



WATER CONVENTION ADVANCE PROGRAMME

2016 THE GLOBAL PLATFORM TO SHARE AND
CO-CREATE INNOVATIVE WATER SOLUTIONS

10-14 JULY 2016

SANDS EXPO & CONVENTION CENTRE
MARINA BAY SANDS, SINGAPORE



REGISTRATION FOR WATER CONVENTION OPENS IN FEBRUARY 2016.
VISIT [HTTP://WWW.SIWW.COM.SG/WATER-CONVENTION](http://www.siww.com.sg/water-convention) FOR MORE INFORMATION.

www.siww.com.sg

Water Convention is jointly organised by:



SINGAPORE INTERNATIONAL WATER WEEK

The Singapore International Water Week (SIWW) is the global platform to share and co-create innovative water solutions. The biennial event gathers stakeholders from the global water industry to share best practices, showcase the latest technologies and tap business opportunities. SIWW is part of the strategic programme of the Singapore Government to grow the water industry and to develop water technologies.

Held in between the main SIWW editions, the SIWW Spotlight series are exclusive by-invitation events to continue the dialogue from SIWW and foster ongoing exchanges on pressing challenges faced by the water industry worldwide. This meeting of minds focuses on critical issues and discussions in greater

depth, where the outcomes will shape the programme and content for SIWW.

These events are organised by Singapore International Water Week Pte Ltd, a company set up by Singapore's Ministry of the Environment & Water Resources and PUB, Singapore's national water agency.

The 7th Singapore International Water Week will be held in conjunction with the 5th World Cities Summit and the 3rd CleanEnviro Summit Singapore, from 10 – 14 July 2016 at the Sands Expo and Convention Centre, Marina Bay Sands in Singapore.

PROGRAMME AT A GLANCE

DATE	AM	LUNCH	PM	EVENING		
10 JUL (SUN)	Whole-of-Government Smart Nation Pavilion				Opening Ceremony & Welcome Reception Guest-of-Honour: Dr Tony Tan Keng Yam, President of Singapore	
	WCS and SIWW Site Visits		World Cities Summit			
	World Cities Summit	Networking Lunch				
	Networking Golf & Lunch		Water Leaders Summit Lunch and Insights 1			
	Young Water Leaders Summit					
	Hot Issues Workshop					
	TechXchange					
11 JUL (MON)	Whole-of-Government Smart Nation Pavilion				Lee Kuan Yew Prize Award Ceremony & Banquet Guest-of-Honour: Mr Lee Hsien Loong, Prime Minister of Singapore	
	City Solutions Singapore					
	In-Conversation	Opening Plenary	Networking Lunch	Lee Kuan Yew Prize Lectures and Lee Kuan Yew World City Prize Forum		Water Convention Poster Presentation
			Water & Environment Ministerial Welcome Lunch	Hydro Pitch Day		
			ASEAN Plus Three Ministers Forum			
12 JUL (TUES)	Whole-of-Government Smart Nation Pavilion				Networking Events by Partners	
	City Solutions Singapore					
	World Cities Summit		Networking Lunch	World Cities Summit		China Business Forum
	Young Water Leaders Summit					Southeast Asia Business Forum
	Water Leaders Summit Roundtable	Water Leaders Summit Insights 2	Water Leaders Summit Closing	Networking Lunch		Water Convention Parallel Tracks
	Water Convention Opening Plenary	Water Leaders Summit Insights 3				
	Water Convention Parallel Tracks		Smart Water Forum			
CleanEnviro Summit Singapore		Networking Lunch	CleanEnviro Summit Singapore			
13 JUL (WED)	Whole-of-Government Smart Nation Pavilion				Closing Dinner	
	City Solutions Singapore					
	India Business Forum		Networking Lunch			
	Latin America Business Forum					
	World Cities Summit			WCS Site Visits / Networking Events		
	Water Convention Parallel Tracks			Water Convention Parallel Tracks		Water Convention Closing Plenary
	Singapore's Water-Energy-Waste Nexus Journey: Deep Tunnel Sewerage System Phase 2 & Integrated Waste Management Facility			Desalination and Water Reuse Business Forum		
	Industrial Water Solutions Forum			Industrial Water Solutions Forum		
CleanEnviro Summit Singapore		CleanEnviro Summit Singapore				
14 JUL (THU)	SIWW and CESS Site Visits					

● World Cities Summit (WCS) ● Singapore International Water Week (SIWW) ● CleanEnviro Summit Singapore (CESS) ● Joint Programme

Information accurate as of 1 March 2016

WATER CONVENTION 2016

Now into its seventh edition, Singapore International Water Week (SIWW) 2016 reinforces the global sharing and co-creation of innovative water solutions. Aligned with this objective, Water Convention offers a platform for water experts to share their solutions and practical experience, and address the challenges that spans over five different themes.

1. **DELIVERING WATER FROM SOURCE TO TAP**
2. **EFFECTIVE AND EFFICIENT WASTEWATER MANAGEMENT**
3. **WATER FOR LIVEABILITY AND RESILIENCE**
4. **WATER QUALITY AND HEALTH**
5. **WATER FOR INDUSTRIES**

PROGRAMME COMMITTEE

Harry Seah	Chief Engineering & Technology Officer, PUB Singapore
Darryl Day	Chair, International Water Association – Australian National Committee (Australia)
Alan Baird	Senior Water Supply and Sanitation Specialist, Asian Development Bank (Philippines)
Albert Janssen	Manager Water R&D, Global R&D Coordinator Water Handling, Shell (The Netherlands)
Andrew Shaw	Global Practice and Technology Leader, Black & Veatch (USA)
Chong Hou Chun	Senior Deputy Director, Water Supply Network, PUB (Singapore)
Corinne Trommsdorff	Programme Manager, International Water Association (UK)
David Cunliffe	Principal Water Quality Adviser, Department of Health (South Australia)
Emani Kumar	Deputy Secretary General and Executive Director, ICLEI South Asia (India)
Ganesh Pangare	Regional Director, International Water Association (Asia-Pacific)
Gary Amy	Emeritus Professor, Clemson University (USA); Visiting Professor, National University of Singapore (Singapore)
Glen Daigger	President, One Water Solutions LLC (USA)
Hamanth Kasan	General Manager – Scientific Services Division, Rand Water (South Africa)
Hitoshi Mimura	President & CEO, Nagaoka International Corporation (Japan)
In. S. Kim	Professor, Gwangju Institute of Science and Technology (Korea)
Indira Chakravarty	Chief Advisor, Water & Sanitation Support Organisation Public Health Engineering Department, Government of West Bengal (India)
Jennifer de France	Technical Officer, World Health Organisation (Switzerland)
Jonathan Clement	CEO, PWN Technologies (The Netherlands)
Marion Savill	Executive Director, Affordable Water (New Zealand)
Nilaksh Kothari	General Manager, Manitowoc Public Utilities (USA)
Niwa Terutake	General Manager, Meiden (Singapore)
Ong Choon Nam	Director, NUS Environmental Research Institute, National University of Singapore (Singapore)
Pascal Dauthuille	Director, Projects, CIRSEE, Suez Environnement (France)
Paul-Joel Derian	Senior Vice President Research & Innovation, Suez Environnement (France)
Philip Rolchigo	Vice President, Engineering & Technology Innovation, Pentair (USA)
Robert Bos	Senior Advisor, International Water Association (Switzerland)
Robert Renner	Executive Director, Water Research Foundation (USA)
Robert Skinner	Professorial Fellow, Centre for Water Sensitive Cities, Monash University (Australia)
Stephanie Rinck-Pfeiffer	Managing Director, Global Water Research Coalition (Australia)
Tao Li	Regional Director, International Water Association (China)
Wah Yuen Long	Advisor (Used Water), PUB (Singapore)

MESSAGE FROM THE EXECUTIVE DIRECTOR OF ENVIRONMENT AND WATER INDUSTRY PROGRAMME OFFICE (EWI)



PETER JOO HEE NG

Executive Director
Environment and Water Industry Programme Office
& Chief Executive
PUB Singapore

The wait is almost over. The Singapore International Water Week (SIWW) takes place from 10 to 14 July 2016 at the Marina Bay Sands Singapore.

The biennial SIWW is now a preferred gathering for thought leaders and practitioners in water management. 20,000 participants from 133 countries and regions came to Singapore for SIWW in 2014. SIWW 2016 will again gather together, for dialogue and discussion, the world's top leaders in the water sector, from government, utilities, international organisations, industry and academia.

SIWW offers an unprecedented networking opportunity to interact and confer with high-level officials, heads of industry and opinion makers. You can also expect to rub shoulders and exchange viewpoints with mayors of leading international cities who are attending the World Cities Summit and CleanEnviro Summit Singapore, both held alongside SIWW 2016.

We look forward to hearing from Chad Holliday (Chairman, Royal Dutch Shell), Peter Brabeck, (Chairman, Nestlé), Tharman Shanmugaratnam (Deputy Prime Minister, Singapore), Han Seung-Soo (UN Secretary-General's Special Envoy for Disaster Risk Reduction and Water,) and other luminaries at the **Water Leaders Summit**, which is always a SIWW highlight.

The **Water Convention** is also *le plat principal* on the SIWW programme. This year's Water Convention will focus squarely on strategy, innovation and available solutions. From high-level system resilience and sustainability, to potable water delivery, to water quality and health, to waste water management, and to specific industrial requirements, I am certain that participants will again find insight and inspiration at the Water Convention during SIWW 2016.

There is more! Learn about global business trends and opportunities at the **Business Forums**. Connect to leading solution providers and get hands-on with the latest innovations at our largest ever **Water Expo @ City Solutions Singapore**. In addition, attend and benefit from deliberations at the **Industrial Water Solutions Forum** and **TechXchange**, component events directed, respectively, at the industrial water space and the commercialisation of emerging water technologies.

My gratitude to the Water Convention Programme Committee, whose ingenuity and hard work produced the very exciting agenda that awaits this year's participants. And a special thank you to the International Water Association, our steadfast collaborator these last eight years. Without the IWA, the Water Convention would surely not be the shiny jewel that it is today.

My colleagues and I are highly anticipative of a most productive and profitable SIWW 2016.

See you all in Singapore in July 2016!

MESSAGE FROM THE PRESIDENT OF THE INTERNATIONAL WATER ASSOCIATION (IWA)



HELMUT KROISS

President
International Water Association (IWA)

The Singapore Water Week is a well-established meeting point for all those who are contributing to solving the growing water problems faced in almost every part of the globe, and to meet the ambitious UN Sustainable Development Goals. The Singapore Water Convention is the event where recent scientific research results and technological developments combine with a full-scale experience of up-to-date urban water quality and quantity solutions. This is reflected in the 5 priority topics of the Water Convention, developed by experts from PUB Singapore, together with the International Water Association:

1. Delivering Water from Source to Tap
2. Effective and Efficient Wastewater Management
3. Water for Liveability and Resilience
4. Water Quality and Health
5. Water for Industries

The water situation in Singapore is itself unique in many respects, and the convention and the city showcase of a great variety of innovations in science, technology and full-scale solutions. These are increasingly interesting for many cities and regions worldwide, irrespective whether they are located in high-, middle- or low-income countries or in climates very different to those experienced in Singapore.

Water Convention is a global meeting point for researchers who are driving scientific developments in the water sector, as well as experts from the most advanced water industries. Singapore International Water Week is attracting decision makers such as politicians and economists. Beyond the exchange of knowledge and experience, the event offers an outstanding occasion for networking and building up personal relationships.

This is becoming increasingly relevant to deliver solutions for the complex urban water management problems we face, and cannot be replaced by electronic communication. Complexity can be overcome by the teamwork of experts from different disciplines with different experiences. Those able and willing to work with all water stakeholders to create a liveable environment for humans and nature based on sound scientific knowledge.

MESSAGE FROM THE CO-CHAIRS OF THE WATER CONVENTION 2016 PROGRAMME COMMITTEE



HARRY SEAH
Chief Engineering and
Technology Officer
PUB, Singapore

We are delighted to welcome you to Singapore for the seventh Water Convention, a flagship event of the Singapore International Water Week (SIWW) from 10-14 July 2016. Growing steadily from the first edition, the Water Convention has evolved into a cornerstone of SIWW, providing delegates with an invaluable platform to share expertise, current developments in the water sector and inspire ideas to meet global water challenges.

During the Water Convention 2016 Call for Papers, more than 500 papers from 50 countries were received, covering diverse topics such as water and wastewater technologies and operations, building resilience in early urban planning and to broad-reaching topics like water quality and health.

We would like to express our gratitude and appreciation for your overwhelming response and continued support for the Water Convention. It was no easy task to finalise the programme as many of the papers submitted were well-written and relevant to the critical issues we face today. Over the years, we are heartened by the increase in numbers and quality of content. Interestingly, we have noted a shift from the initial focus on engineering solutions and technical viewpoints, to a broader integrated focus which combines expertise from water engineering, urban planning and sociology to design water resilient cities and conservation programmes. We are confident that you will find the Water Convention 2016 programme an interesting and enlightening one.

In addition to the Technical Sessions, delegates can also look forward to two main highlights – the Hot Issues Workshop and the Poster Presentations. The Hot Issues Workshop series on Sunday 10 July 2016 will kick-start the Water Convention with a comprehensive overview of the five main themes, featuring key topics such as desalination pre-treatment, anaerobic digestion enhancement, development of urban water systems for flood and drought resilient cities and water management for the mining industry. At the hugely-popular Poster Presentations, over 200 presenters will discuss their ideas and engage the judges in a lively Q&A session. This segment is one of the most anticipated sessions, synonymous for intense discussions and forging new connections over the years.

With such an exciting programme, we believe that this year's convention will bring more fruitful discussions and knowledge sharing. We hope you will find the Water Convention, including the technical sessions, Hot Issues Workshop and other programmes educational and interesting. We look forward to welcoming you to the Singapore International Water Week's Water Convention in July 2016.



DARRYL DAY
Chair
International Water
Association - Australian
National Committee

WATER CONVENTION 2016 PROGRAMME

SESSIONS	Theme 1: Delivering Water from Source to Tap		Theme 2: Effective and Efficient Wastewater Management		Theme 3: Water for Liveability and Resilience	Theme 4: Water Quality & Health	Theme 5: Water for Industries
	(A) Network	(B) Treatment	(A)	(B)			
Sunday 10 July	Water Convention Hot Issues Workshops						
	Opening Ceremony & Welcome Reception						
Monday 11 July	In-Conversation						
	Opening Plenary						
	Lee Kuan Yew Prize Lectures and Lee Kuan Yew World City Prize Forum						
	Water Convention Poster Presentation						
Tuesday 12 July	Water Convention Keynote Plenary						
	Network asset management and condition assessment	Desalination - Application	Membrane-based processes	Drainage & sewer management	Water's Contribution to Sustainable Development Goals	Policy & Regulation frameworks for water quality	Sustainability (Frameworks and Policies)
	Network maintenance and rehabilitation	Desalination - Energy	Advanced wastewater treatment (1)	Sensors for wastewater monitoring	Frameworks for integrating water systems within urban planning	Going Full Circle: Water Safety Plans and Sanitation Safety Plans	Recovery, Reuse, Recycling
	Smart Water Grid - Sensor Technologies	Water Reuse	Advanced wastewater treatment (2)	Advanced Tertiary Treatment	Application of integrated water systems planning	Protection of surface / ground water quality	Upstream Oil&Gas
	Smart Water Grid - Data Analytics for Operations and Optimization	AOP & Disinfection	Efficient Carbon Management	Synergies between centralized & decentralized treatments	Water Sensitive Urban Design	Advanced detection methods / technologies & Contaminants of emerging concern	Biological Treatment
Wednesday 13 July	Water Conservation Measures & Programmes	Membrane-based Technologie	Full-flow Anaerobic MBR	Ecosystems and Green Infrastructure	Delivering flood resilient cities	Real-Time Sensors and Remote Sensing Data	Physical/ Chemical Treatment
	Water Conservation - Strategies and User Engagement	Challenges of NOM removal	Nutrients / resource recovery & use	Environmental Impact	Assessing resilience and livability	QMRA, decision analysis & surveillance	-
	Water Convention Closing Plenary & Best Poster Awards Presentation						

Information accurate as of 15 Feb 2016

WATER CONVENTION 2016 HOT ISSUES WORKSHOPS

Hot Issues Workshops covering critical issues – from desalination pre-treatment to building climate-resilient cities – will be offered during Singapore International Water Week 2016, all taking place on Sunday, 10 July 2016. These workshops will run on a highly interactive, panel discussion-

based format, providing a focused platform to stimulate more open engagement between experts and delegates on 'hot' or emerging issues facing the water industry. This will serve as the perfect opener to the technical sessions on 12-13 July 2016.

WORKSHOP PROGRAMME

The details of the six workshops are as follows:

DATE	TIME	WORKSHOP TOPICS
SUNDAY 10 July 2016	MORNING 0900 - 1230hrs	Workshop 2a: Mainstream Deammonification: How far have we come & how do we get to the finishing line?
		Workshop 3a: Developing Urban Water Systems For Flood And Drought Resilient Cities
		Workshop 4: One Water, One Health
	AFTERNOON 1400 - 1730hrs	Workshop 1: Pre-Treatment Challenges for Desalination
		Workshop 2b: Anaerobic Digestion Enhancements
		Workshop 3b: Policies And Governance To Enhance Urban Water Resilience

For more details regarding the content of the topics and the speakers, please see www.siww.com.sg

WORKSHOP SYNOPSIS

Workshop 1: Pre-Treatment Challenges For Desalination

The dominant means of desalination is reverse osmosis (RO) which requires adequate or optimal pre-treatment to remove solids and organics. Improved pre-treatment will result in lower operational costs for RO and improved recovery. Despite the importance of seawater desalination pre-treatment, it has not been seriously evaluated or optimized.

In most cases, pre-treatment for desalination RO has been simply a matter of applying those technologies that are used in classical filtration or polymeric filtration. Given the magnitude of the difference between fresh waters and seawater, it is critical

that technology applied is more appropriately selected based on the specific nature of seawater. By not placing adequate seawater desalination pre-treatment, cost of desalinated water may increase and /or initial desalination plant design capacity may be reduced.

The workshop will promote discussion on the challenges in the pre-treatment processes of desalination and the economics of different pre-treatment technologies. It is hoped that this workshop will raise awareness of the importance of pre-treatment processes among Utilities, academia and industries.

Workshop 2a: Mainstream Deammonification: How Far Have We Come & How Do We Get To The Finishing Line?

The Anaerobic Ammonium Oxidation (Anammox) pathway can significantly reduce oxygen and carbon requirements, as compared to a conventional nitrification-denitrification process. By adopting Anammox, aeration energy required for Nitrogen removal can be reduced. As Anammox process requires no organic carbon input, the influent organics are freed up for biological phosphorus removal and for conversion into methane in anaerobic digesters. Currently, many full-scale side stream deammonification have been in successful operation and oxygen consumption for side-stream nitrogen removal was reduced by 50%. However, savings gained from side-stream Anammox are limited due to the small flow volume. If Anammox were to be efficiently applied to mainstream deammonification, the cost savings will be significantly impactful. However, limitations exist for mainstream deammonification, including the lower temperature and lower NH₄ concentration in the mainstream, competition for nitrite with nitrite oxidizing bacteria (NOB) and the long start-up time.

Anammox process is operationally challenging. Despite these challenges, it is clear that Anammox presents strong technical merits and incentives in the pursuit of energy neutral/positive waste water treatment. If Anammox were to be efficiently applied to mainstream deammonification, the cost savings will be significantly impactful.

In the 2 years since the in-depth discussion on fundamental research and pilot-scale anammox plants around the world at the Water Convention 2014, anammox processes remains a hot topic and it would be timely to investigate the discoveries and enhancements which has been made since 2014. Topics to be discussed in this workshop include the utilization of Anammox in A-B process, integration of Anammox with Nereda for granular sludge technology and case studies of implementation in WWTP and its associated operational challenges and limitations.

Workshop 2b: Anaerobic Digestion Enhancements

Sewage sludge is nutrient-rich organic materials generated from the treatment of waste water where organic substances not completely degraded are left behind as residuals and biosolids. Due to its high organic and nutrient content, the beneficial reuse and resource recovery of biosolids is increasingly seen as an economically and ecologically important part of the wastewater treatment process.

Anaerobic digestion (AD) of sludge is globally used in wastewater treatment plants to reduce solid mass and in doing so, reduce pressure on final disposal and the sludge volumes to be transported off the site. Energy is also recovered from the process by production of biogas. Among various methods for sewage sludge treatment and utilization, AD as the primary technology coupled with other complementary processes has the lowest carbon footprint. However, as the microbial

population within the AD process is diverse and complex, there is research impetus to enhance fundamental understanding to improve energy and nutrient recovery from the rich biosolids. Currently, a number of pre-treatment processes can be used in conjunction with AD to further enhance energy recovery from biogas, such as thermal hydrolysis. Moving forward, AD and a series pre-treatment process will continue to play a key role in energy generation from wastewater organics, particularly so in tropical climates which is conducive to biological kinetics.

The workshop will focus on the discussion of technologies and pre-treatment processes that enhance biogas production from AD, which will include thermal hydrolysis, enzymatic hydrolysis, recuperative thickening, co-digestion with high strength organics, and ultrasonication. It will also cover the overview and utilities' perspectives of some of the implementation.

Workshop 3a: Developing Urban Water Systems For Flood And Drought Resilient Cities

Climate change has resulted in the increased occurrence and intensification of extreme weather which adversely impacted the cities' water infrastructure. In the last 70 years, floods have increased more than any other types of natural disaster in the Asia Pacific region. In the meanwhile, climate change also poses the threat of severe droughts and water stress. To strengthen the adaptive capacity and resilience of a city, holistic and flexible approaches have to be adopted. Urban planning and management should be aimed towards Disaster Risk Reduction (DRR), resilience-building and sustainable development. Engineering solutions and technologies,

together with measures that take into account ecological and social considerations, combined with appropriate governance and institutional arrangements, are necessary to create a sustainable, efficient, adaptive, and resilient city.

The workshop is aimed at promoting discussion on importance of building resilience in early urban planning and the challenges to deal with extreme weather events. Case studies will be presented from cities that experienced severe flood and drought, with key stakeholders sharing the planning and governance challenges that need to be addressed.

Workshop 3b: Policies and Governance to Enhance Urban Water Resilience

According to the Intergovernmental Panel on Climate Change (IPCC), resilience refers to the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change. While the concept of resilience is often linked to climate change, the related issues are much broader. The capacities of social and ecological systems to adapt to stress and change have always existed. In fact, with urban growth and rapid changes in the natural environment, including water resources available for socio-economic development, rapid changes in scientific and technological developments and increasing social expectations, urban resilience will become an increasingly important component of political, policy and governance agendas of all cities in the future.

The aim of this workshop is to hold in-depth discussions on policies and governance to enhance urban water resilience with focus on Singapore and on the role and contributions of scientific water journals in knowledge dissemination. Discussions will focus on preparedness, policy responses, roles of institutions (formal and informal), governance perspectives and practices, infrastructure development, overall investments, science and technology, etc.

This workshop is part of the Inaugural International Conference of Water Policy and Governance (ICWG), organised by the Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore.

Workshop 4: One Water, One Health

One Water addresses an integral concept of water as reflected in the proposed Sustainable Development Goal 6: *Ensure availability and sustainable management of water and sanitation for all*. This includes access to safe, reliable and sustainable drinking water and sanitation services, adequate waste water management practices (including re-use), water efficiency and the protection of essential services by aquatic ecosystems, under the umbrella of integrated water resources management.

The One Health concept is a global strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment. It specifically focuses on the synergies in preventive action for human public health, veterinary public health, animal health and ecosystem health. With a view to improve health and

well-being through the prevention of risks and the mitigation of effects of crises that originate at the interface between humans, animals and their various environments, the One Health initiative aims to promote a multi (cross) sectoral and collaborative approach, and a “whole of society” approach to health hazards, as a systemic change of perspective in the management of risk.

The workshop aims to raise the profile of water (and sanitation) in the context of One-Health with a focus on discussion of water quality affected by animal waste, the role of quality management for water resources and water/sanitation services in the event of disease outbreak and risk management of antimicrobial resistance attributable to antibiotics contamination of water resulting from their use in livestock.

WHO SHOULD ATTEND

The workshops will be of interest to industry experts, academic, policy makers, and practitioners. The Hot Issues Workshops are open to all Water Convention delegates.

Nominal fee applies to exhibitors and trade visitors who wish to attend the workshops. Please check out the website for more information.

LIST OF ORAL PRESENTATIONS

THEME 1A: DELIVERING WATER FROM SOURCE TO TAP – NETWORKS

Advanced Network Cleaning: A Multi-level Approach For Diagnosis Of Discoloration Risk
D. Sinapah, J. Marsaly, S. Luo. SUEZ Environnement (France)

Advanced Pressure Management
V. Fournier, D. Duccini. SUEZ Environnement (France)

An Asset Lifetime Model For Improving Replacement Policy Efficiency In Water Supply Systems
F. Cubillo. Canal de Isabel II Gestión (Spain)

AQUADVANCED QUALITY : A Smart Real Time Platform For Drinking Water Network Quality Monitoring
F. Campan, Z. Do Quang, N. Vayatis. SUEZ Environnement (France)

Behavioural Nudges – An Innovative Approach To Influence Water Use Behaviour Change
J. Bhagwan, M. Visser, G. Smith, K. Brick. Water Research Commission (South Africa)

Bounds On Water Quality Sensor Network Performance From Design Choices And Practical Considerations
P. van Thienen, B. de Graaf, J. van Summeren, A. Vogelaar. KWR Watercycle Research Institute (Netherlands)

Development of Best Practices for Water Usage in Trades in Hong Kong
C. W. S. Chan, T. Y. Lai. AECOM Asia Co. Lte (Hong Kong)

Development Of Smart Water Grid To Enhance The Operations Of Water Supply Network In Singapore
J. Goh, K.H. Ong, K. C. Lai, A. Preis, M. Iqbal. PUB (Singapore)

Dynamic Asset Management: Asset Management Evolution With Smart Network
H. Yin, L. Diakhate. SUEZ Environnement (France)

Importance Of Hardware And Software Of On-Line Monitoring Stations For Long Time Day-To-Day Operation In Distribution Networks
J. Raich-Montiu. R. Peris, Roger, J. Gutiérrez, D. Milán, A. Weingartner. s::can Messtechnik GmbH (Spain)

Mandatory Water Efficiency Management Plan Submission By Non-domestic Users And Related Initiatives
W. Wong, H. T. Ng, G. Kalyanaraman, Y. L. Yuen. PUB (Singapore)

Meeting Of Waters: A Large Scale Model Of The Distribution Network
M. IJszenga, B. Rietman, E. Driessen, B. De Graaf. Vitens N.V. (Netherlands)

New Method Of Pipe Replacement Without Cut Off Of The Water Supply
T. Isoyama, K. Nakai, N. Takei, T. Konishi. Yokohama Waterworks Bureau (Japan)

Prioritizing Capital Spending Using Non-Invasive Acoustics To Help Identify Good Pipe Vs Bad Pipe
D. Johnston, R. Titus, M. Wolan. Echologics (Canada)

Smart Water Customers Profiling And Engagement
J. Batisse, K. Claudio, B. Evain. LYRE (R&D centre of SUEZ) (France)

The Response Action Of Taiwan Water Corporation For Drought Resistance
S. J. Lin, N. T. Hu, G. J. Wang, K. S. Tsai. Taiwan Water Corporation (Taiwan - China)

Water Rust To Water Trust In India
V. Manickam. We CAN Control Corrosion in India Network (Malaysia)

Will Real Time Information Induce Change In Shower Behaviour?
T. F. Sing. National University of Singapore (Singapore)

THEME 1B: DELIVERING WATER FROM SOURCE TO TAP – TREATMENT

Demonstration Of A Wireless Biofouling Monitoring And Control Platform For Reverse Osmosis Plants
M. Arnaldos, C. Sanroma, J. Malfeito. Acciona Agua SA (Spain)

Demonstration Of CCD Technology As Third Stage RO System At Kranji NEWater Factory
X. Q. King, Y. Wang. PUB (Singapore)

Design Considerations For Implementing Ceramics In New And Existing Polymeric UF Systems
C. Kurth, B. Wise, S. Smith. Nanostone Water Inc. (United States)

Direct Potable Reuse - A Feasible Water Management Option
J. Lahnsteiner, P. van Rensburg, J. Esterhuizen. VA TECH WABAG (Austria)

Environmentally-Friendly Desalination Plants
B. Liberman. IDE Technologies (Israel)

Membrane Optimization For Desalination With State-of-art Early Warning Online Monitoring System
V. Sim, W. Krantz, T. H. Chong, T. Fane. CH2M Hill Singapore & Nanyang Technological University (Singapore)

MP UV/H2O2 Treatment For Organic Contaminant Control And Byproduct Mitigation
A. Martijn, J. Kruithof. PWN Technologies (Netherlands)

Footnote:

The confirmed list of presentations is accurate as of March 2016. For an updated list of presentations, please visit www.siww.com.sg.

LIST OF ORAL PRESENTATIONS

NOM-removal By The SIX

G. Galjaard, E. Koreman, D. Metcalfe, G. Moore, P. Ericsson. PWN Technologies (Netherlands)

Opportunities And Challenges For Ultraporous RO Membranes

A. Fane, R. Wang, T. H. Chong, J. W. Chew. Nanyang Technological University (Singapore)

Organic Matter Removal In Biofilters To Achieve Biologically Stable Water Downstream Of The Process

J. Ortiz Mingo. Acciona (Australia)

Production Of Biostable And Taste & Odor Free Drinking Water - A Multibarrier Concept Pilot Testing

J. Wang, Y. Zhang, E. Wong, R. Xie, Y. Xing, Q. Chow. Xylem Services GmbH (Germany)

Sustainable Desalination

A. Alshaiikh. Advanced Water Technology (Saudi Arabia)

Sustainable Technologies for Seawater Desalination

G. Amy, N. Ghaffour, P. Saikaly, P. Hong, T. Leiknes, S. Lattemann. National University of Singapore (Singapore)

THEME 2A: EFFECTIVE AND EFFICIENT WASTEWATER MANAGEMENT

0.5 MGD Full Scale Demonstration Of Low Energy No Aeration (LENA) MBR Using Reciprocating Submerged

J. Ho, G. Lee, H. K. Roh. Doosan Hydro Technology (United States)

Aerated Anoxic Process For Nitrogen Removal In Carbon-Limited Conditions

D. Cheng, R. Conde, H. Ding, M. Pamperin, A. Erdogan. Evoqua Water Technologies Pte Ltd (Singapore)

Aerobic Granular Biomass Technology: Advancements In Design, Applications And Further Developments

A. Giesen, B. de Bruin, M. van Loosdrecht, S. Robertson. Royal HaskoningDHV (Netherlands)

Application Of Powdered Carrier Activated Sludge (POCAS) Process Using A Novel Diatomite (ADSORICA)

Z. Li, E. T. Saw W. Fang, L. C. Lim, Q. Wang. Kytolink Tech Pte Ltd (Singapore)

Bioaugmentation in Sludge Treatment of Wastewater - A Techno-Economic Analysis

R. Adin. Adin Holdings (Israel)

Concept, Design & Operation Of Modern Flat Sheet MBR Modules

P. Ohle, L. Bohmerich, S. T. Choo. Newterra GmbH (Germany)

Demonstration Of Innovative MABR Low-Energy Nutrient Removal Technology At Chicago MWRD

J. Peeters, N. Adams, Z. Long, P. Cote, T. Kunetz. GE Water & Process Technologies (Canada)

Enhanced Biological Phosphorus Removal Under Tropical Conditions

Y. Law, R. H. Kirkegaard, A. Cokro, K. Arumugam, C. Xie, X. H. Liu, S. Schuster, D. I. Drautz-Moses. Nanyang Technological University (Singapore)

Extractive Resource Recovery Options For Water Resource Reclamation Facilities Of The Future

W. Khunjar, A. Pramanik, R. Latimer, S. Jeyanayagam, K. Gilmore, D. Batstone, C. Mehta. Hazen and Sawyer (United States)

Inducing Biomass Granulation To Achieve Improved Settability In BNR Processes

J. Sandino, P. Nielsen, T. Constantine, D. Houweling, L. Havsteen, A. Willoughby. CH2M (United States)

Introduction Of Alternative Oxygen Source For A Septage Treatment Plant

J. P. Serias, H. Manalo, S. Cerbito. Manila Water Co. Inc. (Philippines)

Liquid Process Selection For One Of The Largest Advanced WRPs In The World At Tuas, Singapore

S. H. Koh, R. Chandran, Y. W. Loh, A. Shaw, A. Niranjana, C. C. Goh. PUB (Singapore)

Mass Balances Of AB Process Pilot Plant In Warm Climate

Wellym, M. Choo Kun. DHI Water and Environment (Singapore)

Membrane Bioreactor Operation At Short Solid Retention Time - An Energy Efficient Approach

G. Tao, Y. Lee, J.T. Yen, S. C. Chua, Y. L. Wah, Y. A. Ghani, H. Seah. PUB (Singapore)

Membrane Fouling Mechanisms In Single - And Two-Stage Anaerobic Fluidized-Bed Membrane Bioreactors

Y. Liu, B. Wu, W. Lim, P. McCarty, A. Fane. Nanyang Technological University (Singapore)

Operational Experience Of Large-Scale Membrane Bioreactors In An Underground Sewage Treatment Plant

M. Tang, W. Yong, J. Liu. CITIC Envirotech Ltd (Singapore)

Pilot-Scale Study Of Integrated Two-Stage MABR System For The Treatment Of Polluted Urban River

B. Li, M. Li, L. Sun, P. Li, C. Du, H. Zhang. Tianjin University (China)

Recovery Of Ammonia From Digestate As Fertilizer

E. Broeders, H. Menkveld. Nijhuis Water Technology B.V. (Netherlands)

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A. Shaw, R. Jezek, E. Kobylinski, M. Steichen, J. Barnard, S. Pekarek, B. Sturm. Black & Veatch (United States)

TransMembrane ChemiSorption: Ammonia Abatement Using Hollow Fiber Membrane Contactor Technology

S. Willis, A. Mancusi, A. Sengupta, M. Ulbricht. 3M Industrial Business Group (United States)

Treating Changi Primary Wastewater At High SORs With A Ballasted Technology

R. Wikramanayake, T. Yu, M. Whittier. Evoqua Water Technologies (United States)

Treating Municipal Used Water Using Anaerobic Systems: Pilot-Scale Demonstration Of ZeeWeed

B. Chaudhari, M. Dagnew, Y. Hong, N. Adams, A. Kagansky, G. Koops, V. Ramachandran. GE Water & Process Technologies (Singapore)

Using Risk And Uncertainty Analysis To Maximize Opportunities In Process Design And Operations

B. Johnson, S. Murthy, G. Daigger, A. Menniti. CH2M (United States)

THEME 2B: EFFECTIVE AND EFFICIENT WASTEWATER MANAGEMENT

A Novel Approach To Define Sustainability Of Non-Potable Water Reuse Treatment Train

A. Lazic, C. Baresel, A. de Kerchove, R. Windsor. Xylem Inc (Sweden)

Blue Buildings: Decentralized And Integrated Management Of Water From "Source-To-Source, At Source"

S. Samuel, M. Lim, A. Ho, C. Hsien, U. Schraudolph, S. White. Ecosoft Pte Ltd (Singapore)

Decentralized Sewage Treatment – Tracking Results And Impact

R. Shah. Peer Water Exchange (India)

Doha West WWTP: CAPEX And OPEX Reduction Due To Interchangeability And Membrane Experience

M. A. Sanz, D. Ratte. SUEZ Environnement (France)

Effects Of Sludge Quality On The Performance Of Novel Low-Energy Filtration Approach For Wastewater

T. Bugge, W. C. Yang, X. Gao, D. M. Dominiak. Grundfos (Singapore) Pte. Ltd. (Singapore)

ENVISIONING The LCA of A Wastewater Treatment Plant

A. Shaw, A. Kadava, S. Murthy. Black & Veatch (United States)

Genetically Engineered Biosensors For The Detection Of Volatile Organic Compounds In Wastewater

F. Lauro, P. Y. Yung, L. Lo Grasso, A. F. Binti Mohidin Batcha, E. Acerbi, J. Hinks, T. Seviour, E. Marsili. Nanyang Technological University (Singapore)

Life Cycle Analysis Of Energy And Resource Recovery At Used Water Treatment Plants

A. van Nieuwenhuijzen, M. Sanders, I. Odegard, C. Visser. Witteveen+Bos Consulting Engineers (Netherlands)

Managing Sequential Sewer Modelling

J. Ang, C. H. Tan, V. Phipatanasuphorn. PUB (Singapore)

Microbial Electrochemical Sensor For Real-time Detection Of Heavy Metals Present In Used Water

H. Y. Ng. National University of Singapore (Singapore)

Micropollutant Removal By Full-Scale Constructed Wetlands At WWTP Outlet In South Of France

Y. Penru, J. Schuehmacher, M. Bacchi, P. Prohin, M. A. Lebas, M. P. Som, H. Budzinski. SUEZ Environnement (France)

Model-Based Estimation Of The 'Lost Opportunity' Accrued Through Faulty Wastewater Instrumentation

M. McEwan. Perceptive Engineering Limited (United Kingdom)

Online Monitoring Of Nitrogen Greenhouse Gas Emissions From Full-Scale BNR Processes

H. Y. Ng, M. Wang. National University of Singapore (Singapore)

Operational Integrated Platform For Stormwater Management

O. Pison, A. Mahadevan, B. Chan. SUEZ Environnement (Singapore)

Planning A Resilient Conveyance System – Singapore's Deep Tunnel Sewerage System Phase 2

J. Currie, L. L. Woo, H. Ching, S. H. Lo, S. Cheng, G. Vallipuram, S. J. Gan, W. Cox, S. Sreedharan. Black & Veatch - AECOM JV (Singapore)

Refractory Micropollutants Removal By A Full-scale Ozonation To Improve Treated Wastewater Quality

Y. Penru, C. Miège, A. Rousel-Galle, L. Dherret, A. Guillon, C. Crétollier, M. Esperanza, B. Barillon, S. Baig, S. Martin Ruel, M. Coquery, J. M. Choubert. SUEZ Environnement (France)

Remote Real-Time Monitoring Of High Volatile Organic Compounds Discharges Into The Public Sewers

K. Chaudhary, W. O. Kwok, C. P. Chiew, L. C. Goh, J. Justin. PUB (Singapore)

Resource-Efficient Infrastructure For Fast Growing Cities – Realization Of Resource Recovery Center

J. Tolksdorf, P. Cornel, S. Bieker, M. Wagner. Technische Universität Darmstadt (Germany)

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U. K. Choudhary, A. N. Singh. Mahamana Malvia Institute of Technology for Ganga Management (India)

Sanitation Game Changers: Paradigm Shift From End-Of-Pipe Solutions To Off-Grid Solutions

S. Pillay, J. Bhagwan. Water Research Commission (South Africa)

Simultaneous Nitrification and Denitrification In An Hybrid Membrane Bioreactor

N. Roche, S. Ruz, K. Zerari, I. Seyssiecq. Aix-Marseille University (France)

Understanding How Changing Rainfall May Impact On Urban Drainage Systems

M. Dale, E. Gill, E. Kendon, H. Fowler, S. Blenkinsop, S. Chan, A. Hosking. CH2M (United Kingdom)

THEME 3: WATER FOR LIVEABILITY AND RESILIENCE

A Comparative Assessment Of International WSUD Policy And Implementation Strategies

K. Lowe, C. Henderson, A. Wu. AECOM (Hong Kong - China)

A National Guide For Climate Adaptation Planning Of Urban Areas

F. Van de Ven, M. Hoogvliet, W. J. Goossen. Deltares / TU Delft (Netherlands)

A Water Sensitive Cities Index To Support Transitions To More Liveable, Sustainable And Resilient Cities

C. Chesterfield, R. Brown, L. Beck, S. Lloyd, C. Urich. Cooperative Research Centre for Water Sensitive Cities (Australia)

An Integrated Approach To Enhancing Urban Flood Resilience: A Case Study Of Elwood, Melbourne

B. Rogers, K. Arnbjerg-Nielsen, C. Murphy, T. Wong. Monash University (Australia)

Bringing Stormwater To The Front Of The Design Process - Comparing Approaches In Australia, UK And USA

S. Mudaliar. XP Solutions (Australia)

Cities: Survival Of The Resilient (Bigger Picture - Global Perspective)

J. Batten. ARCADIS (United States)

Creating Water Sensitive Airports In Times Of Climate Change - A Case Study.

N. Dolman, M. Hillen. Royal HaskoningDHV (Netherlands)

Delivering An Integrated Water Management Strategy For The First Major Eco Community In The UK

T. Gunasekara. Hyder Consulting (UK) Ltd (United Kingdom)

Design Of Catastrophic Flood Resilience System In Beijing Based On Sponge City Concept

H. Li, L. Shen, L. Meng. Beijing Institute of Water (China)

Design With Water

J. Abbott. Arup (United Kingdom)

Developing A Water Sensitive City Leapfrogging Program

L. Werbeloff, B. Rogers, R. Brown. Monash University (Australia)

Eco-Efficiency Tool To Support Decision-Making For Water Management In Cities

D. Marín, M. J. Amores, M. Planas, G. Feijóo, Y. Lorenzo-Toja, A. Petit-Boix, D. Sanjuan-Delmás, J. Rieradevall, M. Termes-Rifé. Cetaqua, Water Technology Centre (Spain)

Holistic Planning Process Of Water Infrastructure In Megacities

R. Bufler, K. Muench, D. Kahali, S. Ghosh. GKW Consult GmbH (Germany)

Innovation In Flood Mitigation And Water Conservation : Intelligent Distributed Infrastructure

P. Reidy. Geosyntec Consultants Sdn. Bhd. (Malaysia)

Operationalising Sustainable Development Goals For Water Management

T. Wong, J. Thwaites, R. Brown, R. Skinner. Cooperative Research Centre for Water Sensitive Cities (Australia)

Storm Water Management And Multifunctional Urban Flood Protection In Delta City - Rotterdam

P. Dircke, A. Molenaar. ARCADIS (Netherlands)

Stormwater Resilience In Post-Sandy NY

J. Witko, V. Lee. Arup (United States)

The Future Of Urban Water: Scenarios For Urban Water Utilities In 2040

D. Lambert. Arup (Australia)

The Price Of Resilience – Infrastructures Needs For An Uncertain Future

S. Bieker. Institute IWAR (Germany)

Water's Contribution To Delivering The Sustainable Development Goals

J. Thwaites, T. Wong, R. Brown, R. Skinner. Monash Sustainability Institute (Australia)

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S. Six, T. Diez. De Watergroep (Belgium)

An Index Model For Evaluating Water Safety Plans In The Philippines
B. Magtibay. World Health Organization (Philippines)

Application Of An Innovative And Highly Sensitive Sensor For Real - Time Monitoring Of Bacteria In Drinking Water Systems
S. Courtois, B. Højris, C. Smith, Z. Do-Quang, M. Dahlqvist. SUEZ Environnement (France)

Application Of QMRA To Prioritize Water Supplies For Cryptosporidium Risk In NSW, Australia
S. Petterson, S. Leask, P. Byleveld. Water & Health Pty Ltd (Australia)

Changing Mountain Water Resources In A Warming Climate: Results From The European "ACQWA" Project
M. Beniston, M. Stoffel. University of Geneva (Switzerland)

Develop Green Eco-Corridor And Maintain Healthy Yangtze
M. Wang. Changjiang Water Resources Commission (China)

Governance And Assurance Processes For Ensuring Safe Drinking Water
S. Capewell. Water Corporation (Australia)

Identification Of Fecal Contamination Sources In Three Shellfish Growing Areas In Korea Using Metagenomics
G. P. Ko, C. Lee, S. Lee, S. Y. Hyo, Y. L. Jae, S. J. Park. Seoul National University (Democratic People's Republic of Korea)

Improving Water Quality Testing By Use Of Cellular Enabled Data Collection And Validation
A. Bhattacharya, Public Health Engineering Department (India)

Near Persistent Interactive Monitoring In Reservoirs Using NUSwan – A Preliminary Field Result
T. B. Koay. National University of Singapore (Singapore)

New Techniques For Real-Time Monitoring Of Reverse Osmosis Membrane Integrity For Virus Removal
V. Frenkel, Y. Cohen. CH2M (United States)

Policy Driven Innovation As The Tool For Water And Sanitation Development – Lessons From Post-Apart
D. Naidoo, J. Bhagwan. Water Research Commission (South Africa)

Preparing For Future Drinking Water Challenges
P. Grevatt, D. Travers. U.S. Environmental Protection Agency (United States)

Quantitative Microbial Risk Assessment (QMRA) To Support Decisions For Water Supply In Affluent And Developing Countries
P. Smeets. KWR Watercycle Research Institute (Netherlands)

Rapid Continuous Acoustofluidic Preconcentration Of G. Lamblia In Drinking Water
A. Liu, Y. Xia, L. Lei, S. Xiong, J. Zhang, H. Sun, Y. Liu. Nanyang Technological University (Singapore)

Removal Of Antibiotic Resistance Bacteria & Gene In Singapore Domestic Wastewater By MBR Process
T. H. Le, C. Ng, F. Da, Y. H. K. Gin. National University of Singapore (Singapore)

Supporting Safe Drinking Water In New South Wales, Australia
P. Byleveld, S. Leask, L. Jarvis, K. Wall, W. Lee, J. Tickell, M. Phoenix. New South Wales Health (Australia)

World's Largest On-Line Real-Time Water Quality Monitoring Network In A Drinking Water Distribution
B. de Graaf, B. Bajema, J. Hoogterp. P. van Thienen, F. Williamson, J. van den Broeke, J. S. Verhoef, G. Witvoet, E. Trietsch, M. Ijszenga, E. Driessen. Vitens (Netherlands)

Theme 5: Water for Industries

Application Of Advanced Oxidation Process To Reduce TOC From Process Condensate Water
R. Mallampati, S. Yountae, S. Sara, M. Huijuan, H. Mo, P. C. Kwek, H. Y. Ng, H. Ramanan. GE BETZ Singapore Pte Ltd (Singapore)

Application Of Integrated MBR In Centralized WTP For Chemical Industrial Park A Case Study In China
J. Zhang, J. J. Liu. CITIC Envirotech Ltd (Singapore)

Applying Aerobic MBR To Remove Extremely High COD From Pharmaceutical Waste Water For Reuse
Y. Seo, D. Thompson, M. T. D. Aye, N. Hu, G. Kicsi, E. Schoepke. GE Water & Process Technologies (Singapore)

Comprehensive Development Of Water Recycle Plant For A Petroleum Refinery
C. Reddy, K. Kekre, N. Terutake. Singapore Refining Company Private Limited (Singapore)

Conservation Of Water By Reuse In A Steel Mill
S. S. Choo. NatSteel Holdings Pte Ltd (Singapore)

Convert High Strength Industrial Wastewater To Biogas And Demineralized Water
G. He, Z. Zhao, J. Liang. Sembcorp Industries Ltd (Singapore)

Desalination As A Critical Water Management Tool In The Oil & Gas Industry
C. Hertle, K. Athanasiadis. GHD Pty Ltd (Australia)

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Acciona Agua, SA (Spain)

Reject To Resource: Water Sustainability In The
Bio-Pharmaceutical Industry
E. Helmig, J. Jiao, M. Endrizzi. ARCADIS (United States)

Rethinking Water And Industry In The Post-2015
Development Agenda
E. Tonda, M. Aldaya, L. Mila-i-Canals, J. Maestu.
Water Observatory (France)

Silica Reduction In Cooling Tower Blow-down Reuse
Using Low Cost Ceramic Ultrafiltration Membrane
B. Wise, S. Smith, M. Waer. Nanostone Water, Inc.
(United States)

Sulfate Reduction From NF Reject With Gibbsite
Recovery Achieves High Mine Water Recovery Rate
K. Banerjee, C. Blumenschein, H. Buisson.
Veolia Water Technologies, Inc (United States)

Treatment Of Industrial Used Water By UASB+CMBR
Process To Produce Industrial Grade Water For Reuse
H. Noguchi, T. Niwa, T. Yamashita, H. Shiota,
W. S. Ang, K. Kekre. Meiden Singapore (Singapore)

Using Diatomaceous Earth As A Filtration Aid
For Seawater Injection
S. Khan. Saudi Aramco (Saudi Arabia)

Wastewater Management Approach In
An Industrial Park
J. Liu, M. Tang. CITIC Envirotech Ltd (Singapore)

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A. Chazerain, S.Vegi. SUEZ Environnement (France)

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T. Choi, C. Bae, D. Lee, J. Kim. K-Water Research Institute (Republic of Korea)

Aquasupport™: SUEZ Project For Competence Delocalization

S. Nait-Kaci, A. Mokssit. SUEZ Environnement (France)

Decentralized R.O. Drinking Water Treatment Plant with Water Dispensing Machines (ATM) In Water Deficit Areas of Delhi

R. Tyagi. Delhi Government (India)

Delivering Water From Source To Tap: Innovation In Water Distribution To Informal Urban Settlements

R. Dashtbani Mikkelsen. Grundfos Lifelink (Denmark)

Detecting And Localizing Large Leakages And Bursts In Long-Distance Water Pipelines

A. Wu, R. Kishore, F. Blank. ABB Pte Ltd (Singapore)

Development And Application Of Water Distribution Operation Systems Based On Smart Meter And Sensor

T. Choi, D. Choi, J. Kim, D. Lee. K-Water Research Institute (Republic of Korea)

Do Archaea Drive Nitrification In Drinking Water Biofilms?

S. Wuertz, M. C. Cruz, Y. Woo, W. L. Teng, R. Williams, K. Arumugam, D. Drautz-Moses, H. C. Flemming, S. Kjelleberg. SCELSE (Singapore)

Enhancing Network Management To Continue Ensuring Good Customer Services In Singapore

M. Li, M. K. Wong, G. Y. Sim, N. L. Ang. PUB (Singapore)

Event Management Solution

T. Friedman, A. Peleg. TaKaDu (Israel)

Flexibility In Transmission Main Management With Hydraulic Transient Modeling

M. Rungvetvuthivitaya, N. Lawgun. Eastern Water Resources Development and Management, PCL (Thailand)

From AMR Data To Water Losses Disaggregation

K. Claudio, V. Couallier, C. Leclerc, Y. Le Gat, J. Saracco. SUEZ Environnement (France)

Guidelines For Addressing Municipal Unauthorised Consumption

M. Bannister. Department of Water & Sanitation (South Africa)

High Resolution Turbidity Data For Evaluating Mains Flushing Within Distribution Systems

J. Gaffney. Evoqua Water Technologies (United Kingdom)

Identification Of Pipes With Higher Risk Of Failure

T. Pradhan, A. Anand, V. Babovic, S. Chia. Aqleo Private Limited (Singapore)

Improving Allocative Efficiency Of Scarce Water In Southern Alberta

M. K. Ali. University of Lethbridge (Canada)

Innovation In Use Of Underground Service Reservoir For Enhancing Existing Network Delivery Capacity In Densely Built-up Residential Area

S. G. Sim, E. K. Ong, M. W. Loh, K. Khew, J. S. Chua, E. Chin, M. A. Samadi. PUB (Singapore)

Innovation In Water Financing

C. T. Ong, S. Somani. KPMG Services Pte Ltd (Singapore)

Intelligent & Energy Optimizing Control System For Well Fields

H. Juul. VCS Denmark (Denmark)

Is Permanent Leak Detection A Viable Alternative To The Traditional Approach Of DMAs?

M. Nicol, M. Bracken. Echologics, LLC (Singapore)

Leak Detection On Large Diameter Pipes Using In-Line Acoustic Technologies In Malaysia

A. S. Daud, H. Sheikh, M. Sheikh. Jalur Cahaya Sdn Bhd (Malaysia)

Leveraging Big Data For Intelligent, Utility Management

G. Wong. OSIssoft (United States)

Managing Non-Revenue Water By Establishing District Meter Area (DMA) In Dhaka Water Supply System

M. A. Kashem. Dhaka Water Supply and Sewerage Authority (Bangladesh)

Manila Water Elevates Its Enterprise Asset Management To New Heights, Through Systems Integration

F. Ibrahim, B. De Guzman. GHD PTY LTD (Australia)

Portable Parallel Analysis

X. Tan. Hach Company (Singapore)

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Predicting Water Treatment Costs For Raw Water Intake Optimization

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Promoting Safe Water & Health Practices Through Secondary Schools Involvement In Bangladesh

M. Akter. Bangladesh Water Partnership (Bangladesh)

Qualification Platform For Water Quality Sensors Assessment And Benchmarking

Z. Do Quang, T. Landa, F. Campan. SUEZ Environnement (France)

Reducing Non Revenue Water Loss With Pressure Control

G. Wyeth. Singer Valve (Malaysia)

Role Of Women In Water Conservation At Household Level With Special Reference To Chennai City Of India

M. Thamilarasan. University of Madras, Chepauk, Chennai (India)

Simultaneous Corrosion Control And Water Quality Improvement In Water Distribution Systems

X. Bai, H. Zhu, J. Chen. Shanghai Jiao Tong University (China)

SUEZ'S DSS (decision Support System) To Drive 24X7 Continuous Water Supply Projects

D. Duccini, A. Mokssit. SUEZ Environnement (France)

Sustainable WASH Development & Risk Management On Public-Private Partnership Philosophy In Lahore

M. W. Babar. Pakistan Youth Parliament for Water (Pakistan)

Tapping In To Effective Asset Management Best Practices – How PUB Can Leverage On Black & Veatch Experiences On CMMS / RFID Tools For A Safe And Sustainable Plant Operations And Water Supply System

K. V. Anand. Black & Veatch (Singapore)

The Problem Of Trunk Main Failure And How Leaks Can Be An Early Indicator

E. Stacey, M. Stadnyckyj. Echologics, Inc. (affiliate of Mueller Co.) (Canada)

The Role Of Women In Water Issues

A. Al Musalhi. Oman Water Society (Oman)

Users' Behaviour And The Design Of Taps

E. S. Chia, P. W. Chan, Z. K. Gao, F. Hu, J. H. Zhou, J. H. Tan. National University of Singapore (Singapore)

Utility Survival In An Environment Of Mandated Conservation

G. Symmonds, T. Hill. FATHOM (United States)

Utilization Of Reclaimed Island As Groundwater Reservoir

A. Saha, W. K. Lee, A. Bironne-Taisne, V. Babovic, L. Vonhögen-Peeters, E. S. van Baaren, P. Vermeulen, G. H. P. Oude Essink, J. R. Valstar, G. Lange, R. M. Hoogendoorn. National University of Singapore (Singapore)

Water Demand Management Through Leakage Control Program

D. Sonwane. Tata Consulting Engineers (India)

THEME 1B: DELIVERING WATER FROM SOURCE TO TAP – TREATMENT

A Novel Technique For Characterization Of Spacers Used In Electro-Separation Processes

V. Waghlikar, H. Zhuang, Y. Jiao, N. Moe, H. Ramanan, L. M. Goh, J. Barber, J. Y. H. Fuh, K. S. Lee, H. P. Lee. National University of Singapore (Singapore)

Advanced Oxidation Processes For Water Treatment

A. Karabelas. Centre for Research and Technology-Hellas (CERTH) (Greece)

Application Of Electrodialysis And Ozonation To Alleviate Inorganic And Organic Fouling Potential

M. Park, N. N. Marquez-Villagomez, S. A. Snyder, F. Zraick, J. Simon. University of Arizona (United States)

Assessing Oxidative Degradation Of Coated And Uncoated Polyamide Membrane By FTIR Spectroscopy

S. Lay, V. L. Puspitasari, W. Y. B. Loh, C. Qiantao. GE Betz Singapore Pte Ltd (Singapore)

Assessment Of Organic Micropollutant Removal By Mobile Advanced Water Treatment Plant

Y. Yu, Y. Choi, S. Kwon, S. Maeng. Korea Water Resources Corporation (Republic of Korea)

Autonomous Process Control For Optimum Filtration

D. Dominiak, J. Svendsen, R. Højsholt. Grundfos Holding A/S (Denmark)

BG121 – A Novel Method To Control Harmful Algal Blooms

M. Harel, BlueGreen Water Technologies Ltd (Israel)

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A. C. Lee, I. Chua. Evoqua Water Technologies (Singapore)

Capacitive Desalination Of WO₃/carbon Cloth Supercapacitor And Morphology Analysis

D. Blackwood, Y. Gui. National University of Singapore (Singapore)

CFD Analysis On UV-Reactor With Optimized Lamp Location For Treating Higher Flow Rate

J. Wang, Y. Zeng, R. van Esch, K. Andre. Evoqua Water Technologies (Singapore)

Community-Led Transformation: The Key To Sustainable Rural Water Supply And Management

S. Samuel, M. Lim, A. Ho, C. Hsien, S. White, J. Madiath. ECOSOFTT PTE LTD (Singapore)

Comparison Of Fouling Behavior In Forward Osmosis And Reverse Osmosis Desalination

E. Tow, V. J. Lienhard. Massachusetts Institute of Technology (United States)

Computational Fluid Dynamics Simulations And Validation Of Forward Osmosis Modules

M. Perry, M. R. Bilad, G. Sun, L. Yde. Aquaporin Asia (Denmark)

Concept Of A Reverse Osmosis System Using Thermal Energy: Theoretical Validation And Analysis

A. Mudgal, P. Davies. Pandit Deenadayal Petroleum University (India)

Culmination Of WaterReuse Direct Potable Reuse Initiative

M. Meeker, J. Minton, J. Mosher. WaterReuse Research Foundation (United States)

Decentralized Membrane-Based Drinking Water Treatment Plant For Rural Areas In Developing Countries

N. D. Trinh, F. B. Frechen. University of Kassel (Germany)

Design Challenges For First Sea Water Reverse Osmosis Desalination Plant In Hong Kong

Y. T. K. Kwok, C. Athreya, V. Veerapaneni, C. Ko. Water Supplies Department (Hong Kong - China)

Destruction Of Trace Organic Contaminants Using An Advanced Oxidation Process

J. Wood, S. Doung, C. Hall, B. Coulter. Evoqua Water Technologies (United States)

Development And Demonstration Of A New Submerged Membrane Filtration System

L. Leckie, T. Swiatek, A. Balczewski. Evoqua Water Technologies (Australia)

Development Of Advanced Ion Exchange Membrane Characterization Methods For RED Application

L. M. Goh, Y. H. Zhao, D. Stachera, N. Moe, H. Ramanan, J. Barber, J. Absalon, Selvaraja. GE Water & Process Technologies (Singapore)

Economic Benefits Of Water Reuse And Impact Of The California Drought

J. Mattingly, M. Meeker. WaterReuse Research Foundation (United States)

Effect Of Ca/Mg Of Remineralized Water On Stability Of Cement-Lined Ductile Iron Pipe

J. Hu, J. H. Shan, A. Q. Deng, R. J. Xie, C. N. Ong, C. N. Ong, A. Adin. National University of Singapore (Singapore)

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J. L. Lim, Y. M. Jung, J. S. Park, H. J. Park. K-Water Institute (Republic of Korea)

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G. Chopra. SeaTech Solutions International (S) Pte Ltd (Singapore)

From Ugly Duckling to the Swan - 6 Years Operating Experiences of the Pre-Treatment at SembCorp's 50 MiGD NEWater Plant

H. Lazaredes, P. Trimboli, G. Hui, S. Sambasivan. Evoqua Water Technologies (Australia)

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J. Scheideler, R. Aflaki, S. Hammond, K. Robinson. Xylem Inc. (Germany)

High Energy Radiation Treatment For Removal Of Emerging Contaminants From Water And Wastewater

A. Capodaglio. University of Pavia (Italy)

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J. Emori, M. Kabaya, S. Nishimura. Yokohama Waterworks Bureau (Japan)

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B. Bernados. State Water Resource Control Board (United States)

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J. Scheideler, J. Gebhardt, M. Fassbender, K. H. Lee, Y. C. Kwak. Xylem Inc. (Germany)

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D. Zhou. National University of Singapore (Singapore)

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H. Fujimura, D. Okamura, M. Hashino, H. Gotoh. Asahi Kasei Chemicals Corporation (Japan)

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Numerical Study Of Fluid Flow And Hydrogen Distribution In Electrolyser

Y. Zeng, P. Beddoes, X. Wang, H. Lim, K. Tomlinson, A. Green. Evoqua Water Technologies (Singapore)

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J. Y. Lee. Nanyang Technological University (Singapore)

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D. Drapper, T. Lucke, A. Hornbuckle. Drapper Environmental Consultants (Australia)

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H. Yacubowicz, B. Antrim, M. Forbes. Koch Membrane Systems (United States)

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R. Clemente, J. Martin, A. Dolan. Global Desalination Operations Energy Recovery, Inc (United States)

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D. Y. Arifin, M. Weber, O. Gronwald, H. Voss, J. Malisz, M. Heijnen, A. Gukova, S. Haas, C. Staaks, P. Berg. BASF South East Asia Pte Ltd (Singapore)

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H. Zou, Q. Zhang, J. Liang, Z. Zou, L. Zhang. Aquapoten Company Limited (China)

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Y. Zeng, A. Harris, R. Wikramanayake, M. C. Whittier. Evoqua Water Technologies (Singapore)

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G. D. Bishop. Hydra Renewable Resources, Inc. (Canada)

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R. Saraf. Viraj Envirozing India Pvt. Ltd (India)

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J. Wan, J. Wang, G. Xu, V. Deluchat, Y. Wang, Y. Liu. Nanyang Technological University (Singapore)

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M. Krauss, R. Minke. University of Stuttgart (Germany)

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M. Moro. Danish Technical University (Denmark)

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V. Singh, J. Poon, G. Bhatt. CH2M (Singapore)

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Managing Climate Change Adaptation Across All Infrastructure Markets

J. Jones. Atkins (United Kingdom)

Manila Water's East Zone Earthquake Impact Reduction Report

C. A. Emboltorio, A. Basilio, J. Torres, R. A. Dela Cruz, F. A. Bacungan, M. Abuel, D. Evangelista. Manila Water Company Inc. (Philippines)

Metals And Land-Use Influence The Microbial Communities In Surface Water Networks Of Singapore

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Mitigating Aftermath Of Malaysia's Worst Flood In 50 Years: Emergency Drinking Water Supply With Ultrafiltration

C. M. Chew, K. M. D.Ng. Techkem Water Sdn. Bhd. (Malaysia)

Numerical Groundwater Flow Modeling Of The Northern River Catchment Of The Lake Tana, Nile Basin

M. Sebhat, N. Asrie, Bahir Dar University (Ethiopia)

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C. Dierkes, T. Lucke, H. Hulsman, T. Vergroesen. Frankfurt University of Applied Sciences (Germany)

Program With Public Water Utilities To Increase Household Access: Lessons From Indonesia

E. Taravilla, J. Moyer, B. Mandell. Water.org (United States)

Ravi Water Issues & It's Catastrophically Impact On Eco-Human Development Index In Punjab- Pakistan

M. W. Babar. Pakistan Youth Parliament for Water (Pakistan)

Removal Of Heavy Metals From Stormwater Runoff By StormDMT™; Technology

K. Athanasiadis, P. McFadyen, M. Brennan. GHD Pty Ltd (Australia)

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R. Das, B. L. Singh, M. Jawed. Indian Institute of Technology Guwahati (India)

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R. Mallampati, S. Y. Goh, G. Gunasheela, H. Ramanan, N. Moe, B. John, K. Irwin. GE BETZ Singapore PTE LTD (Singapore)

Temporal Evaluation of a Pit Basket and Filter Media Cartridge for Urban Stormwater Treatment
D. Drapper, A. Hornbuckle. Drapper Environmental Consultants (Australia)

Towards Including Water Quality In Climate Adaptation Frameworks
N. T. Hu, T. F. Lin, L. Y. Cai, C. H. Chang, L. van der Linden, M. Burch. Taiwan Water Corporation (Taiwan – China)

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I. Choi, H. Chung, J. Park, K. Ahn, M. Yang, O. Kwon. National Institute of Environmental Research (Republic of Korea)

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D. Tracey, P. Whalen, G. Gagnon, W. Travis. LuminUltra Technologies Ltd. (Canada)

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Characterization Of Ozonation Transformation Products Of Salicylic Acid
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Comparison Of GAC Materials Using RSSCT On Adsorption Of Trace Organic Contaminants
Y. Xu, J. Hu. National University of Singapore (Singapore)

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F. Arellano, K. Catangcatang. Maynilad Water Services, Inc. (Philippines)

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S. Sherchan. California State University – Fresno (United States)

Examination Of The Occurrence Of 2-Methylisoboreneol (2-MIB) in Water Intake
H. S. Lee, Y. I. Song, S. H. Nam, Y. J. Park. K-Water (Republic of Korea)

Geochemical Triggers Of Arsenic Mobilization During Aquifer Recharge Of Purified Recycled Water
J. Dadakis, S. Fakhreddine, J. Dittmar, D. Phipps, S. Fendorf. Orange County Water District (United States)

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N. Hahn, O. Thas, N. Boon. LabMET Ghent University (Belgium)

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K. Acharya, C. Tang, Y. Li. Desert Research Institute (United States)

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H. Gorisse. SUEZ Environnement (France)

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R. van 't Oever, R. Oborny. Pentair X-Flow (Netherlands)

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M. Gelman. Acciona Agua (Australia)

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L. Ferraciolli, L. Naval, V. Santos, D. Luiz. Federal University of Tocantins (Brazil)

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H. Zhu, Q. Chu. Dow Chemical (China) Investment Co., Ltd. (China)

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Y. Seo, Z. T. Yip, K. K. Kee, S. A. Khoo, V. P. Surve, A. Ekstrom, C. Ellingworth, I. Goktas, M. P. McDonald, E. Schoepke. GE Water & Process Technologies (Singapore)

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K. Ng, M. W. Shahzad. King Abdullah University of Science & Technology (Saudi Arabia)

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H. W. H. Menkveld, A. Kluit. Nijhuis Water Technology BV (Netherlands)

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S. Chalmers, H. Le. Osmoflo Pty Ltd (Australia)

Water Management In Industrial Parks SUEZ Experience In China

J. P. Arcangeli. SUEZ - Sino-French Water Development Ltd (China)

Water Management, The Key To Oil & Gas Industry Sustainability

A. Tung, B. Garnier. SUEZ Environnement (Singapore)

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ABOUT PUB

PUB is a statutory board under the Ministry of the Environment and Water Resources. It is the water agency that manages Singapore's water supply, water catchment and used water in an integrated way.

ABOUT PUB'S TAGLINE

WATER FOR ALL: CONSERVE, VALUE, ENJOY

PUB has ensured a diversified and sustainable supply of water for Singapore with the Four National Taps (local catchment water, imported water, NEWater, desalinated water).

To provide water for all, PUB calls on all to play our part to conserve water, keep our water catchments and waterways clean and build a relationship with water so we can enjoy our water resources. If we all play our part, we can have enough water for all our needs – for industry, for living, for life.

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