30			**"A Study and Demonstration of High Temperature MED-TVC Desalination Technology in the Gulf Area"** Younggeun Lee, Doosan Water R&D Center
16:55	Sessions End		
18:00	Exhibition Closes		

VIP Dinner (By Invitation Only)

Wednesday, 18 October 2017
Al-Dana Hall

18:30 **Keynote Addresses**

Eng. Abdullah N. Al Zowaid
Deputy Governor,
Operations & Maintenance Affairs
Saline Water Conversion Corporation
Kingdom of Saudi Arabia

Koichi Inoue
Director for Project Coordination
Ministry of Economy
Trade & Industry (METI), Japan

19:30 **Recognize Sponsors & Poster Contest Winners**

20:00 **Dinner**

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Technical Sessions
Thursday, 19 October 2017

7:30	Registration
Location	Al-Dana Hall
8:30	Opening Keynote Session
	"Effective Policies and Management of Water Supplies Utilizing Integrated Water Resources Management Framework in Saudi Arabia"  **Prof. Walid Abdulrahman**, Vice President of the Arab Water Council and Member of Supreme Steering Committee - National Water Strategy, Ministry of the Environment, Water & Agriculture
9:00	Coffee Break

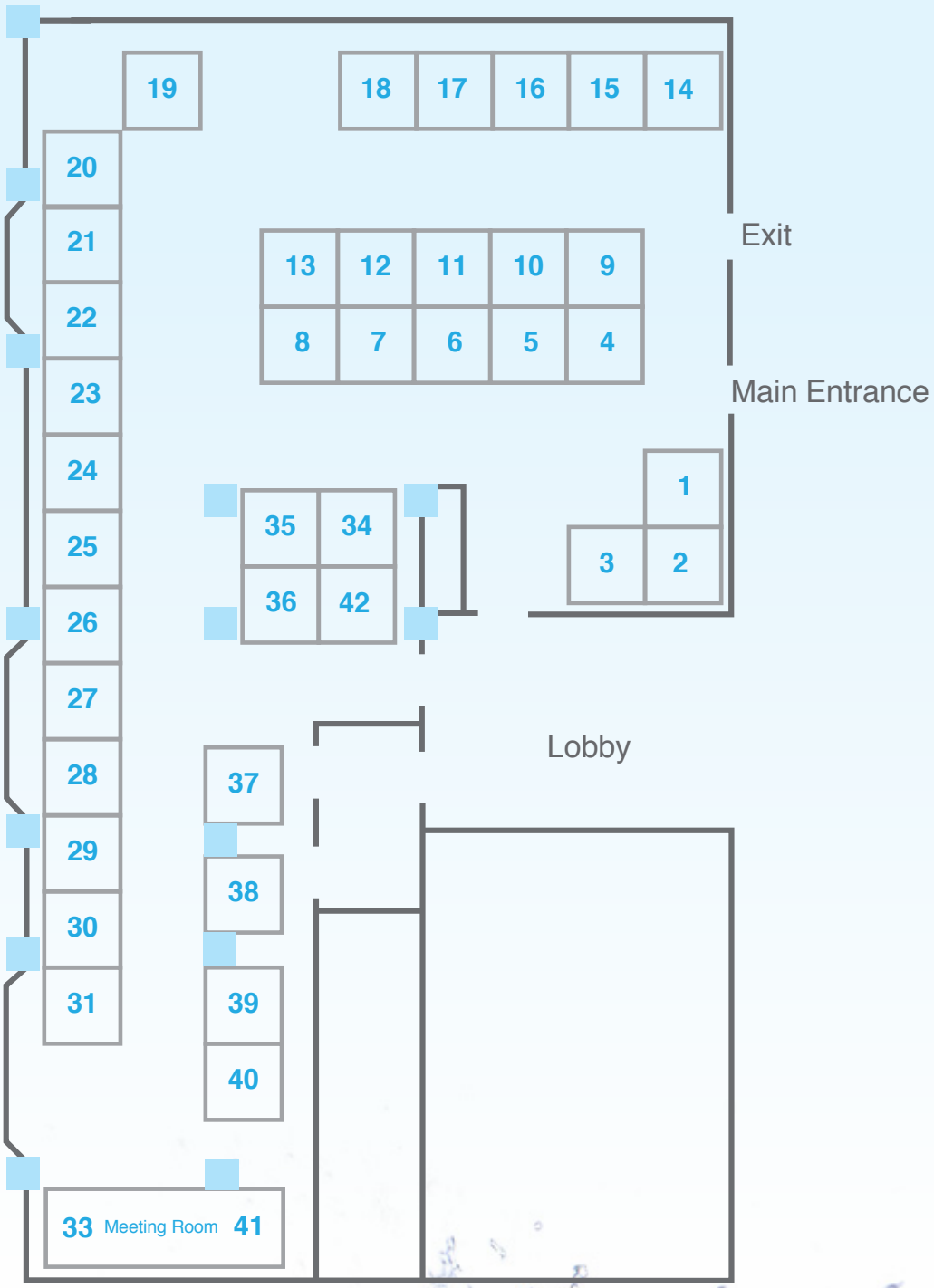
Technical Sessions

Sessions	Advanced Water Desalination Technologies	Wastewater Treatment Technologies	Special Topics
Location	Al-Dana Hall	Okaz Hall	Al-Diwan Hall
Chairman	Mohammad Al-Hajjy	Dr. Zeyad Ahmed	Bruno Villegas
Co-Chairman	Mohammad Jaweed	Subhi Aama	Mohammad Al-Falah
9:15	**"The Effect of Source Water Quality and Chlorination on Biofouling in SWCC Seawater Reverse Osmosis Plants"** Troy N. Green, SWCC	**"Membrane Bioreactor for Industrial Applications"** Hiroki Toyohara, Toray Industries	**"Water Conservation Through In-Plant Source Water Utilization"** Vilas S. Koleshwar, Ayedh K. Al-Hajri and Kamarul A. Amminudin, Saudi Aramco
9:40	**"A New Non-Phosphorous Corrosion Inhibitor for Low or Zero Hardness Water"** Sid Dunn, Baker Hughes Company	**"The Use of Palm Tree Fiber Waste as a Solid Adsorbent for Methylene Blue Dye"** Basma G. Alhogbi, King Abdulaziz University	**"Ceramic Membrane Ultrafiltration Enables Cost Effective Produced Water Reuse"** Andrea Larson, Siemens Water Solutions
10:05	**"Membrane Distillation for Water Desalination: Air Gap and Water Gap Modules"** Dr. Atia E. Khalifa, KFUPM	**"Optimizing the Use of Renewable Water with Energy Saving Wastewater Reclamation System with Membrane Technology"** Hiromichi Ishino, Kobelco Eco-Solutions	**"Removing Problematic Sulphates from Abundantly Available Seawater to Boost Oil Recovery Operations"** Nauman Rashid, GE Water & Process Technologies
10:30	Break		
11:00	**"Forward Osmosis Systems for Sea Water Desalination"** Mr. Nobu Iwata JFE Engineering	**"Debottlenecking Water-Oil Separation to Increase Water Flow Rates in Mature Oil Fields"** Dr. Maher M. Shariff, Saudi Aramco	**"Optimizing Performance in Industrial Cooling Water Systems using Treated Water as Makeup"** Dr. Paul Beattie, Nalco
11:25	**"Feasibility of Small Scale Solar Powered RO Desalination for Brackish and Saline Groundwater in Arid Regions: Abu Dhabi Case Study"** Mohamed A. Dawoud, Abu Dhabi Environment Agency	**"The Removal of Carcinogenic VOCs at the Sub-Micron Level with Low Profile Air Stripping"** Dr. Ziyad Ahmed, Saudi Aramco	**"Innovative Hybrid Ion Exchange-Nanofiltration Membrane Process for Water Desalination"** Dr. Hasan Al Abdulgader, NOMAC
11:50	**"The Innovative Energy Efficient Seawater Desalination RO System with Advanced Technologies: "Mega-ton Water System"** Yoshinari Fusaoka, Toray Industries	**"Abrasion Resistant Ultrafiltration Membrane Enables Refinery Wastewater Reuse"** Chad Felch, Siemens Water Solutions	**"Air Gap Membrane Distillation: A Future Trend in Desalination Process"** Dr. Habis AlZoubi, Imam Abdulrahman Bin Faisal University
12:15	**"Successful Long-Term Operation Results of a Seawater RO Plant Using Hollow-Fiber Type CTA-RO Membrane Modules"** Yuki Miura, TOYOBO Company	**"Sustainable Wastewater Treatment and Reuse Options for Commercial and Residential Buildings"** Dr. Shamim Shaukat Khan and Dr. Shifana Fatima Kaafil, Dar Al Hekma University	**"Water Safety Plan"** Mohammad Y. Al-Yagout and Abdullah A. Al-Ammar, Saudi Aramco
12:40	Prayer & Lunch		
13:40	Closing Remarks		

Exhibitors

Amiantit Saudi Arabian Co. Booth: 15	
G.E. Water & Process Technologies Booth: 16, 17 &18	
Saudi Aramco Booths: 1, 2 & 3	
Australian Laboratory Services Co. LTD Booth: 11	
ILF-Tecon & Partners Engineering PSC Booth: 20 & 21	
ABB Electrical Industries LTD Booth: 14	
BMS Booth: 30	
Kemira Chemicals - Alwaslchem Booth: 37	
AES Arabia LTD Booths: 34 & 35	
Delmon Company LTD Booth: 22	
Mashail Future Trading Co. Booths: 7	
Alfa Laval Middle East LTD Booth: 13	
Ebara Pumps Saudi Arabia LLC Booth: 6	
MoEWA (Ministry of Environment Water & Agriculture) Booth: 36 & 42	
Alkhorayef Water & Power Technlogies Co. Booths: 23 & 24	
Estedama Booth: 39	
PureLine Booth: 40	
Alwasail Booth: 9 & 10	
Freih Bin Owaidha Al-Qahtani Sons Co. Ltd. Booth: 28 & 29	
Prince Mohammad Bin Fahd University Booth: 31	
Japanese Trade Delegation Booths: 25, 26 & 27	
Siemens Water Solutions Booth: 12	
Technology Products & Services Co. LTD with Al Kuhaimi Booth: 4 & 5	
Toray Membrane Middle East LLC Booth: 8	
Wetico (Water & Environment Technologies Co.) Booth: 19	
Water Environment Federation Booth: 38	

Exhibition Layout



Notes

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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

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 & Technical Support 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

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

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