World Water Congress & Exhibition
16–21 September 2012

B U S A N  K O R E A

Pioneering global water solutions

Congress programme and exhibition catalogue

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To turn sea water into drinking water is the best job on earth.
We are excited to welcome you to the 2012 International Water Association World Water Congress and Exhibition in Busan, Korea.

Korea is the perfect setting for the IWA World Water Congress. The rain gauge was invented in Korea, and the country has developed its water service provision dramatically over the past 30 years.

In Busan, you will have many chances to share and learn about global best practice, fundamental science, innovative research, policy developments and solutions to the challenges faced by water professionals worldwide.

As you would expect from IWA, the programme is high quality, stimulating and covers the broad and challenging issues faced by water professionals today. Our speakers, from top institutions and organisations around the world, will lead forward-thinking discussions. You will leave with a renewed sense of urgency, innovation and inspired thinking.

You will be spoiled for choice at the congress, with over 200 sessions and workshops to choose from. You can either delve into your specialised subject or choose to widen the scope of your knowledge by attending sessions on other topics. This variety is complemented by over 700 poster displays showing new developments, research and practical case studies.

We sincerely thank the Programme Committee and all the reviewers for contributing their time to developing such a comprehensive programme.

Remember, in between all the discussions, sessions and workshops, to visit the exhibitor stands. These are the people you will want to talk with to make your technical or collaborative ideas grow—they can further your thinking, making sure you get the right design, technological, organisational or publishing solutions. Exhibitors and country pavilion staff also have contacts and networks that are absolutely invaluable to delegates, so drop in for a chat.

We deeply thank all our sponsors, including the City of Busan, for making this congress and exhibition a reality. It is because of their participation that we can offer such a stimulating programme and side events, and it shows their leadership and commitment to the water field and its professionals.

Now is the time to start your journey into the congress and exhibition—make sure you talk with people within and outside of your specialisation to take advantage of the insights that come with cross-disciplinary thinking. We know you will thoroughly enjoy the congress.
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<td>Water industry and technology leaders panel</td>
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**Programme overview**

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<td>Nitrogen removal</td>
<td>Sustainable management of river basins</td>
<td>Rural areas of the future—best wastewater management strategies</td>
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<td>Anaerobic ammonium oxidation</td>
<td>Sustainable management of river basins</td>
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**Keynote speaker**

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- 11:30 Keynote speakers
- Poster session and reception
- Young water professionals reception
- Water industry and technology leaders panel
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**Keynote speaker**

- Nitrous oxide in wastewater treatment
- Water safety plans
- Biological drinking water treatment processes
- Desalination—thermals
- Improving the energy efficiency of wastewater treatment
- Integrated real time control of sewer—wastewater systems
- Celebrating professional women in water

**Keynote speaker**

- Climate change and urban flood risk management
- Greenhouse gas footprint of the urban water cycle
- Water safety plans
- Drinking water disinfection
- Desalination—process applications
- Improving the energy efficiency of wastewater treatment
- Integrated modeling and control of sewer/wastewater systems
- Celebrating professional women in water

**Keynote speaker**

- Climate change and urban flood risk management
- Advances in modelling GWP emissions from wastewater systems
- Managing water quality in distribution systems
- Desalination—foulig management
- Biofuels and biogas production from wastewater
- Integrated real time control of sewer—wastewater systems
- Busan City investment seminar

**Keynote speaker**

- Treatment of drinking water for public systems—how safe is safe?
- Water conservation and demand management
- Emerging issues related to health and the environment
- Adsorption and ion exchange—removal of macroconstituents
- Desalination—forward osmosis process
- Frontiers in the identification and quantification of microorganisms
- Highlights of Korea’s effort to contribute to development activities
- Focus on Africa Forum—cities of the future

**Keynote speaker**

- Health-based investments in drinking water—how can we inform society?
- Utility finance and revenue challenges
- Emerging issues related to health and the environment
- Adsorption and ion exchange—organic matter removal
- Disinfection and disinfection byproducts in wastewater treatment
- Frontiers in the identification and quantification of microorganisms
- Large scale and rapidly implemented sewage rehabilitation
- Focus on Africa Forum—urban sanitation
- Focus on Africa Forum—water-energy nexus

**Keynote speaker**

- Frontiers of toxicology—new imperatives for health
- Driving performance improvement
- Development of online sensing monitoring systems
- Adsorption and ion exchange—removal of pollutants
- Advanced oxidation processes
- Current status of groundwater planning and management
- Membrane technology for water and wastewater in Korea

**Keynote speaker**

- Drugs, drugs of abuse and their transformation products
- Asset maintenance and management
- Improving the energy efficiency of drinking water supply
- Eco-business parks—developing effective regulatory regimes
- Photocatalysis in drinking water treatment
- Improvement of conventional water treatment technologies—clarification
- Establishing innovative decentralised water supply systems
- Transitioning to new paradigms in water—institutional

**Keynote speaker**

- Drugs, drugs of abuse and their transformation products
- Strategic asset management and long-term planning
- Human resource capacity gaps and how to close them
- Urban sanitation initiative
- Oxidation and advanced oxidation processes
- Improvement of conventional water treatment
- Appropriate technology water for scientists and engineers without borders
- Transitioning to new paradigms in water—cultural

**Keynote speaker**

- Micropolutants and emerging contaminants
- Strategic asset management and long-term planning
- AquaRating—a system for rating utility performance
- Urban sanitation initiative
- Oxidation and advanced oxidation processes
- Governance and regulation
- Evaluation of nonpoint source BMPs in Korea
- Ballast water management

**Closing session and Harremoes lecture**

**Gala dinner**

**Technical tours - Friday**
Information

Tours

**Technical tours**

- **Treatment plants using wastewater as a resource**
  - Friday 09:00 – 13:00
- **Clean drinking water and the Four Major Rivers Restoration**
  - Friday 08:30 – 14:00
- **The Nakdong River Estuary treasure**
  - Friday 08:30 – 13:15
- **Health/environment labs and desalination technology**
  - Friday 08:30 – 15:15

**Sightseeing tours**

- **Gyeongju, capital of the Shilla Kingdom for 1000 years**
  - Tuesday 09:00 – 17:00
- **Up close and personal with Busan’s temples**
  - Wednesday 10:00 – 16:00
- **Seafood markets and Busan Tower’s Sky Deck**
  - Thursday 09:00 – 13:00

All tours depart from and return to the Paradise Hotel Busan (NOT from BEXCO). You need to purchase a ticket before going on the tour.

If you have purchased a ticket already, please be at Paradise Hotel Busan 15 minutes before your tour’s departure time, outside the side entrance hotel’s main building (exit the door near the bakery) between the main building and the annex building.

If you still need a ticket for a tour, please ask at the congress registration desk.

**Luggage storage**

You can leave luggage at the delegate bag room, to the left of the congress registration desk. The bag room will be open between Wednesday 08:00 – 17:00 and Thursday 08:00 – 14:30. Any bags left there are at your own risk.

**Wi-fi internet access**

You can access wi-fi in three areas of the exhibition hall (shown on the floor plan—see page 76). The password is **busan**.

**Media centre**

A media room with computers, internet and printing facilities is available for journalists. It is located near the registration desk at the entrance to the exhibition hall. A separate interview room is also available. To reserve this room for interviews, please speak to the media support staff at the media centre. They will be at the centre each day.

For more information, contact:
Alison Binney
Email: alison@econnect.com.au
Mobile: +61 428 900 450

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Opening ceremony

*16:30 – 18:00 Sunday  Room 1 Floor 3 BEXCO*

Keynote address: National effort on global water problems

Minister Yoo Young Sook has a distinguished career in directing research. She was previously directed research at the Korea Institute of Science and Technology and the Korean Chemical Society, among others. In October 2008, the Minister received the third AMOREPACIFIC Award for outstanding women in the sciences.

Welcome reception

*18:00–19:30 Sunday*

All attendees to the opening ceremony are invited to network over drinks.

Korean cultural show

*17:30-18:45 Tuesday  Busan Cinema Center*

Don’t miss this special event at a very new venue in Busan. The show features traditional Korean cultural entertainment. The venue is an easy 15 minute walk from BEXCO, and a map is printed on the back of your free ticket.

Your free ticket should be in your delegate envelope. If you are missing it, please go to the registration desk to collect one.

If you would like to walk with a group, please be in the Floor 1 lobby, near the entrance, at 17:05 and a volunteer will guide you.

Gala dinner

*19:00 Thursday  Floor 3 BEXCO Exhibition Center 2*

Dress: business dress or national costume

Join thousands at the special closing event of the congress and exhibition. The entertainment features modern Korean culture. Please bring your ticket to enter the dinner.

If you have a ticket but are not able to attend the event, please give it to someone who does not have one or return it to the registration desk. No refunds are available.

Gala dinner

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Opening ceremony

*16:30 – 18:00 Sunday  Room 1 Floor 3 BEXCO*
To meet the needs of growing private sector participation in global water projects, we’re using our distinguished project expertise and strong work ethic to deliver world-class water assets and services to our most valued clients.

Driven to provide complete EPC solutions for private sector water projects in the fields of Desalination, Wastewater & Water, we are committed to delivering a quality project every step of the way from financing to O&M.

To learn more about our 42 years of project success, visit us at www.samsungengineering.com
Natural resources are not infinite. Each day, SUEZ ENVIRONNEMENT and its subsidiaries deal with the challenge of protecting resources by providing innovative solutions to industry and to millions of people. SUEZ ENVIRONNEMENT supplies drinking water to 91 million people, provides wastewater treatment services for 63 million people, and collects the waste produced by close to 57 million people. SUEZ ENVIRONNEMENT has 80,410 employees and, with its presence on five continents, is a world leader exclusively dedicated to water and waste management services.

SUEZ ENVIRONNEMENT
Contact – Caroline Mairesse
Email caroline.mairesse@suez-env.com
www.suez-environnement.com

A spin-off from ITT Corporation created in October 2011, Xylem is a global water leader deeply involved in every stage of the cycle of water—transporting, treating, testing and analysing it, then returning it to the environment. Doing business in more than 150 countries, the company plays an important role in improving quality of life, and helps communities to grow, farms to prosper and industries to thrive. ‘Xylem’ is the Greek word for the tissue that moves water in plants. Following the spin-off, Xylem has retained its industry-leading product brands such as Flygt, Goulds Water Technology, WEDECO, Godwin Pumps, WTW, Flojet, Bell & Gossett, Lowara and many others. Serving the municipal water, wastewater, residential and commercial building services and industrial markets, it produces highly efficient products and systems that require less maintenance, use less energy and provide environmental benefits to users and communities. Through its social investment arm, Watermark, Xylem offers critical assistance in water emergencies and helps provide safe water, sanitation and hygiene education for children and families through school-based programs in developing countries.

Xylem
Contact – Tom Glover
Email tom.glover@xyleminc.com
www.xyleminc.com

Doosan Heavy Industries & Construction has been one of the leading providers of desalination solutions since commissioning our first turnkey project in 1989. In addition to the 310 million imperial gallons per day (MIGD) of capacity currently under construction, our plants are producing 1300 MIGD of water for use by more than 19 million people in communities and industries around the globe.

Our proven portfolio of Multi-Stage Flash (MSF), Multi-Effect Distillation (MED), and Reverse Osmosis (RO) technologies, which are continuously developed by our R&D centers in Changwon, Tampa and Dubai, enables us to deliver reliable and cost-effective turnkey solutions with the shortest lead times in the industry for projects of various scales.

Doosan’s wide spectrum of products and services, which include engineering, procurement, construction and operation and maintenance for desalination and water treatment plants and systems, are actively marketed by our regional offices in the Americas, the Middle East, and South-East Asia along with our US subsidiary, Doosan Hydro Technology.

Doosan Heavy Industries & Construction
Contact – Won Kang
Email won3.kang@doosan.com
www.doosanheavy.com

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www.iwa2012busan.org 7
Samsung Engineering has been recognised for over 42 years of excellence in engineering, procurement, construction, commissioning, operation and maintenance for environmental, industrial and hydrocarbon plants and facilities. With 7,600 talented engineers and project managers, Samsung Engineering offers complete solutions in the water business value-chain, and has a proven track record of delivering projects on schedule and safely. Samsung Engineering has proven expertise in all processes of water treatment, including water supply (clean water, desalination), and utilities (ultra-pure water, industrial water), and reuse. The company is broadening its business to provide services for reverse osmosis desalination using membrane technology, as well as equity investment. As a total environmental solutions provider for international markets, Samsung Engineering was awarded the IWA Project Innovation Award in 2008 for Resplia, a large public partnership sewage project in Korea. In 2009, the ICAD industrial wastewater treatment plant in Abu Dhabi was successfully completed and is operational. The Bahrain Muharraq sewage treatment plant was the first build–own–operate project awarded to the company. Samsung Engineering was recognised for its instrumental role as the lead developer for Muharraq, receiving the 2011 ‘Deal of the Year’ honour from the Project Finance Institute.

Samsung Engineering
Contact – Jong Sang Lee
Email js0214.lee@samsung.com
www.samsungengineering.co.kr

The Ministry of Environment is focused on establishing a sustainable, ‘green’ country, based on the spirit of ‘respect for life’. At the same time, the Ministry has continued its efforts to create a healthy and sound environment, enhance international cooperation, and encourage citizens to participate in solving environmental issues. The Ministry of Environment is meeting people’s expectations of and desire for government action; objectively assessing the performance, limitations of previous environmental policies, and establishing a new framework for environmental policies based on these assessments.

The Ministry is focusing on responding to environmental threats and diseases, enhancing international environmental diplomacy and cooperation to encourage active participation to address global environmental problems, fostering innovation in environmental technologies and industries so that it is more globally competitive, encouraging recycling, and creating a clean and pleasant environment which increases the quality of life and where nature and humans harmoniously coexist.

The Ministry of Environment
Contact – Jin Hyun Jung
Email gry0924@korea.kr
www.me.go.kr

Busan, home to 3.6 million people, is South Korea’s second-largest city after the capital, Seoul. Pronounced ‘Pusan’ in Korean, the city is located on the south-eastern tip of the Korean peninsula. It is the country’s largest port and the fifth-largest port in the world, which creates a vibrant international atmosphere for the city. Busan is known for its superb beaches and hosts a wide range of marine sports and leisure activities such as yachting, windsurfing, scuba diving and fishing. Sailors from around the world mix with the locals and a growing number of tourists.

Luxurious five-star hotels spread throughout Busan’s beaches and downtown areas are ready to welcome you. Busan is increasingly becoming known as one of Asia’s foremost cities for conventions. It has already played host to major global events such as the 2002 Asian Games, the 2002 FIFA World Cup and the 2005 APEC Korea meetings.

Busan Metropolitan City
Contact – Doim Kim
Email dokim8454@korea.kr
www.busan.go.kr

The global leader in water and wastewater services, Veolia Water delivers outsourcing services, designs technological solutions and constructs and operates facilities for municipal and industrial customers. Veolia Water operates at all stages of the water cycle: extraction, treatment, storage and distribution of drinking water; collection, transport, treatment, recycling and restitution of wastewater, with a constant focus on protecting resources, saving energy, controlling costs and limiting the environmental impact of its actions. Veolia Water has become a leader in technology and networks. Today, Veolia Water delivers the best quality water to 103 million people worldwide and provides 73 million people with wastewater services. To address the challenges and expectations presented in the water business, Veolia Water has developed a new three-dimensional vision: SVR. This approach combines high-performance solutions (Service), optimised use of natural resources (Value) and fair practices (Responsibility).

Veolia Water
Contact – Atika Doukkali
Email atika.doukkali@veoliaeau.fr
www.veolia.com
CDM Smith

CDM Smith is a consulting, engineering, construction and operations firm delivering exceptional service to public and private clients worldwide. We provide innovative and sustainable solutions for water, environment and energy needs—all developed through strong client relationships of mutual trust and respect and a commitment to quality and integrity. From integrated water resources planning to programme management, design, construction and operation of water and wastewater infrastructure, CDM Smith is committed to providing a wide range of services to water utilities. We are applying advanced technologies and integrated approaches to help clients around the globe meet the need for exceptional water quality.

Kolon Global Corporation

Kolon Global Corporation is the first choice for water management. Our expert specialists proactively diagnose and solve problems to provide high-quality, value-added service.

Kolon Global Corporation
Contact – Mun-Ho Jang
Email goodgyu001@kolon.com
www.kolonglobal.com

Salsnes Filter

Salsnes Filter’s patented filter technology for wastewater treatment complies with EU primary treatment regulations, and is widely used as a stand-alone application for primary treatment followed by discharge of treated water to recipient. The systems are used for primary treatment or storm water treatment; and in slaughterhouses, processing facilities, breweries, tanneries and the paper.

Salsnes Filter technology may replace primary clarifiers, and may work with chemically enhanced primary treatment, or followed by any secondary treatment process. Due to the high removal rate of particles, the system is very attractive as a primary stage followed by MBBR or MBR systems.

Salsnes Filter AS
Contact – Bjørn Aas
Email bjorn@salsnes-filter.no
www.salsnes-filter.no

SSENG

For the past decade, SSENG has shown itself as a nationally recognised leader in recycling contaminated water and supplying clean water through the distribution of their own filtration technology for sewage, industrial waste water, potable water treatment and desalination facilities.

SSENG aims to reduce environmental and water pollution worldwide, and prides itself on excellent quality products, as well as economical construction and maintenance. SSENG’s award-winning, innovative and patented fibre filter technologies and Oasis Double PCF Potable Water process, for example, can filter very highly turbid water to a drinkable state without pretreatment.

SSENG
Contact – Alex Moon
Email mkh@sseng.co
www.sseg.co

CDM Smith

CDM Smith specialises in researching, developing and manufacturing state-of-the-art membranes for reverse osmosis, nanofiltration and ultrafiltration, as well as cartridge and micro-filters.

Operating under Woongjin Chemical Co. Ltd, CSM is dedicated to maintaining high standards of product quality and customer service, which it achieves through its global customer support, with branch offices and affiliated corporations in the US, China, Japan, India, UAE, Singapore and Spain.

CSM products are available in various sizes to accommodate diverse water needs and applications. CSM continues to advance filtration and separation technologies used for processes such as water reuse and desalination of seawater and brackish water.

CSM (Woongjin Chemical Co Ltd)
Contact – David Kim
Email davidk@wjchemical.co.kr
www.csmsfilter.com

Kolon Global Corporation

Kolon Global Corporation are about creating total water and environmental solutions for our clients. We manage environmental facilities for government agencies, create synergies with our plant construction business, and are growing as a full-service solution provider. We are currently leading cutting-edge water solutions in Jordan, Sri Lanka and Vietnam. Because of our complete knowledge of the construction and operation of environmental facilities, Kolon Global Corporation is the first choice for water management. Our expert specialists proactively diagnose and solve problems to provide high-quality, value-added service.

Kolon Global Corporation
Contact – Mun-Ho Jang
Email goodgyu001@kolon.com
www.kolonglobal.com

K-water

K-water is a world-class water corporation at the forefront of achieving sustainable green growth in the 21st century. K-water is providing the highest quality water services to local and international people, increasing water efficiency and securing its global competitiveness.

Since its establishment in 1967, K-water has implemented policies for national water resource management by constructing, operating and managing multi-purpose dams and water supply systems. K-water makes essential contributions to Korea’s national economy and improves quality of life for the public. K-water is on its way to achieving its vision—to be the world’s ‘best water partner’—and its mission – of ‘water for a happier world’.

K-water
Contact – Ji Woong Kim
Email jwk72@kwater.or.kr
www.kwater.or.kr

POSCO E&C

Established in 1994, POSCO Engineering & Construction are a leading partner for water and environment works. We are committed to giving our clients a competitive edge.

We have recently been appointed as the contractor for the water treatment plant in Yanbu‘ al Bahr (Saudi Arabia) and for water resources planning in Abu Dhabi (United Arab Emirates). We also specialise in strategic planning for desalination facilities.

We have accumulated diverse skills from our many projects, which range from drinking water to recovery. We have implemented the PEPCOM system of project planning—financing, engineering, procurement, construction, operation and maintenance—throughout our projects.

POSCO Engineering & Construction
Contact – Jong Myong Lee
Email blade@poscoenc.com
www.poscoenc.com

SSENG’s award-winning, innovative and patented fibre filter technologies and Oasis Double PCF Potable Water process, for example, can filter very highly turbid water to a drinkable state without pretreatment.

SSENG
Contact – Alex Moon
Email mkh@sseng.co
www.sseg.co

Join the conversation
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LinkedIn: IWA World Water Congress Exhibition
Facebook: www.facebook.com/iwa2012busan

Gold sponsors
The International Water Association (IWA) is the global reference point and network for water professionals, spanning research and practice and covering all facets of the water cycle. Through its network of members and experts in research, practice, regulation, industry, consulting and manufacturing, IWA is in a better position than any other organisation to lead and support water professionals to create innovative, pragmatic and sustainable solutions for current and future global water challenges.

The strength of IWA lies in the international and geographical diversity of its members. This global mosaic of national, corporate and individual member communities allows multi-level collaboration, generating knowledge and expertise on exchange on all aspects of the science, research, practice and management of water.

Korean Organising Committee

The Korean Organising Committee (KOC) was established as a non-profit organisation for the successful management of the 2012 IWA World Water Congress in Busan. Group members of KOC include the Korean Ministry of Environment, Busan Metropolitan City, Korean Society of Environmental Engineers (KSEE), Korean Society of Water Quality (KSWQ), Korean Society of Water and Wastewater (KSWW) and Korea Water and Wastewater Works Association (KWWA). The membership of KOC comprises representatives of the event sponsors, Doosan Heavy Industries & Construction, Samsung Engineering, K-water, POSCO E&C, KOLON E&C and SSENG, as well as individual water specialists and experts.
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**Mobile app for schedule, map, community**

The easy-to-use app shows you:

- up-to-the-minute information on its ‘dashboard’
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- an interactive map of the exhibition
- real-time alerts from congress organisers
- a built-in Twitter feed to follow and join in on the event chatter

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- rate and comment on sessions you attend
- take photos to share your experiences
- connect with colleagues using the ‘friends’ feature
- keep up with industry news

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- For all other phones: go online to www.m.core-apps.com/iwa2012busan to download the app or bookmark the page for future reference.

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**Technical programme themes**

- Integrated urban water systems
- Managing utilities and their assets
- Water treatment technologies
- Wastewater treatment and reuse
- Water and health
- Water resources supply and sustainability
- Water, climate and energy

**Workshops**

- BOF Basins of the Future
- COF Cities of the Future
- FOST Frontiers of Science and Technology
- SNC Smart Networks Cluster
- SWC Smart Water Cluster
- WCE Water, Climate and Energy

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**Platinum sponsors**

- GS E&C Corporation
- Veolia WATER
Tomasjord WWTP
Tromsø - Norway

Design: 45000 PE
Max hydraulic capacity: 86400 m3/day (1000 l/sec)

www.salsnes-filter.no
The IWA Development Hub is a space for IWA members and partners to showcase their programmes, achievements, services and products focused on lower- and middle-income countries. Network with delegates and exhibitors and establish new initiatives and business opportunities linked to research, development, small and medium enterprises, and water and sanitation service delivery. Discuss and debate the following themes, emphasising ‘solutions’ and ‘what works’:

**Strengthening utilities**
Technical, managerial and governance achievements that have improved performance, and innovative approaches to strengthening utilities.

**Water, climate and energy**
Frameworks, case studies and policies dealing with challenges such as mitigation, energy and carbon neutrality, and adaptation.

**Right to water and sanitation in practice**
The practical implications of implementing the human right to water and sanitation, and the roles and responsibilities of stakeholders.

**Urban sanitation**
Tried and tested practices and how they can be scaled-up. New thinking about safe, efficient and affordable solutions for sanitation in low- and middle-income cities and surrounding areas.

**Entrepreneurs for water and development**
Successful business initiatives in lower- and middle-income regions. Innovative technologies and management approaches. New thinking on entrepreneurship in these regions.

**River basins of the future**
How to optimise water use in the city. Tools, policies and incentives for transitioning basins into the future.

Pick up your copy of the schedule of discussions this week at the Development Hub, exhibition stands DH1-10

Development Hub exhibitors include:
Specialist Groups Hub

Exhibition stand no. 100

The IWA specialist group hub (SG Hub) is a dedicated space for specialist groups to showcase their activities, and for group leaders and members to meet with delegates. You will be amazed by the networking, information and activities you find there, so please drop by the SG Hub.

Schedule for open meetings

<table>
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<tr>
<th>Monday</th>
<th>Tuesday</th>
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<tr>
<td>Nano and water</td>
<td>Odours and volatile emissions</td>
<td>Urban drainage</td>
<td>Water and wastewater in ancient civilizations</td>
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<td>12:00 – 13:30 Room 10</td>
<td>12:45 – 14:15 Room 2</td>
<td>13:00 – 14:15 Room 1</td>
<td>12:45 – 14:15 Room 1</td>
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<tr>
<td>Sustainability in the water sector</td>
<td>Anaerobic digestion</td>
<td>Sludge management</td>
<td>Chemical industry</td>
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<td>12:00 – 13:30 Room 11</td>
<td>12:45 – 14:15 Room 3</td>
<td>12:45 – 14:15 Room 2</td>
<td>12:45 – 14:15 Room 5</td>
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<td>Water security and safety management</td>
<td>Design, operation and costs</td>
<td>Membrane technology</td>
<td>Diffuse pollution</td>
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<td>12:00 – 13:30 Room 12</td>
<td>of large wastewater treatment plants</td>
<td>12:45 – 14:15 Room 4</td>
<td>12:45 – 14:15 Room 6</td>
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<td>Hydroinformatics</td>
<td>Small water and wastewater systems</td>
<td>Watershed and river basin management</td>
<td>Instrumentation, control and automation</td>
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<td>Water reuse</td>
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<td>Water safety planning</td>
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<td>Design, operation and maintenance of drinking water treatment plants</td>
<td>12:00 – 13:30 Room 13</td>
<td>12:45 – 14:15 Room 14</td>
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<td>Pretreatment of industrial wastewaters</td>
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<td>Modelling and integrated assessment</td>
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<td>12:45 – 14:15 Room 16</td>
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Specialist Groups Hub

Exhibition stand no. 100

The IWA specialist group hub (SG Hub) is a dedicated space for specialist groups to showcase their activities, and for group leaders and members to meet with delegates. You will be amazed by the networking, information and activities you find there, so please drop by the SG Hub.

Sustainability awards

Tuesday 17:00 – 18:00

You are welcome to attend this reception featuring the IWA sustainability specialist group prizes award ceremony, and hosted on behalf of the specialist groups.

Programme

Chair Bruce Beck Chair IWA specialist group on sustainability
17:00 Introduction
17:05 Presentations by authors of prize-winning submissions
17:35 Announcement of winners and presentation of awards Glen Daigger IWA President
17:40 Drinks and canapes

This event celebrates excellence in sustainable urban water management. The prizes are awarded every two years by IWA's sustainability specialist group, and generously sponsored by CH2M Hill. There are two categories: research excellence in support of sustainable urban water management, and innovation in the practical realisation of sustainable urban water management. Announcing the winners of these prizes is an eagerly awaited feature of the World Water Congress.

More information

For details of group meetings and other specialist group activities, check out the congress website or email hong.li@iwahq.org
Young Water Professionals— make the most of your week

The YWP Hub—a unique learning zone for professional skills development

08:00 - 09:00 Monday
YWP breakfast meeting
YWP Hub
Kick off your week with this breakfast meeting where you can meet your peers, plan your week ahead and receive advice on how to turn your week into a week with impact. A must attend event for all our YWP delegates.

19:00 - 21:00 Monday
YWP reception
Paradise Hotel Busan
This special reception for YWP provides an opportunity for you to meet with leading professionals in your field, connect with your peers and raise your professional visibility. The reception is sponsored by Xylem.

From 14:15 Monday and Wednesday
Exhibition tours
Meet at the YWP Hub
These tailored tours will enable YWP to meet a selection of the industry's leading organisations exhibiting at the congress. They will be of particular interest to YWP looking at entering a career in the water sector.

Highlight of activities for the week:

09:15 Tuesday
Room 17
Prize ceremony and presentation for the prestigious IWA Women in Water Award for Leadership in memory of Hei-jin Woo.

09:45 - 12:45 Tuesday
Room 17
IWA Women in Water Workshop with distinguished speakers including Diana Gale, US and Her Worship Elaine Trepper, Mayor of City of Windhoek, Namibia.

09:45 - 10:15 Wednesday
YWP Hub, Exhibition Hall
Dialogue with Young Women Water Professionals

13:00 Thursday
Development Hub, Exhibition Hall
Dialogue led by Women in Water on Community based solutions to water and sanitation.

For the full schedule of activities for Women in Water and more information on the programme visit the IWA Stand in the exhibition.

Schedule of activities
Pick up your copy of the activity schedule for YWPs at the Hub, exhibition stand no. 101.
Busan Metropolitan City events

Busan is a city of water, located in the south-eastern corner of the Korean peninsula, along the delta of the Nakdong River and directly facing the sea. The clean and environmentally friendly city of Busan, through scientific management and its advanced water-quality processes, will emerge as a leader in the global quest to find answers to the issues of water sustainability by hosting the IWA World Water Congress & Exhibition.

Congress workshop
New paradigm of the ecological restoration of urban streams toward a ‘green city’, Busan
14:15 - 15:45 Tuesday Room 1
The workshop will include global case studies and positive examples of ecologically and environmentally sound restoration of urban streams in waterfront cities. There will be discussions about the pros and cons of human intervention on urban streams and how to develop better strategies for the ecological and sustainable restoration of urban streams for the benefit of future generations.

Technical tours
On Friday the technical tours will visit the Suyeong Sewage Treatment Plant, Deoksan Water Treatment Plant and Busan RDF Plant— Busan’s first-class water treatment system, sewage disposal system, waste recycling system and desalination technology. Also see Nakdong Estuary and take a peek at this beautiful ecosystem.

Investment seminar
14:15 - 15:45 Tuesday Room 17
For invited delegates
This session will provide global water-related corporations and other interested parties with an overview of Busan’s suitability for investment, as well as possible long-term investment plans. It will also be an opportunity for participants to network, and meet with and engage the key decision-makers from the city.

Familiarisation tour
Sunday - Thursday
Delegations from ten sister cities will participate Busan Metropolitan City and Busan Foundation for International Activities (BFIA) will jointly take delegates for a tour of the IWA World Water Exhibition and a visit to some local landmarks, such as the Yonggungsa Temple, Nurimaru APEC House and Busan Cinema Center.
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• For all other phones: go online to www.m.core-apps.com/iwa2012busan to download the app or bookmark the page for future reference.

Technical programme themes
Integrated urban water systems
Managing utilities and their assets
Water treatment technologies
Wastewater treatment and reuse
Water and health
Water resources supply and sustainability
Water, climate and energy

Workshops
BOF Basins of the Future
COF Cities of the Future
FOST Frontiers of Science and Technology
SNC Smart Networks Cluster
SWC Smart Water Cluster
WCE Water, Climate and Energy

Principal sponsors

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“SVR Vision” combines three basic principles:

SERVICE: guaranteeing performance, controlling costs and improving health, safety and environmental performance;

VALUE: using natural resources more efficiently;

RESPONSIBILITY: operating our business responsibly – caring for people and the environment.

By following these three principles Veolia Water can better respond to the needs of today’s world.
Keynote speakers

Building innovative partnerships in the water sector

Jaehyang So
Manager
International Water and Sanitation Program
World Bank

Ms So currently manages the multi-donor, International Water and Sanitation Program administered by the World Bank. She has a background in urban service delivery, utilities and corporate restructuring, and public-private partnerships. Ms So has worked for various World Bank programs and plans. She previously worked for Monitor Company in the USA, advising Fortune 100-level companies on corporate strategy issues.

Green growth and Korea’s policy toward water and wastewater

Soo-Gil Young
Chairman
Presidential Committee on Green Growth
Korea

Dr Young is a senior economist and expert in trade, development and cooperation in Asia-Pacific with a focus on Korea’s challenges. He is president of the National Strategy Institute, an independent think tank on economic reform and national governance. Dr Young leads a committee which formulates Korea’s green growth policy.

Water futures—a cross-sectoral system perspective

Pavel Kabat
Director and CEO, International Institute for Applied Systems Analysis (IIASA)

Professor Kabat has over 20 years’ experience of leading interdisciplinary and international research teams investigating global environmental change, with particular strengths in climate hydrology and water cycles. He has given science and policy advice to numerous national and international organisations and governments in various roles.

08:15 - 09:45

Opening workshop: Inspiring change to meet a challenging future

Chair Paul Reiter IWA

Meeting the future water needs of the planet involves both unimaginable challenges and opportunities. One thing which is clear today is that responding to all scenarios for the future will require ‘game-changing’ solutions and massive innovation. This session frames both the challenges and opportunities ahead, as envisioned by some of the world’s leading figures on the many facets of water. This session also serves as the gateway to an exciting set of workshops covering IWA’s key programs, including: Cities of the Future; Water and Climate; Water and Energy; Global Sanitation, Innovation; the IWA Smart Water Cluster, the newly created IWA Smart Network Cluster and the IWA Bio-Cluster. Featured speakers include Glen Daigger, Hallvard Odegaard, David Garman, Catarina de Albuquerque and Paul Reiter, and some plenary keynote speakers from the congress.

09:45 - 10:30 Morning break

10:30 Presidential address

11:30 Building innovative partnerships in the water sector

Jaehyang So
World Bank

Green growth and Korea’s policy toward water and wastewater

Soo-Gil Young
Korea

12:00 - 13:30 Lunch

13:30 – 15:00

COF workshop: Creating new and hybrid paradigms for water and cities on the path to 2050

Chair Paul Brown US

13:30 Welcome and introduction Paul Reiter IWA

13:35 The imperative for urban systems integration in an increasingly complex world Paul Brown US

13:55 Emerging technologies in hardware and software— driving analytic breakthroughs in urban systems Anil Menon US

14:15 Panel discussion, facilitator Paul Brown US


14:55 Closing remarks

15:00 – 15:30 Afternoon break

15:30 – 17:00

COF workshop: Building on the Montreal COF consensus— case studies from developed countries

Chair Rob Skinner Australia

15:30 Melbourne case study Chris Chesterfield Australia

15:50 Oslo case study Per Kristiansen Norway

16:10 Philadelphia case study Avinash Patwardhan US

16:30 Panel discussion

17:15 – 18:00 Water futures—a cross-sectoral, system perspective Pavel Kabat IIASA

18:00 – 19:30 Posters sessions and reception

19:00 – 21:00 YWP reception
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<td>Small-scale systems for stormwater management</td>
<td>Process optimisation in anaerobic wastewater treatment</td>
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<td>Chair Rafaela Matos Portugal</td>
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<td>08:15 Introduction</td>
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<td>08:20 Integrating roof water harvesting into the city supply mix—</td>
<td>08:20 A novel technique for evaluating foam dynamics in anaerobic</td>
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<td>experience from Australia’s fastest growing urban region Alan Gregory</td>
<td>digesters</td>
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<td>Australia</td>
<td>Chair Chun Woo Baek</td>
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<td>08:40 The influence of antecedent soil-moisture conditions on the</td>
<td>08:40 Control parameters in an activated anaerobic digestion with a</td>
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<td>rainfall-run-off threshold value of a roaded catchment used for water</td>
<td>membrane filtration system</td>
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<td>harvesting Olof Jonasson Australia</td>
<td>S Joh Kang US</td>
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<td>09:00 Adopting water-sensitive urban design in the developing world—</td>
<td>09:00 Use of the upflow anaerobic sludge blanket (UASB) reactor for</td>
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<td>a case study from Bhutan</td>
<td>biological pretreating sewage in developing countries: the current</td>
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<td>09:20 A practical application of a watering method on road surfaces for</td>
<td>status Brace Boyden Australia</td>
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<td>improving water cycle and heat environment Masahiro Imbe Japan</td>
<td>09:20 Process optimisation and biogas cogeneration in a wastewater</td>
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<td>treatment plant Nuno Branco Portugal</td>
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<td>Green growth and Korea’s policy toward water and wastewater</td>
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<td>12:00 – 13:30</td>
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<td>Pollution control in stormwater treatment systems</td>
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<td>Chair Peter Steen Mikkelsen Denmark</td>
<td>Chair Rüya Tasli Turkey</td>
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<td>13:35 Adsorption of heavy metals by road-deposited solids</td>
<td>13:35 Performance evaluation of a novel trickling filter for the post-</td>
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<td>Ashantha Goonetilleke</td>
<td>treatment of anaerobic effluents from small communities Marcus</td>
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<td>Australia</td>
<td>von Sperling Brazil</td>
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<td>13:55 Treatment of heavy metals by iron oxide-coated and natural</td>
<td>13:55 Enhanced swine-manure treatment with anaerobic membrane bioreactor</td>
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<td>gravel media in sustainable urban drainage systems Marnie Norris</td>
<td>with phosphorus recovery Li Xie China</td>
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<td>14:15 Assessment of anaerobic co-digestion of fatty wastes and</td>
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<td>14:15 Development of a stormwater treatment system using bottom ash</td>
<td>waste-activated sludge: a case study Samuel Martin France</td>
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<td>as filter media</td>
<td>14:35 Granulation of sulphate-reducing sludge for compact SANIA®</td>
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<td>Joan B Gorems</td>
<td>process for saline sewage treatment Hao Tianwei Hong Kong, China</td>
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<td>15:35 Modelling of load dynamics in a CSO retention tank for</td>
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<td>decision-managing strategies</td>
<td>pollution caused by combined sewer overflow Kathrin Gantner Germany</td>
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<td>Markus Ahnert Germany</td>
<td>15:55 Biologically enhanced high-rate clarification system solving</td>
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<td>15:55 Aeration performance of hydrodynamic flow regulators</td>
<td>peak wet-weather flow challenges jyh-Wei (Al) Sun US</td>
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<td>Patryk Wójtowicz Poland</td>
<td>16:15 Effects of groundwater ions and organic matter on the reactivity</td>
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<td>16:15 UV disinfection for treatment of stormwater Ji An Canada</td>
<td>and mobility of NZVI particles Jun-Young Ahn Korea</td>
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<td>16:35 Natural solutions for combined sewer overflow treatment in a</td>
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<td>Mediterranean country, Portugal Rita Amaral Portugal</td>
<td>nano zero-valent iron using the response-surface method Yu-Hoon</td>
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<td>Five years of water recycling at the Panipat Refinery, India Josef Lahnsteiner Austria</td>
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<td>Sustainable water management with multi-quality recycled water production: the example of San Luis Potosí in Mexico Valentina Lazarova France</td>
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<td>Improving performance and energy efficiency of water-recycling facilities</td>
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<td>Chair Peter Cornel Germany</td>
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<td>13:35</td>
<td>Challenges in the implementation of the Atotonilco WWTP, the world’s largest water reclamation facility Julian Sandino US</td>
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<td>Maximum allowable values of copper and manganese in recycled water for washing machines Bandita Mainali Australia</td>
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<td>Characterisation of biodegradable organic matter in reclaimed water by bacterial isolates Parinda Thayanukul Japan</td>
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<td>Effect of temperature and redox conditions on attenuation of bulk organic matter and nutrients in simulated SAT studies Saroj Sharma Netherlands</td>
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<td>Comparative assessment of aquifer recharge and recovery versus constructed wetlands in managing chemical and microbial risks during wastewater reuse Ahmed Hamad Ne Saudi Arabia</td>
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<td>Feasibility for recreational water usage based on algal growth potential test for effluent from various wastewater reclamation and reuse plants Jin Chul Joo Korea</td>
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<td>Effects on macronutrients in plants irrigated with different quality water and wastewater Maria Teresa Orta Mexico</td>
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<td>Microbial contamination of vegetables eaten raw under direct agricultural wastewater reuse: its potential health risk in developing countries Francisco Turner Mexico</td>
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<td>Water futures—a cross-sectoral, system perspective</td>
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| 08:15 – 09:45| Characterisation of water quality for the sustainable management of river basins  
Chair Harro Bode Germany  
08:15 Introduction  
08:20 Evaluation of the Suyeong River water quality by principal component analysis Tae-Uk Jeong Korea  
08:40 Evaluation of water quality characteristics of an urban, polluted stream during dry weather and rainy events Marcos von Sperling Brazil  
09:00 Water quality and biological characteristics of discharged maintenance water streams Jung Won Son Korea  
09:20 A simple characterisation of the low-rainfall events in greater Melbourne using standard precipitation index Shirley Gato-Trinidad Australia  
09:40 Closing summary |
| 08:15 – 09:45| COF workshop: Rural areas of the future— what are the best wastewater management strategies?  
Chair Florent Chazarenc France  
08:15 Introduction. Rural areas and peri-urban areas of the future: What are the best decentralised wastewater management strategies enabling the efficient treatment of domestic effluent for nutrients and pathogens? Florent Chazarenc France  
08:30 Septic tanks everywhere Florent Chazarenc France  
08:45 The zero-emission concept Gunter Langergraber Austria  
09:00 Upgrading P and N removal in existing small treatment facilities Yves Comeau Canada  
09:15 Panel discussion  
09:40 Closing remarks |
| 09:45 – 10:30| Morning break   | Exhibition      |
| 10:30        | Presidential address |
| 11:30        | Building innovative partnerships in the water sector Jaehyang So World Bank  
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| 12:00 – 13:30| Lunch           | Exhibition      |
| 13:30 – 15:00| Characterisation of water quality for the sustainable management of river basins  
Chair Ray Earle Ireland  
13:30 Introduction  
13:35 Seasonal changes in diffuse agricultural pollution-control performance of catch crops Keisuke Kondo Japan  
13:55 Sustainable effluent-management strategy for the Lower Hunter River Dennis Cho Australia  
14:15 Evaluation of water quality monitoring network: a multivariate statistical approach to the Kabbini River catchment (India) Musthafa Othayoth Mavukkandi India  
14:35 Occurrence of pharmaceuticals and personal care products in aquatic environments around Shenzhen: comparison of Shenzhen and Japan Seiya Hanamoto Japan  
14:55 Closing summary |
| 13:30 – 15:00| BOF workshop: Means for achieving complementary basin solutions on a crowded planet. Tools and technologies and approaches for basin-wide optimisation  
Chair Alan Vicory US  
New technologies, modelling and decision-support systems provide great opportunities for underpinning the balancing of the water needs of agriculture, industry, cities and the environment.  
13:30 Opening remarks Ger Bergkamp IWA  
13:35 Data and information for optimising basin management Chris McIntyre US  
14:00 Panel discussion: How can we accelerate the use of new technologies for basin-wide optimisation?  
Panelists: Dongil Seo Korea, Betsy Otto US, Kelly West Kenya, Børge Storm Denmark, Ray Earle Ireland, Chris McIntyre US  
14:55 Closing remarks |
| 15:00 – 15:30| Afternoon break |
| 15:30 – 17:00| Analytical approaches for the sustainable management of water resources  
Chair Shane Snyder US  
15:30 Introduction  
15:35 Data analysis for understanding eutrophication trends in a large reservoir José Viera Portugal  
15:55 A multivariate approach to assess habitat integrity in urban streams using benthic macroinvertebrate metrics Sergio Canobbio Italy  
16:15 Total maximum daily load (TMDL) estimation using a joint real-time and periodic-sampling approach William Stringfellow US  
16:35 Analysis of rainwater using potential as drinking water in a developing country—a case study of Laixa, Cukhe and Khetag in Vietnam Yonghwan Kim Korea  
16:55 Closing summary |
| 15:30 – 17:00| BOF workshop: Means for achieving complementary basin solutions on a crowded planet. Investing in optimising the water, food, energy nexus of water food and energy  
Chair Ger Bergkamp IWA  
What initiative is needed to accelerate broad transition to investment in multiple-source and multiple-user investments in basins?  
15:30 Opening remarks Ger Bergkamp IWA  
15:35 Investing in optimising the water, food, energy nexus at basin level Mark Smith IUCN  
16:00 Panel discussion: investing in basins and optimising uses across the nexus  
16:55 Closing remarks |
| 17:15 – 18:00| Water futures—a cross-sectoral, system perspective Pavel Kabat IIASA |
| 18:00 – 19:30| Posters sessions and reception |
| 19:00 – 21:00| YWP reception  
Paradise Hotel Busan |
## FOST workshop: Biomimicry, biotechnology and water
Chair: Stefan Kjelleberg, Australia

The workshop will present overviews of recent advances in all aspects related to water management from the point of view of a biotechnologist interested in providing innovative processes for the water industry. Traditional ways of treatment are not, for the purposes of this workshop, regarded as either high-tech biotechnology or biomimicry. The workshop will attempt to outline the potential of biotechnology to simulate biomimicry-based methods for improving both the real and perceived risks associated with water reuse and to stimulate participants to identify novel areas of future technology development across multidisciplinary areas of research.

### Workshop: Multi-city collaboration on water quality improvement and risk management
Chair: Seoul Waterworks

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<th>Room 8</th>
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<tr>
<td>08:15 - 09:45</td>
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<tr>
<td>09:45 - 10:30</td>
<td>Morning break</td>
<td>Exhibition</td>
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<tr>
<td>10:30</td>
<td>Presidential address</td>
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<tr>
<td>11:30</td>
<td>Building innovative partnerships in the water sector</td>
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<tr>
<td>12:00 - 13:30</td>
<td>Lunch</td>
<td>Exhibition</td>
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<tr>
<td>13:30 - 15:00</td>
<td>Workshop: Right to water—policy imperatives and regulatory requirements</td>
<td>Room 8</td>
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<tr>
<td>Chair: Gerard Payen, France</td>
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<tr>
<td>13:30 Adoption of water as a human right as a driver for policy and regulatory changes</td>
<td>Catarina de Albuquerque, United Nations</td>
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<tr>
<td>13:45 Panel discussion: What are the policy and regulatory consequences of the adoption of water as a human right by the United Nations and national governments? Panelists will reflect on whose role and responsibility it is to deliver universal access to water and sanitation. Participants will have ample opportunity to contribute and be part of a lively debate on the consequences of water as a human right.</td>
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<td>Panelists: Jaime Baptista, Portugal; Neil McLeod, South Africa; Vasile Ciomos, Romania</td>
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<tr>
<td>14:55 Closing remarks</td>
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<tr>
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<tr>
<td>15:30 - 17:00</td>
<td>Workshop: Water as a human right—new realities of progressive realisation</td>
<td>Room 8</td>
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<tr>
<td>Chair: Michael Rouse, UK</td>
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<tr>
<td>15:30 Panel discussion: The adoption of water as a human right by the United Nations puts the realisation of universal access to water and sanitation on centre-stage. How is this creating new realities for operators and services providers from around the world? The panelists will reflect on their own experiences and have an interactive discussion with participants.</td>
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<td>Panelists: Mamadou Dia, Senegal; Jack Moss, France; Virgilio (Perry) Rivera, Philippines</td>
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<td>17:10 Closing remarks</td>
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<tr>
<td>17:15 - 18:00</td>
<td>Water futures—a cross-sectoral, system perspective</td>
<td>Room 1</td>
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<tr>
<td>Pavel Kabat, IIASA</td>
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### Exhibition

18:00 - 19:30 Poster sessions and reception
19:00 - 21:00 YWP reception
<table>
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<tr>
<th>Time</th>
<th>Room 10</th>
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<tbody>
<tr>
<td>08:15 - 09:45</td>
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<tr>
<td>FOST workshop: Understanding and managing nanotechnologies in water systems</td>
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<td>Developing countries and sustainable systems</td>
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<tr>
<td>Chair Jan Hofman Netherlands</td>
<td></td>
<td>Chair Tom Williams IWA</td>
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<tr>
<td>08:15 Frontiers of nanotechnology for the water industry Jan Hofman Netherlands</td>
<td></td>
<td>08:15 Introduction</td>
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<tr>
<td>08:30 Fate and risks of nanomaterials Qilin Li US</td>
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<td>08:20 WSS performance improvement in Brazil: benefiting the poor? Raquel dos Santos Netherlands</td>
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<tr>
<td>08:45 What are the regulations on nanomaterials? David Garman US</td>
<td></td>
<td>08:40 O&amp;M of water services infrastructure by social franchising partnerships Kevin Wall South Africa</td>
</tr>
<tr>
<td>09:00 How do we tell the public? Brita Forsberg Sweden</td>
<td></td>
<td>09:00 Business-based, pro-poor approach to water and sanitation for better sustainability Sonoda Yamamura Japan</td>
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<tr>
<td>09:15 Panel discussion: Brita Forsberg Sweden, Qilin Li US, Jennifer McKay Australia</td>
<td></td>
<td>09:20 SISAR: a sustainable management model for small, decentralised rural sanitation systems Alejandro Meleg Germany</td>
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<tr>
<td>09:40 Closing remarks</td>
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<td>09:40 Closing summary</td>
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<tr>
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<td>Green growth and Korea’s policy toward water and wastewater</td>
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<tr>
<td>FOST workshop: Frontiers of membrane and nano-membrane technologies in reuse and desalination</td>
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<td>Institutional capacity and policy development</td>
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<td>Chair Jan Hofman Netherlands</td>
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<td>Chair Jan Janssens Switzerland</td>
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<tr>
<td>13:30</td>
<td>Opening remarks Valentina Lazarova France, Chung-Hak Lee Korea</td>
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<td>13:35</td>
<td>New frontiers of membrane and nano-membrane technologies in reuse and desalination In Kim Korea, Chung-Hak Lee Korea</td>
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<td>13:55</td>
<td>Desalination— new frontiers for energy efficiency, reliability and affordability Nikolay Voutchkov US</td>
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<td>14:10</td>
<td>Performance and scale-up of nanotechnologies for desalination and production of high-quality recycled water Robert Burk US</td>
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<td>14:20</td>
<td>Advances in nano-scale science and engineering, and potential application in wastewater treatment and reuse Qilin Li US</td>
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<tr>
<td>14:30</td>
<td>Panel discussion: Chung-Hak Lee Korea, In Kim Korea, Valentina Lazarova France, Robert Burk US, Qilin Li US</td>
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<td>Disaster preparedness, response and recovery</td>
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<td>Chair Valentina Lazarova France</td>
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<td>Chair Takao Murakami Japan</td>
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<td>Opening remarks</td>
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<td>15:55</td>
<td>Leading-edge applications and challenges of nanotechnology applications for the production of high-quality, purified water Jan Hofman Netherlands</td>
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<tr>
<td>16:10</td>
<td>Leading-edge applications of membrane technologies in China Xia Huang China</td>
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<td>16:20</td>
<td>New tools for the improvement of energy efficiency, fouling control and reliability of membrane systems Val S. Frenkel US</td>
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<td>17:10</td>
<td>Panel discussion: Roger Ben Aim France, Jan Hofman Netherlands, Xia Huang China, Val Frenkel US</td>
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<td>Closing remarks</td>
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<td>YWP reception</td>
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</table>
| **08:15 – 09:45** | **Microbial pollution in water**  
Chair Joan Rose US  
08:15 Introduction  
08:20 Developing a fully integrated micro-device for the in-situ detection of cyanobacteria and cyanotoxin-producing strains in freshwater samples Zdravka Do-quang France  
08:40 Characterization of enteroviruses occurring in domestic wastewaters by real-time PCR Jinhong Zhou China  
09:00 Evaluation of a new technology for onsite detection of E. coli and coliform bacteria in water Stephen Brown Canada  
09:20 Single-step 11-gene m-PCR for the detection of diarrhoeagenic E. coli in clinical and environmental water sources in South Africa Kousar Omar South Africa  
09:40 Closing summary | **Membrane technologies— new developments**  
Chair Josef Klinger Germany  
08:15 Introduction  
08:20 Preparation of a membrane for water treatment with low biofouling and narrow pore-size distribution by the lithographic method Dong-Chan Choi Korea  
08:40 A comparison of CNT membrane performance manufactured by mixed CNT membrane and vertically aligned CNT membrane Youngbin Baek Korea  
09:00 Demonstration of AquaporinZ (AQPz)-embedded nanofiltration membranes Peishan Zhong Singapore  
09:20 Preparation, characterisation and application of a novel PA/SiO2 nanocomposite NF membrane Limei Jin China  
09:40 Closing summary |
| **09:45 – 10:30** | **Morning break**                                               | **Exhibition**                                                              |
| **10:30** | **Presidential address**                                                   | **Room 1**                                                                  |
| **11:30** | **Building innovative partnerships in the water sector**  
Jaehyang So World Bank  
Green growth and Korea's policy toward water and wastewater Soo-Gil Young Korea | **Room 1**                                                                  |
| **12:00 – 13:30** | **Lunch**                                                               | **Exhibition**                                                              |
| **13:30 – 15:00** | **Chemical and biological hazards in water**  
Chair Fenting Li China  
13:30 Introduction  
13:35 Ecotoxicity comparison of organic contaminants and heavy metals using Vibrio qinghaiensis (sp. 067) Xiaochang Wang China  
13:55 Molecular typing of somatic coliphages to determine their presence and survival in environmental waters Hee Suk Lee Korea  
14:15 The endocrine-disrupting activity and interspecies sensitivity of wastewater: evaluation by reporter gene assay using oestrogen receptors derived from multi-species Masaru Ibara Japan  
14:35 In vivo endocrine-disruption assessment of wastewater treatment plant effluents with small organisms David Benanou France  
14:55 Closing summary | **Membrane technologies— fouling management**  
Chair Val Frenkel US  
13:30 Introduction  
13:35 Fouling of UF membranes during algal bloom: the role of transparent exopolymer particles (TEP) Lorenz Willocq Netherlands  
13:55 A study of biopolymer retention, NOM fouling and microbial barrier effects in pilot-scale with ultrafiltration and combined coagulation Alexander Keucken Sweden  
14:15 Potential application of D-amino acids in biofouling control of nanofiltration membranes Qilian Li US  
14:35 Characterization of hydraulically reversible and irreversible fouling species in ultra-filtration drinking water treatment systems using fluorescence EEM and LC-OCD measurements Youngseck Hong Canada  
14:55 Closing summary |
| **15:00 – 15:30** | **Afternoon break**                                                | **Exhibition**                                                              |
| **15:30 – 17:00** | **Chemical and biological hazards in water**  
Chair Yang Min China  
15:30 Introduction  
15:35 Evaluation of the adenosine triphosphate (ATP) bioluminescence assay for monitoring effluent quality and disinfection performance Natalie Linklater Canada  
15:55 Development of fluorescent molecular probes for analysis of heavy metal ions in aquatic samples Akira Hafuka Japan  
16:15 Identification of potential disinfection treatment by-products Valérie Ingrand France  
16:35 Innovative approach combining emerging disinfection by-products’ prioritisation to the development of analytical, sensitive methods David Benanou France  
16:55 Closing summary | **Membrane technologies— process applications**  
Chair AiK Num Puah Singapore  
15:30 Introduction  
15:35 Dependency of synthesis conditions on properties of functionalised carbon nanotube-blended polyethersulphone membrane Moon Son Korea  
15:55 Mechano-chemical ageing of polyethersulphone/polyvinylpyrrolidone ultrafiltration membranes used in drinking water production Bastien Pèlerin France  
16:15 A multi-criteria approach to select low-pressure membranes for water treatment applications Philippe Gislette France  
16:35 Assessing the removal of cyanobacteria cells and cyanotoxins by means of ultra-filtration membranes in pilot-scale testing Marcelo Libanio Brazil  
14:55 Closing summary |
| **17:15 – 18:00** | **Water futures—a cross-sectoral, system perspective**  
Pavel Kabat IIASA | **Room 1**                                                                  |
| **18:00 – 19:30** | **Posters sessions and reception**                                       | **Poster lounge exhibition hall**                                             |
| **19:00 – 21:00** | **YWP reception**                                                        | **Paradise Hotel Busan**                                                     |
Monday technical programme

08:15 - 09:45  Room 14  08:15 - 09:45  Room 15
Water quality control and the smart grid approach  Leakage, transients and rehabilitation of water distribution systems
Chair Heechul Choi Korea  Chair Timothy Waldron Australia
08:15 Introduction  08:15 Introduction
08:20 A smart-sensor network case study for drinking water quality monitoring  08:20 A study on setting methods of economic level of leakage in water pipe networks Taeho Choi Korea
  Cyrille Lemoine France  08:40 The ‘Mapping the Underworld’ project—industry/academic cooperation delivers dramatic new developments for water networks Jo Parker UK
08:40 The smart grid as a public health protection tool—using smart-grid technologies to monitor distribution systems Graham Symmonds US
09:00 Evaluation of trihalomethane formation in treatment of water containing Microcystis aeruginosa using chitosan as a coagulant Bruna Capelete Brazil
09:20 Recent developments and applications in smart-water metering Jin Chul Joo Korea
09:40 Closing summary

09:45 - 10:30  Morning break  Exhibition
10:30 Presidential address  Room 1
11:30 Building innovative partnerships in the water sector  Room 1
Joehyang So World Bank
Green growth and Korea’s policy toward water and wastewater  Soo-Gil Young Korea
12:00 - 13:30  Lunch  Exhibition
13:30 - 15:00  Room 14  13:30 - 15:00  Room 15
Water quality control and the smart grid approach  Water quality modelling in water distribution systems
Chair Heechul Choi Korea  Chair David Butler UK
13:30 Introduction  13:30 Introduction
13:35 Development of point-of-use water disinfection technology using ceramic water filters and an electrochemical hybrid system Yejoon Yoon Korea
13:55 A sustainable, decentralised water cycle: a smart water grid application Serper Sarp Korea
14:15 Minoan and Etruscan water and wastewater technologies: approaches and lessons learned Andreas N Angelakis Greece
14:35 The regrowth potential of drinking water produced from NOM-containing groundwater: is Fe(II)-related radical generation involved? Peter van der Maas Netherlands
14:55 Closing summary
15:00 - 15:30  Afternoon break  Exhibition
15:30 - 17:00  Room 14  15:30 - 17:00  Room 15
Industrial wastewater treatment—process applications  Multi-scale urban water systems
Chair Jay Witherspoon Australia  Chair Mary Ann Dickinson US
15:30 Introduction  15:30 Introduction
15:35 Degradation, separation and recovery of fuel elements from nuclear wastewater Evans Chirwa South Africa
15:55 Physical–chemical processes for treatment of wastewater and industrial water reuse Rafael Almada Brazil
16:15 Combined technology for clomazone herbicide wastewater treatment—three-dimensional packed-bed electrochemical oxidation and biological contact degradation Yujie Feng China
16:35 Biodegradability improvement of textile wastewater treated by SDS-CuO/TiO2 under solar light Xuan Xu China
16:55 Closing summary
17:15 - 18:00  Water futures—a cross-sectoral, system perspective Pavel Kabat IIASA  Room 1
18:00 - 19:30  Posters sessions and reception  Poster lounge exhibition hall
19:00 - 21:00  YWP reception  Paradise Hotel Busan
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<tr>
<td>Integrated water management for the city of the future</td>
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<td>Workshop: Connecting millions— expanding access to unserved populations at scale</td>
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<td>Chair Faisal Anwar Australia</td>
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<td>Chair Josses Mugabi World Bank</td>
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<td>08:15</td>
<td>Introduction</td>
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<td>08:20</td>
<td>Sustainable urban planning and water management in the city of the future Per-Arne Malmqvist Sweden</td>
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<td>08:40</td>
<td>The city blueprint: experiences with the implementation of 24 indicators to assess the sustainability of the urban water cycle Cornelis van Leeuwen Netherlands</td>
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<td>09:00</td>
<td>Unlocking integrated water management opportunities in our cities Daniel O'Halloran Australia</td>
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<td>09:20</td>
<td>Integrated water management planning in Melbourne, Australia—managing competing objectives Glenn Wilson Australia</td>
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<tr>
<td>Workshop: The Four Rivers Restoration Project</td>
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<td>Workshop: Sharing water solutions from the Portuguese-speaking world</td>
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<td>Chair Byung-Kook Lee Korea</td>
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<td>Chair Rodrigo Proença de Oliveira Portugal</td>
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<td>13:35</td>
<td>The Four Major Rivers Restoration Project to adapt to climate change Dongryul Yi Korea</td>
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<td>14:00</td>
<td>Water quality forecasting systems in Korea Joonghyuk Min Korea</td>
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<td>14:10</td>
<td>The effect of a new green deal to overcome economic recession in the water sector Julia Bucknall US</td>
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<tr>
<td>14:25</td>
<td>Panel discussion</td>
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<td>Open discussion</td>
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<td>Workshop: Optimising public and private roles in supply chain management</td>
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<td>Chair Jan Janssens Switzerland</td>
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<td>Chair Helena Alegre Portugal</td>
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<td>15:30</td>
<td>Introduction Paul Reiter IWA</td>
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<td>15:35</td>
<td>Project delivery for utilities—operating in the ‘grey zone’ Lucia Cade Australia</td>
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<td>15:45</td>
<td>Review of public-private collaboration in delivering performance for water users and public authorities Jack Moss France</td>
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<td>16:00</td>
<td>Creative use of alliance contracting Peter Moore Australia</td>
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<td>16:15</td>
<td>Approaches to financing project delivery: a bank’s perspective Julia Bucknall World Bank</td>
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<td>Feedback on cases of new contractual models for performance improvement Jacques Labre France</td>
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<td>A novel public-private collaboration in the management of New York’s water supply Gustavo Migues Korea</td>
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<td>9:45 – 10:30</td>
<td>Prince Sultan Bin Abdulaziz International Prize for Water Industry’s leading scientific innovation prizes— nominations open</td>
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<td>12:00 – 12:45</td>
<td>Samsung Cheil Industries Samsung Cheil Membrane products— features with innovations Presented by Fufang Zha</td>
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<td>12:45 – 13:30</td>
<td>Samsung Engineering Successful private development of water projects (part 1) Presented by Russell Reed</td>
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<td>13:30 – 14:15</td>
<td>Samsung Engineering Successful private development of water projects (part 2) Presented by Russell Reed</td>
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<td>Doosan Heavy Industries &amp; Construction Design and construction of Korea’s first test-bed SWRO plant Presented by Sung-woo Woo</td>
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<td>Doosan Heavy Industries &amp; Construction Innovative application of pre-treatment systems for challenging projects Presented by Won-kyu Yim</td>
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<td>SUEZ ENVIRONNEMENT Industrial parks and environmental protection in China</td>
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**Monday technical programme**
**Proceedings—on USB**

In your delegate bag you will find a USB of congress proceedings. The USB contains full papers of platform presentations, electronic versions of posters, and extra resources from IWA.

To easily find materials on the USB, search the files using keywords. This will bring up presentations associated with those keywords, and their papers.

**Wi-fi internet—free access**

Free wi-fi is available in the exhibition hall in areas shown on page 76, during the open hours of the exhibition. The password is **busan**. If you unable to log on, the network may be too busy—so please try again shortly.

**Mobile app for schedule, map, community**

The easy-to-use app shows you:
- up-to-the-minute information on its ‘dashboard’
- a customisable ‘schedule-at-a-glance’ to get organised
- an interactive map of the exhibition
- real-time alerts from congress organisers
- a built-in Twitter feed to follow and join in on the event chatter

You can also:
- rate and comment on sessions you attend
- take photos to share your experiences
- connect with colleagues using the ‘friends’ feature
- keep up with industry news

**Get the app**

- For iPhone, iTouch, iPad and Android: visit the App Store or Android Market and search for **IWA2012busan**.
- For all other phones: go online to www.m.core-apps.com/iwa2012busan to download the app or bookmark the page for future reference.
**Keynote speakers**

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<tr>
<th>Date</th>
<th>Time</th>
<th>Speaker</th>
<th>Affiliation</th>
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<tbody>
<tr>
<td>Sunday</td>
<td>16:30</td>
<td>Yoo Young Sook</td>
<td>Minister for the Environment Korea</td>
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<tr>
<td>Monday</td>
<td>11:30</td>
<td>Jaehyang So</td>
<td>World Bank</td>
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<tr>
<td>Monday</td>
<td>11:00</td>
<td>Yong So-Gil</td>
<td>Presidential Committee on Green Growth Korea</td>
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<tr>
<td>Monday</td>
<td>17:15</td>
<td>Pavel Kabat</td>
<td>International Institute for Applied Systems Analysis (IIASA) Austria</td>
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<tr>
<td>Tuesday</td>
<td>08:15</td>
<td>Water industry leaders panel</td>
<td>• Suez Environnement • Doosan • Samsung Engineering • Xylem • and others</td>
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<tr>
<td>Wednesday</td>
<td>08:15</td>
<td>Paul Greenfield</td>
<td>Australian Nuclear Science &amp; Technology Organisation, International WaterCentre Australia</td>
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<tr>
<td>Thursday</td>
<td>08:15</td>
<td>Wim van Vierssen</td>
<td>KWR Watercycle Research Institute Netherlands</td>
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<tr>
<td>Monday</td>
<td>11:30</td>
<td>Jaehyang So</td>
<td>World Bank</td>
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<tr>
<td>Monday</td>
<td>16:15</td>
<td>Staffan Kjelleberg</td>
<td>Singapore Centre on Environmental Life Sciences Engineering, Centre for Marine Bio-Innovation University of NSW Singapore and Australia</td>
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<tr>
<td>Wednesday</td>
<td>16:15</td>
<td>Linda Macpherson</td>
<td>CH2M HILL United States</td>
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<tr>
<td>Thursday</td>
<td>16:00</td>
<td>Hansruedi Siegrist</td>
<td>Swiss Federal Inst. of Aquatic, Science and Technology Switzerland</td>
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<tr>
<td>Thursday</td>
<td>16:00</td>
<td>Shane A. Snyder</td>
<td>University of Arizona United States</td>
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</table>

At CDM Smith, we are committed to building strong and lasting relationships with our clients and each other. Together, we are solving the world’s water, environment, transportation, energy and facilities challenges with smart, integrated solutions. As your trusted partner, we are shaping tomorrow while delivering the services you need today. Proving every day—in every way—we’re better together.
08:15 – 09:00  Water industry and technology leaders panel

Keynote speakers

Water industry and technology leaders panel
Facilitator: Paul Brown, US

Central to our ability to find ‘game changing’ solutions and the massive innovation needed to meeting the staggering challenges that lie ahead for the water needs of the planet—are the industry and technology leaders in the water business.

This session, building on Monday morning’s session titled ‘Inspiring change to meet a challenging future’, provides the Busan Congress delegates with an opportunity to listen and interact with some of the world’s leading figures in the water industry on what they see as the key innovations to come and the future of the industry.

Included in this session will be leaders of the water technology consultants and suppliers including Xylem, Suez Environment, Doosan, and Samsung Engineering, CDM Smith and CH2M Hill. In addition, the panel will include world renowned technology innovators. In combination, these leaders will provide a rare opportunity to achieve a view of where the future lies from the vantage point of the key industry and technology leaders in the water business.

Towards controlling integrated bioprocesses—engineering microbial communities from within

Prof. Staffan Kjelleberg is internationally renowned for his research in bacterial biofilm biology, chemically mediated interactions used by bacteria and higher organisms, and using biofilms in engineering and public health. His research seeks to understand the role of complex microbial communities in urban water cycle and coastal ecosystems.

Staffan Kjelleberg
Director, Singapore Centre on Environmental Life Sciences Engineering, Singapore
Co-director, Centre for Marine Bio-Innovation, University of New South Wales Australia

10:15 – 10:45  COF workshop: Building on the Montreal COF consensus—case studies from developing countries
Chair Kala Vairavamoorthy US
09:15 Welcome and introduction Paul Reiter IWA
09:20 The case for building cities differently in lower- and middle-income countries Kala Vairavamoorthy US
09:40 Implementing COF concepts in sub-Saharan Africa Julia Bucknall World Bank
09:40 Implementing COF concepts in China Xiaochang Wang China
Panelists: speakers plus Martin Wagner Germany, Silver Mugisha Uganda, Duncan Mara UK
10:35 Closing remarks Kala Vairavamoorthy US

10:45 – 11:15  Morning break

11:15 – 12:45  COF workshop: Urban resilience, nature and aesthetics—inspired use of water for function as well as beauty—great urban design that includes habitat, and high design aesthetics
Chair Steve Moddemeyer US
11:15 Urban resilience, nature, and aesthetics—a report from the field Steve Moddemeyer US
11:30 Design and function—creating urban habitats with high design aesthetics in the 21st century Robert Marshall Canada
11:50 Ecological landscapes in cities—a fusion of ecosystem services and in the public realm Tony Wong Australia
12:05 The Saemangeum Project—Ariul, the city of water Jiyong Choi Korea
12:20 Connecting the urban green and blue in ICLEI cities around the world Margaret Pageler US
12:30 Panel discussion

12:45 – 14:15  Lunch

14:15 – 15:45  COF workshop: A new paradigm of the ecological restoration of urban streams toward a ‘green city’, Busan
Chair Ji-Gon Kim Korea
14:15 Ecological restoration of the urban streams in Busan city—a case study of Oncheon Stream Jong-Wook Choi Korea
14:35 Restoration of a covered stream in Busan Hyun-Suk Shin Korea
14:50 Urban management in Hamburg Olaf Simon Germany
15:05 Recovery of Aquapolis Osaka—efforts to recovery on the Donorte River waterfront Akitaka Oosugi Japan
15:20 Panel discussion: Margaret Pageler US, Rodger Bannister New Zealand, Won-Joo Kim Korea
15:40 Closing remarks

15:45 – 16:15  Afternoon break

16:15 – 17:00  Towards controlling integrated bioprocesses—engineering microbial communities from within Staffan Kjelleberg Singapore and Australia

17:30 – 18:30  Korean cultural show
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<tr>
<td>08:15 - 09:00</td>
<td>Water industry and technology leaders panel</td>
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<tr>
<td>09:15 - 10:45</td>
<td>Odours and volatile-emissions monitoring treatment and management</td>
<td>Chair Franz-Bernd Frechen Germany</td>
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<tr>
<td>09:15</td>
<td>Introduction</td>
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<tr>
<td>09:20</td>
<td>Advances in odour and corrosion research in Australia</td>
<td>Zhiguo Yuan Australia</td>
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<td>09:40</td>
<td>Control of odour nuisance in urban areas: the efficiency and social acceptance of the application of masking agents</td>
<td>Valentina Lazarova France</td>
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<td>10:00</td>
<td>Development of a diagnostic tool: the wastewater collection network odour wheel</td>
<td>Zdravka Doquang France</td>
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<td>10:20</td>
<td>Dealing with hydrogen sulphide problems in sewers</td>
<td>Marjoleine Weemaes Belgium</td>
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<td>10:40</td>
<td>Closing summary</td>
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<td>10:45 - 11:15</td>
<td>Morning break</td>
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<tr>
<td>11:15 - 12:45</td>
<td>Process control in wastewater treatment</td>
<td>Chair Peter Vanrolleghem Canada</td>
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<td>11:15</td>
<td>Introduction</td>
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<tr>
<td>11:20</td>
<td>Design procedure for anaerobic digestion controllers aimed at a feasible full-scale application</td>
<td>Peter Vanrolleghem Canada</td>
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<td>11:40</td>
<td>Influent flow and aeration control synchronisation in full-scale municipal treatment plants</td>
<td>Marjoleine Weemaes Belgium</td>
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<tr>
<td>12:00</td>
<td>Add control: plant virtualisation for control solutions in WWTP</td>
<td>Mikel Maiza Spain</td>
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<td>12:20</td>
<td>Advanced data management for optimising the operation of WWTPs</td>
<td>Eduardo Ayesa Spain</td>
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<td>12:40</td>
<td>Closing summary</td>
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<tr>
<td>12:45 - 14:15</td>
<td>Lunch</td>
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<tr>
<td>14:15 - 15:45</td>
<td>Modelling treatment processes</td>
<td>Chair Ingmar Nopens Belgium</td>
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<tr>
<td>14:15</td>
<td>Introduction</td>
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<tr>
<td>14:20</td>
<td>Towards a plant-wide benchmark simulation model with simultaneous nitrogen- and phosphorus-removal wastewater treatment processes</td>
<td>Xavier Flores-Aisina Sweden</td>
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<td>14:40</td>
<td>Evaluation of model-based, predictive control strategies based on forecasting influent and effluent in A2/O process</td>
<td>Hyosoo Kim Korea</td>
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<td>15:00</td>
<td>Enhanced denitrification by external carbon source in the CAST process—modelling and application</td>
<td>Markus Ahnert Germany</td>
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<td>15:20</td>
<td>Modelling biological chromium (VI) reduction in aquifer microcosm column systems</td>
<td>Pulane Molokwane South Africa</td>
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<td>15:40</td>
<td>Closing summary</td>
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<td>15:45 - 16:15</td>
<td>Afternoon break</td>
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<tr>
<td>16:15 - 17:00</td>
<td>Towards controlling integrated bioprocesses—engineering microbial communities from</td>
<td>Chair Steven Dentel US</td>
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<tr>
<td>16:15</td>
<td>Introduction</td>
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<td>14:40</td>
<td>Enhancement of waste activated sludge anaerobic digestion by a novel, chemical-free acid/alkaline pretreatment using electrolysis</td>
<td>Wipa Charles Australia</td>
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<tr>
<td>15:00</td>
<td>Enhancement of energy production from wastewater sludges through the applied pretreatment techniques</td>
<td>Aylin Alagoz Turkey</td>
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<td>15:20</td>
<td>Co-digestion of glicerine and sewage sludge to optimise green electricity production</td>
<td>Greet De Guedre Belgium</td>
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<td>15:40</td>
<td>Closing summary</td>
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<tr>
<td>17:30 - 18:30</td>
<td>Korean cultural show</td>
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</table>
08:15 - 09:00  Water industry and technology leaders panel

**Room 1**

**Phosphorus removal**
Chair Norbert Jardin Germany
09:15 Introduction
09:20 Phosphorus removal from secondary wastewater effluent using aluminium-based coagulants Lim Seok Kang Korea
09:40 Improving biological phosphorus removal in UCT-MBR—a pilot study Shaleena Smith US
10:00 Optimised nutrient removal using the activated return sludge process (ARP) Silie Bendix Larsen Denmark
10:20 Adsorption of phosphate from aqueous solutions and wastewater using mesoporous titanium oxide as an adsorbent Ki Young Park Korea
10:40 Closing summary

**Natural wastewater treatment systems**
Chair Günter Langergraber Austria
09:15 Introduction
09:20 Effects of wastewater quality and weather-condition variations on stabilisation ponds' performance for wastewater treatment in Yazd, Iran Mohammad Taghi Ghaneian Republic of Iran
09:40 Influence of retention time, number of ponds and pond depth on nitrogen removal in shallow maturation ponds treating UASB reactor effluent Marcos von Sperling Brazil
10:00 Evaluation of the wind influence in stabilisation-pond circulation Tsunao Matsumoto Brazil
10:20 A new type of subsurface-flow constructed wetland for wastewater treatment in cold areas Fang Ma China
10:40 Closing summary

10:45 – 11:15  Morning break

**Exhibition**

**11:15 – 12:45  Room 4**  **11:15 – 12:45  Room 5**

**Phosphorus recovery**
Chair Peter Cornel Germany
11:15 Introduction
11:20 Three years of operation of North America's first nutrient-recovery facility Peter Schauer US
11:40 Struvite recovery: pilot-scale results and economic assessment of different scenarios Alexandre Gali Serra Spain
12:00 Struvite precipitation of ammonium and phosphate produced from the dual-digestion of municipal sewage sludge Hong-Duck Ryu Korea
12:20 Phosphorus recovery from wastewater by polymer-coated zirconium sulphate surfactant micelle mesostructure Niti Pitakteeratham Japan
12:40 Closing summary

**Advanced oxidation processes in wastewater treatment**
Chair Keith Robertson IWA
11:15 Introduction
11:20 Catalysis degradation and decolourisation of azo dye reactive Black B using immobilised iron oxides occurring with adsorption Yao-Hui Huang Chinese Taiwan
11:40 Microorganism inactivation by an ozonation step optimised for micropolllutant removal from tertiary effluent Heidemarie Schara Austria
12:00 Concurrent photocatalytic hydrogen production and organic degradation by a composite catalyst film in a two-chamber photoreactor Xiao-yan Li Hong Kong, China
12:20 Oxidative-reductive photodecomposition of perfluorooctanoic acid in water Rabinda Gh Japan
12:40 Closing summary

12:45 – 14:15  Lunch

14:15 – 15:45  Room 4  **14:15 – 15:45  Room 5**

**Fate of chemical and biological hazards in the environment**
Chair Maria Fürhacker Austria
14:15 Introduction
14:20 Investigation of antibiotic-resistant plasmid curing under environmental antibiotic stress Joonhong Park Korea
14:40 Change of the adsorption of tetracyclines on sediment during sediment organic diagenesis Xiao-yao Li Hong Kong, China
15:00 Leaching of bisphenol A and F from new and old epoxy coatings: laboratory and field studies Zdravka Doquang France
15:20 Effects of lipid composition on partitioning of fullerene between water and lipid membranes Yeonjeong Ha US
15:40 Closing summary

**Advanced oxidation processes in wastewater treatment**
Chair Hervé Suty France
14:15 Introduction
14:20 Ozone-enhanced biological treatment of wastewater with high COD content Jenny Jian Wang Germany
14:40 Effect of ozonation on the structure of organic matter and its removal by a BAC filter for tertiary wastewater treatment Pengkang Jin China
15:00 Process control of effluent ozonation applying online UV/Vis-spectrometry Heidemarie Schara Austria
15:20 A statistical, experimental design approach for mineralisation and detoxification of diethyl phthalate by H2O2/UV-C process Olcay Tunay Turkey
15:40 Closing summary

15:45 – 16:15  Afternoon break

16:15 – 17:00  Towards controlling integrated bioprocesses—engineering microbial communities from within Staffan Kjelleberg Singapore and Australia

17:30 – 18:30 Korean cultural show
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<tr>
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<tr>
<td>08:15 – 09:00</td>
<td>Water industry and technology leaders panel</td>
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<tr>
<td>09:15 – 10:45</td>
<td>Modelling tools for the sustainable management of river basins</td>
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<td>Room 1</td>
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<td></td>
<td>Chair Joon Ha Kim Korea</td>
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<td></td>
<td>09:15 Introduction</td>
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<td>09:20 Comparative analysis of WASP7 and HEM3D water quality models</td>
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<td>— their application to the Nakdong River, Korea</td>
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<td>Chair Dongil Seo Korea</td>
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<td>09:40 Catchment, hydrodynamic and water quality modelling of the</td>
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<td>Hawkesbury-Nepean river system (Sydney, Australia)</td>
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<td>Chair Tony Church Australia</td>
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<td>10:00 Modelling faecal coliforms using a modified SWAT: a case study</td>
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<td>for the Stillwater sub-basin, Massachusetts</td>
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<td>Chair Mi-Hyun Park US</td>
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<td>10:20 Development of a hydrographic network using Korean river</td>
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<td>Chair Moonjin Kwon Korea</td>
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<td>10:40 Closing summary</td>
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<td>10:45 – 11:15</td>
<td>Morning break</td>
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<tr>
<td>11:15 – 12:45</td>
<td>Artificial recharge for sustainable groundwater resources</td>
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<td>Chair Shafick Adams South Africa</td>
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<td></td>
<td>11:15 Introduction</td>
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<td>11:20 The effect of agro-climatic factors on groundwater recharge</td>
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<td>at Rottnest Island, Western Australia</td>
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<td></td>
<td>Chair A H M Faisal Anwar Australia</td>
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<td></td>
<td>11:40 Sustainable water recharge in developing countries: Turbio</td>
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<td>river basin feasibility study</td>
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<td>Chair Oriana Landa Cansigno Mexico</td>
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<td></td>
<td>12:00 Aqua Charge: recharge synthesis for uplifted karst aquifer</td>
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<td>Chair Guam</td>
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<td>12:20 Reactive organic layer effects in the removal of emerging</td>
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<td>pollutants through SAT in the Llobregat aquifer</td>
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<td>Chair Xavier Bernat Spain</td>
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<td>12:40 Closing summary</td>
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<tr>
<td>12:45 – 14:15</td>
<td>Lunch</td>
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<td>14:15 – 15:45</td>
<td>Remedial actions and evaluation of contaminated groundwater</td>
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<td></td>
<td>Chair Heechul Choi Korea</td>
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<td></td>
<td>14:15 Introduction</td>
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<td>14:20 Ozone and aquifer recharge and recovery hybrid for</td>
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<td>attenuation of bulk organics and micropollutants</td>
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<td>Chair Min Yoon Saudi Arabia</td>
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<td></td>
<td>14:40 Bioremediation of endosulfan-contaminated groundwater using a</td>
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<td>natural zeolite-supported biobarrier</td>
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<td>Chair Selim Sanin Turkey</td>
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<td>15:00 Comparative evaluation of various data-mining algorithms in</td>
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<td>assessing groundwater sensitivity to TCE pollution exposure</td>
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<td>Chair Joonghong Park Korea</td>
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<td>15:20 Estimating the fates of organic contaminants in an aquifer using</td>
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<td>Chair QSAR Seung Lim Korea</td>
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<td>15:40 Closing summary</td>
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<td>17:30 – 18:30</td>
<td>Korean cultural show</td>
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<td>Busan Cinema Center</td>
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**COF workshop: Smart cities — resilient, livable, sustainable and affordable**

Chair Bruce Beck US and Tony Wong Australia
- If cities are to be designed and managed to enhance the resilience, livability and sustainability of urban communities, how can we best value these outcomes? Can the benefit streams of resource energy recovery pay for the costs of smart re-engineering?

Chair Bruce Beck US
- 09:15 Smart urban metabolism — innovation, profits and costs
- 09:50 Water-sensitive cities — generating value-adding ecosystem services

Chair Tony Wong Australia
- 10:15 Panel discussion: Affordable smart cities
- Panelists: speakers plus Terry Moore US, Rob Skinner Australia
- 10:40 Closing remarks

**SWC workshop: Water of the future — how do we know what is smart?**

Chair Glen Daigger US
- 11:15 Introduction to the Smart Water Cluster and results of the Velserbroek workshop
- 11:35 Metrics to define ‘smart water’
- 11:55 Development of resilient portfolios

Chair Enrique Lopez Calva Singapore
- 12:15 Panel discussion: How do we implement metrics and portfolios?
- 12:40 Closing remarks

Chair Mark Beuhler US
- 14:15 Smart water case study — Singapore
- 14:35 Smart water case study — Israel
- 14:55 Smart water case study — Windhoek

Chair Christian Stöck Namibia
- 15:15 Panel discussion: How do we compare portfolios and where do we go from here?
- 15:40 Closing remarks
### 08:15 - 09:00  
**Water industry and technology leaders panel**

#### Room 1

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### 09:15 - 10:45  
**SWC workshop: New horizons in water reuse—scope and applications worldwide**  
**Room 8**

**Chair** Kwang-Ho Choo  
Korea

- **09:15** Introduction: safe water reuse options for sustainable water-cycle management  
  Blanca Jimenéz  
  Mexico

- **09:40** Increased water supply security— the lessons learned from more than 40 years of direct, potable reuse in Windhoek  
  Josef Lahnsteiner  
  Germany

- **09:50** Water reuse as the pillar of the water conservation strategy in the booming city of Macau  
  Felix Fan  
  Macau, China

- **10:00** Water cycle management in the Valle de Mexico  
  Claudia Hernandez  
  Mexico

- **10:10** Valoralisation of historical heritage and restoration of biodiversity in the region of Milan  
  Roberto Mazzini  
  Italy

- **10:20** Creation of a new recreational water environment in Beijing  
  Hong-Ying Hu  
  China

- **10:30** Panel discussion: Blanca Jimenéz  
  Mexico, Bruno Tisserand  
  France, Valentina Lazarova  
  France

#### Room 9

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<td>Utilities workshop: Asset management—decision-making from strategy to implementation</td>
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**Chair** Kirsten de Vette  
IWA

**This workshop, targeting utilities, aims to provide participants with hands-on experience in asset management planning in one of three main contexts:**

- Developing region— case from India; fairly developed region— case from Portugal; leading-edge sustainable city— TRUST project case.

**Group exercises start with an investment ‘game’ to create awareness by showing the immediate and long-term effects of decisions on the performance of the systems.**

**Facilitators:**

- Helena Alegre  
  Portugal
- Meera Mehta  
  India
- João Feliciano  
  Portugal
- Dinesh Mehta  
  India

### 10:45 – 11:15  
**Morning break**

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**Chair** Valentina Lazarova  
France

- **11:15** Introduction: water–energy interactions in water reuse systems  
  Kwang-Ho Choo  
  Korea

- **11:30** Energy consumption in advanced water reuse processes  
  Yong Cheol Shin  
  Korea

- **11:40** Recent trends for reduction of energy use in reverse osmosis— from nanotechnology to green power  
  Nikolay Voutchkov  
  US

- **11:50** New horizons for lowering the energy footprint of wastewater treatment and reuse by forward osmosis  
  Sangho Lee  
  Kookmin Korea

- **12:00** Chemical risk management to lower the environmental footprint of water reuse  
  Shane Snyder  
  US

- **12:15** Panel discussion: Peter Cornel  
  Germany, Jiangyong Hu  
  Singapore, Paolo Rocaaro  
  US, Chi-wang Li  
  Chinese Taiwan

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**In the second part, participants will be guided through the planning process, including a SWOT analysis at the strategic level and a prioritisation of intervention options at the tactical level (using the aware planning tool software).**

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### 11:15 – 12:45  
**Utilities workshop: Asset management—decision-making from strategy to implementation**  
**Room 8**

**Chair** Kirsten de Vette  
IWA

- **11:15** Introductory keynote  
  Joppe Cramwinckel  
  World Business Council for Sustainable Development

- **11:30** Panel discussion: experiences of optimising reuse between industries and municipalities  
  Panelists: Valentina Lazarova  
  France, Didier Perrin  
  China and representatives from Coca Cola Company, Anglo American, Kemira and Shell

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### 12:45 – 14:15  
**Lunch**

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**Chair** Ger Bergkamp  
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**Chair** Paul Reiter  
IWA and Kala Vairavamoorthy  
US

- **14:15** Welcome and introduction  
  Paul Reiter  
  IWA

- **14:20** The big picture: networks of the future—smart, multipurpose and flexible by design  
  Kala Vairavamoorthy  
  US

- **14:50** Potential for smart network design compared with traditional design methodologies  
  Martin Wagner  
  Germany

- **15:05** Trends in control strategies of existing networks  
  Guy Horowitz  
  Israel

- **15:20** Panel discussion: learning from water and other sectors  
  Facilitator: Paul Brown  
  US

- **15:50** Closing remarks  
  Kala Vairavamoorthy  
  US

### 13:00 – 16:15  
**Afternoon break**

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<td>Towards controlling integrated bioprocesses—engineering microbial communities from within Singapore and Australia</td>
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**Chair** Staffan Kjelleberg  
Singapore and Australia

**Panelists:**

- Johan Grön  
  US
- Speakers plus  
  Jake Grön  
  US

### 14:15 – 15:45  
**SWC workshop: Wastewater reuse at scale—cooperation and synergies between cities and industries**  
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  Kala Vairavamoorthy  
  US

### 15:45 – 16:15  
**Afternoon break**

### 16:15 – 17:00  
Towards controlling integrated bioprocesses—engineering microbial communities from within Singapore and Australia

### 17:30 – 18:30  
**Korean cultural show**

**Busan Cinema Center**
### Tuesday Technical Programme

#### 08:15 - 09:00 Water industry and technology leaders panel  
**Room 1**

#### 09:15 - 10:45 Nitrous oxide in wastewater treatment  
**Room 10**

- **Chair**: Kartik Chandran  
- **09:15** Introduction
- **09:20** Emerging pathways and factors for nitrous oxide emissions from activated sludge processes  
  - Kartik Chandran  
  - US
- **09:40** Advanced control system to reduce N2O emissions of a novel SBR process treating N-rich effluent via nitrite pathway  
  - Romain Lemaire  
  - France
- **10:00** Effect of pH on N2O reduction and accumulation during denitrification by methanol-utilising denitrifiers  
  - Yuting Pan  
  - Australia
- **10:20** Extension to the general ASM models to include nitrous oxide production via nitrification and denitrification processes  
  - Barth Smets  
  - Denmark
- **10:40** Closing summary

#### 10:45 – 11:15 Morning break

#### 11:15 – 12:45 Climate change and urban flood risk management  
**Room 10**

- **Chair**: Gertjan Zwolsman  
  - Netherlands
- **11:15** Introduction
- **11:20** Promotion of rain cities for climate change adaptation in a river basin  
  - Mooyoung Han  
  - Korea
- **11:40** Flood management under climate change conditions in Hat Yai municipality, Thailand  
  - Allan Siriratana Tabucanon  
  - Japan
- **12:00** Methodology for risk assessment of flash flood events due to climate and land-use changes: application to the Llobregat basin  
  - Àngels Cabello  
  - Spain
- **12:20** Computational hydraulics aspects of the drainage system planning for Happy Valley flood protection scheme, Hong Kong  
  - Kelvin Lau  
  - Hong Kong
- **12:40** Closing summary

#### 11:15 – 12:45 Greenhouse gas footprint of the urban water cycle  
**Room 11**

- **Chair**: Kartik Chandran  
  - US
- **11:15** Introduction
- **11:20** Connections between water, energy and greenhouse gas emissions in cities: key emerging messages  
  - Steven Kenway  
  - Australia
- **11:40** Quantification of methane and nitrous oxide greenhouse gas emissions from the urban water cycle  
  - Mark van Loosdrecht  
  - Netherlands
- **12:00** Economic feasibility studies for intensive and extensive wastewater treatments considering greenhouse gas emissions  
  - Maria Molinos Senante  
  - Spain
- **12:20** Water–energy–GHG emissions accounting framework for urban water supply and wastewater treatment options  
  - Meenakshi Arora  
  - Australia
- **12:40** Closing summary

#### 12:45 – 14:15 Lunch

#### 14:15 – 15:45 Climate change and urban flood risk management  
**Room 10**

- **Chair**: Gertjan Zwolsman  
  - Netherlands
- **14:15** Introduction
- **14:20** Vulnerability assessment of the damage produced in Barcelona in cases of heavy storm events  
  - Àngels Cabello  
  - Spain
- **14:40** Impact of climate change on flood risk for an urban drainage system: Bordeaux case study  
  - Xavier Litrico  
  - France
- **15:00** Linz SUDPLAN: developing a decision-support system to cope with climate change— urban drainage pilot  
  - Günter Gruber  
  - Austria
- **15:20** Sustainable supply planning in the Australian Capital Territory: choosing future climate scenarios  
  - Graham Cottin  
  - Australia
- **15:40** Closing summary

#### 14:15 – 15:45 WCE workshop: Perspectives and advances in modelling GHG emissions from wastewater systems  
**Room 11**

- **Chair**: Ingmar Nopens  
  - Belgium
- **14:15** Perspectives, approaches and tools for minimising greenhouse gas emissions from wastewater collection and treatment  
  - Zhiguo Yuan  
  - Australia
- **14:35** Relationships between technology, nitrogen removal efficiency and nitrous oxide emissions— the mutual benefit opportunities  
  - Kartik Chandran  
  - US
- **14:55** Where we’ve been, where we are and where we’re going with modelling N2O emissions in wastewater treatment  
  - Sudhir Murthy  
  - US
- **15:15** Panel discussion
- **15:35** Overview of IWA Task Group GHG and future efforts  
  - Ingmar Nopens  
  - Belgium
- **15:45** Open task group meeting

#### 15:45 – 16:15 Afternoon break

#### 16:15 – 17:00 Towards controlling integrated bioprocesses— engineering microbial communities from within  
**Room 1**

- **Staffan Kjelleberg**  
  - Singapore and Australia

#### 17:30 – 18:30 Korean cultural show

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**Room 1**

**09:15 - 10:45**

**Water safety plans**

**Chair:** Jan Janssens Switzerland

- **09:15** Introduction
- **09:20** Water safety plans: Aguas de Portugal's achievements and IWA manual translation to support dissemination Joana Pinto Coelho Portugal
- **09:40** Socially and economically acceptable drinking water supply from rainwater and improved solar disinfection Gippeum Bak Korea
- **10:00** Producing and supplying biologically stable drinking water by different advanced treatments Gang Liu Netherlands
- **10:20** Occurrence of taste and odour in drinking water across China Jianwei Yu China
- **10:40** Closing summary

**Biological drinking water treatment processes**

**Chair:** Bruno Nguyen France

- **09:15** Introduction
- **09:20** Membrane-less bio-electrochemical denitrification for aerobic biofilm systems Andreas Blank Germany
- **09:40** Neutrophilic iron-oxidising bacteria: relevant in biological drinking water treatment? Arda Gulay Denmark
- **10:00** Influence of air-flow rate and backwashing on the hydraulic behaviour of a submerged biological filter Yazmin Cobos Becerra Mexico
- **10:20** The efficiency of subsurface arsenic removal under low-phosphate conditions Sandra Borges Freitas Netherlands
- **10:40** Closing summary

**10:45 – 11:15**

**Morning break**

**11:15 – 12:45**

**Water safety plans**

**Chair:** Rose Lang IWA

- **11:15** Introduction
- **11:20** Small drinking water systems, obstacles and solutions for water safety plan implementation Rui Sancho Portugal
- **11:40** Evaluation of radiological risk in EPAL water supply systems — from water sources to drinking water network Maria João Benoliel Portugal
- **12:00** Potentially pathogenic bacteria isolated from different tropical waters in Sri Lanka Chamila Mannapperuma Sri Lanka
- **12:20** A quantitative microbiological risk assessment (QMRA) for defining the microbiological safety of drinking water in Paris suburbs Caroline Lecarpentier France
- **12:40** Closing summary

**Drinking water disinfection**

**Chair:** Juan Carlos Duran-Alvarez Mexico

- **11:15** Introduction
- **11:20** Innovations and advancements in UV technology for large-scale municipal applications Ji An Canada
- **11:40** The lessons learned from the computational modelling of UV photocatalytic reactors Fariborz Taghipour Canada
- **12:00** An online monitoring system using micro-fluorescent silica detectors for determination of three key operating parameters of a UV facility Mengkai Li China
- **12:20** Synergistic application of UV and chlorine in drinking water disinfection Sergio G Salinas Rodriguez Netherlands
- **12:40** Closing summary

**12:45 – 14:15**

**Lunch**

**14:15 – 15:45**

**Managing water quality in distribution systems**

**Chair:** Joan Rose US

- **14:15** Introduction
- **14:20** Bacterial-community analysis of drinking water reservoirs in Istanbul using molecular tools Sukriye Celikol Turkey
- **14:40** Monitoring and evaluation of pesticides and emerging organic compounds in EPAL water supply systems — from water sources to drinking water networks Maria João Benoliel Portugal
- **15:00** Aggregation and biofilm formation of bacteria isolated from domestic drinking water Bharathi Ramalingam UK
- **15:20** Influence of temperature on the survival of hygienically relevant bacteria in drinking water biofilms Susanne Grobe Germany
- **15:40** Closing summary

**Disinfection by-products in drinking water treatment**

**Chair:** Jürg Keller Australia

- **14:15** Introduction
- **14:20** Chlorine dioxide preoxidation in the formation of disinfection by-products during chlorination/chloramination of water and bromide-rich water Xin Yang China
- **14:40** Relationships between disinfection by-products formed by the chlorination of raw, treated and fractionated surface waters Paolo Roccaro Italy
- **15:00** Trichloronitromethane formation and nitrogen origin exploration during chloramination Xin Yang China
- **15:20** Association between nitrogenous disinfection by-products' formation and dissolved organic nitrogen in natural waters Hsin-hsin Tung Chinese Taiwan
- **15:40** Closing summary

**15:45 – 16:15**

**Afternoon break**

**16:15 – 17:00**

**Towards controlling integrated bioprocesses—engineering microbial communities from within Staffan Kjelleberg Singapore and Australia**

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<td>Chair Chen Guanghao Hong Kong, China</td>
<td>09:15 Introduction</td>
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<td>09:20</td>
<td>Optimisation of large-scale, high-temperature MED-TVC systems: numerical and experimental verification Seungwon Ihm United Arab Emirates</td>
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<td>09:40</td>
<td>Multi-objective optimisation of gas turbine cycle and MED-TVC desalination dual-purpose systems Iman Janghorban Korea</td>
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<td>Numerical simulation of a direct contact membrane distillation module for seawater desalination Seungjoon Chung Korea</td>
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<td>Design of membrane micro-morphology for membrane distillation, leading to better desalination performance Tai-Shung Chung Singapore</td>
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<td>New developments in fouling indices and applications in seawater reverse osmosis systems Sergio O’Salinas Rodriguez Netherlands</td>
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<td>11:40</td>
<td>Microbial desalination cells packed with ion-exchange resin for enhancement of water desalination Xia Huang China</td>
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<td>12:00</td>
<td>Brackish water pilot-plants show promise for drinking water supplies Martijn Groenendijk Netherlands</td>
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<td>12:20</td>
<td>Effects of chloraminated seawater on the SW30HR reverse osmosis membrane Lauren Valentino US</td>
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<td>A breakthrough cleaning technology for (bio) fouling control of spiral-wound membranes: clean operator Bas Rietman Netherlands</td>
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<td>Effect of dead cells on biofouling in reverse osmosis processes In Kim Korea</td>
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<td>Laboratory- to full-scale experiences with air/water cleaning in RO to control membrane fouling Emilie Cornelissen Netherlands</td>
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<td>A key mechanism in FO colloidal fouling: accelerated cake-enhanced osmotic pressure (A-CEOP) Youngjin Kim Korea</td>
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<tr>
<td>08:15 – 09:00</td>
<td>Water industry and technology leaders panel</td>
<td>Room 1</td>
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<td>09:15 – 10:45</td>
<td>SNC workshop: Integrated, real-time control of sewer–wastewater systems: State-of-the-art</td>
<td>Room 16</td>
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<td>Chair: Dines Thornberg, Anne Hoyer, Peter Steen Mikkelsen, Gürkan Sin Denmark</td>
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<td>09:15</td>
<td>Overview: Control structures—the different approaches, advantages and disadvantages</td>
<td>Anine Mollerup Denmark</td>
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<td>09:35</td>
<td>Integrated control in France</td>
<td>Pierre Sacareau France</td>
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<td>09:55</td>
<td>Integrated control without forecast</td>
<td>Edwin van Velzen Holland</td>
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<td>10:15</td>
<td>Integrated control with forecast</td>
<td>Martin Pleau Canada</td>
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<td>10:35</td>
<td>Discussion</td>
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<td>10:45 – 11:15</td>
<td>Morning break</td>
<td>Exhibition</td>
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<td>11:15 – 12:45</td>
<td>Integrated modelling and control of sewer and wastewater systems</td>
<td>Room 16</td>
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<td>Chair: Norbert Jardin, Germany</td>
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<tr>
<td>11:15</td>
<td>Introduction</td>
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<td>11:20</td>
<td>Scientific and technological challenges for high-resolution space-time peri-urban water management</td>
<td>Daniel Schertzer France</td>
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<td>11:40</td>
<td>KALLISTO: cost-effective and integrated optimisation of the urban wastewater system</td>
<td>Eindhoven Ingmar Nopens Belgium</td>
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<td>12:00</td>
<td>Improved wet-weather wastewater influent modelling at Vikinmaki WWTP by online weather radar information</td>
<td>Mari Heinnen Finland</td>
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<td>12:20</td>
<td>An environmental decision-support system for coordinated management of urban drainage systems and WWTPs</td>
<td>Carlos Montero Ruano Spain</td>
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<td>12:40</td>
<td>Closing summary</td>
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<td>12:45 – 14:15</td>
<td>Lunch</td>
<td>Exhibition</td>
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<td>14:15 – 15:45</td>
<td>SNC workshop: Integrated real-time control of sewer–wastewater systems: Research areas for the future</td>
<td>Room 16</td>
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<td>Chair: Dines Thornberg, Anne Hoyer, Peter Steen Mikkelsen, Gürkan Sin Denmark</td>
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<tr>
<td>14:15</td>
<td>News from the Belgrade conference on urban drainage water modelling and forecasting</td>
<td>Wolfgang Rauch Austria</td>
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<tr>
<td>14:35</td>
<td>Optimisation of the whole wastewater system</td>
<td>Norbert Jardin Germany</td>
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<td>14:55</td>
<td>Modelling water quality in the sewer system and its use for control purposes</td>
<td>Dirk Muschalla Austria, Günter Gruber Austria</td>
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<td>15:15</td>
<td>Where is the integration potential?</td>
<td>Morten Grum Denmark</td>
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<td>15:35</td>
<td>Discussion</td>
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<td>15:45 – 16:15</td>
<td>Afternoon break</td>
<td>Exhibition</td>
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<td>16:15 – 17:00</td>
<td>Towards controlling integrated bioprocesses—engineering microbial communities from within</td>
<td>Room 1</td>
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<td>Chair: Staffan Kjellberg, Singapore and Australia</td>
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<td>17:30 – 18:30</td>
<td>Korean cultural show</td>
<td>Busan Cinema Center</td>
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</table>
Tuesday technical programme

08:15 - 09:00 Water industry and technology leaders panel

Industry forum | IF stage A | Industry forum | IF stage B
---|---|---|---
10:00 - 10:45 **SSENG**
Economical water treatment methods in developing countries
Presented by Yun Chang Han
A pressing global issue is how to economically and efficiently purify high-turbidity water into drinking water. We present a solution to this urgent matter, and introduce a new, efficient water treatment process which can be applied directly to high-turbidity water.

10:00 - 10:45 **Veolia Water**
From sludge to energy or plastic (part 1)
Wastewater treatment plants have gradually become energy neutral. Even better, sludge is viewed as a nutrient or material source for agriculture and bioplastics. Sludge treatments are also part of emerging pollutant control. Wastewater treatment plants have to be better integrated into dense, urban environments in particular. This session will address the transformation of sludge.

11:15 - 12:00 **Xylem**
Development of a highly efficient ozone AOP reactor with a limited bromate formation potential
Presented by Jenny Wang
Ozone-based AOP’s can be an attractive option to target a wide range of micropollutants and provide economic benefits. But high levels of bromide in the water source can limit the application of ozone. This session describes the development of an ozone AOP reactor which is capable to treat water sources without exceeding the WHO level of 10 µg/L for bromate.

11:15 - 12:00 **Veolia Water**
From sludge to energy or plastic (part 2)
Wastewater treatment plants have gradually become energy neutral. Even better, sludge is viewed as a nutrient or material source for agriculture and bioplastics. Sludge treatments are also part of emerging pollutant control. Wastewater treatment plants have to be better integrated into dense, urban environments in particular. This session will address the transformation of sludge.

12.00 - 12:45 **Xylem**
Energy-saving potential of a new aeration system
Presented by Asa Nordenberg
Aeration systems at wastewater treatment plants are the biggest energy consumers, between 50% and 80% of the total energy (Olsson, 2008). Asa Nordenberg explains that by designing an energy-optimised aeration system (with aeration grids, blowers, controlling valves) and then operating it with new aeration control system, one can save even more energy.

12:00 - 12:45 **TaKaDu**
The future of water network monitoring
This session features presentations by water utilities and technology providers about using advanced technology for water network monitoring, followed by a panel discussion, and question and answer session. The forum includes a short introduction to the current state of network monitoring technologies, available solutions, water utilities’ needs and new approaches for solutions.

13:15 - 14:00 **NanoH2O**
Lowering desalination energy costs with QuantumFlux membranes
Presented by Nicholas Dyner
We present a way to lower the energy costs of desalination by using thin-film nanocomposite high-flux seawater reverse osmosis membranes.

13:15 - 14:00 **K-Water**
4 Rivers project, R&D innovations and more, from K-Water (part 1)
K-Water will showcase its innovative water technologies: its integrated water management system, the construction and management of the 4 Rivers Project, an industrial water construction project, and the achievements of K-water’s R&D projects.

14:15 - 15:00 **Doosan Heavy Industries & Construction**
Actual plant applications of thermal desalination technologies
Presented by In-seop Song
Reputed as the world’s leading provider of thermal desalination solutions, Doosan will share detailed aspects of both MSF and MED technologies. We will also introduce you to Doosan's record-breaking projects in the MENA region, ranging from Ras Al Khair Phase 1—the world's largest planned desalination plant—to Yanbu projects.

14:15 - 15:00 **K-Water**
4 Rivers project, R&D innovations and more, from K-Water (part 2)
K-Water will showcase its innovative water technologies: its integrated water management system, the construction and management of the 4 Rivers Project, an industrial water construction project, and the achievements of K-water’s R&D projects.

15.00 - 15:45 **Doosan Heavy Industries & Construction**
Technology trends in desalination and product development
Presented by Justin Robert Paden
Continuing its contribution to the desalination industry, Doosan actively operates its water R&D centres in three parts of the world: Dubai, UAE; Tampa, USA; Changwon, Korea. The session will focus on the latest technology trends through an overview of Doosan’s ongoing R&D topics— including high-efficiency thermal solutions, SWRO plant-operation optimisation, water systems for the industrial sector, and much more.

15.00 - 15:45 **Empresa Portuguesa das Aguas Livres, Lisbon, Portugal**
Creating and applying practical tools for reducing non-revenue water within the EPAL Lisbon distribution network
Presented by Andrew Donnelly
In this presentation, EPAL highlights the analysis tools and management systems developed in a successful project which reduced non-revenue water to 10 per cent in the Lisbon distribution network. These tools provide efficient and effective data management and analysis, as well as practical performance indicators for active leakage control, and how they can be applied in various situations.

16:00 - 17:00 **Netherlands Water Partnership (NWP)**
Big challenges, joint solutions— let’s work together
Netherlands water-sector representatives will present joint solutions for global challenges. By presenting global cases from various water-sector themes, the Netherlands will highlight solutions for global water challenges.

16:15 - 17:00 **Ministry of Environment**
Leading-edge technologies for intelligent water distribution systems and their prospects
In this forum, six companies will present their leading-edge technologies on advanced intelligent water distribution systems. Technologies include: integrated management systems for sustainable water quality, supply, and energy; efficient, intelligent diagnostics and monitoring tools; AMI/AMR; reducing NRW; EPC technologies for full-scale applications; and disaster-free water-supply systems.
Proceedings—on USB
In your delegate bag you will find a USB of congress proceedings. The USB contains full papers of platform presentations, electronic versions of posters, and extra resources from IWA.

To easily find materials on the USB, search the files using keywords. This will bring up presentations associated with those keywords, and their papers.

Wi-fi internet—free access
Free wi-fi is available in the exhibition hall in areas shown on page 76, during the open hours of the exhibition. The password is busan. If you unable to log on, the network may be too busy—so please try again shortly.

Mobile app for schedule, map, community
The easy-to-use app shows you:
• up-to-the-minute information on its ‘dashboard’
• a customisable ‘schedule-at-a-glance’ to get organised
• an interactive map of the exhibition
• real-time alerts from congress organisers
• a built-in Twitter feed to follow and join in on the event chatter

You can also:
• rate and comment on sessions you attend
• take photos to share your experiences
• connect with colleagues using the ‘friends’ feature
• keep up with industry news

Get the app
• For iPhone, iTouch, iPad and Android: visit the App Store or Android Market and search for IWA2012busan.
• For all other phones: go online to www.m.core-apps.com/iwa2012busan to download the app or bookmark the page for future reference.

Technical programme themes
- Integrated urban water systems
- Managing utilities and their assets
- Water treatment technologies
- Wastewater treatment and reuse
- Water and health
- Water resources supply and sustainability
- Water, climate and energy

Workshops
- BOF Basins of the Future
- COF Cities of the Future
- FOST Frontiers of Science and Technology
- SNC Smart Networks Cluster
- SWC Smart Water Cluster
- WCE Water, Climate and Energy

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SEE WHO’S MADE A SPLASH.

2012 IWA Project Innovation Awards

Global Winners of the 2012 IWA Project Innovation Awards honoured at the IWA World Water Congress in Busan

Established in 2006, the IWA Project Innovation Awards (PIA) is a prestigious global competition which recognises and celebrates innovation and excellence in water engineering projects throughout the world in six different project categories - applied research, design, operations/management, planning, small projects, and marketing & communications.

Global Project Innovation Awards Ceremony and Dinner (19th September 2012, 1900h-2200h @ Paradise Hotel)

After months of intense competition involving four regional competitions and more than 85 submitted entries, the global winners of the 2012 IWA PIA will be unveiled and presented with the Global Grand Prizes at the PIA Global Awards Ceremony and Dinner on 19 September 2012 at the Grand Ballroom in Paradise Hotel, Busan, Korea. Tickets to the dinner are priced at €90.

Project Innovation Awards Winners Pavilion (Daily during exhibition opening hours)

At the World Congress Exhibition in Busan, regional and global winners of the 2012 IWA PIA will showcase their winning projects and innovations at the PIA Winners Pavilion (Exhibition Stand 52). Join us at the Pavilion to meet with the winning teams, and learn about these exciting and innovative projects! Unique features at the Pavilion include:

- Poster displays featuring all IWA PIA global winners
- Dedicated display stands by PIA winners to feature their innovations
- Networking area to meet and interact with PIA winners
- Daily presentations by PIA winners during tea-breaks and lunch

Global Project Innovation Awards Winners Forum (20th September 2012, 1045h-1415h, Industry Forum @ Exhibition Hall)

Featuring presentations by the PIA Global Award winners, delegates will get the unique opportunity to learn about the innovation and engineering features adopted which make these projects global models for effective and sustainable approaches to water management. For more details on the presentations and timings, visit us at the PIA Winners Pavilion at Exhibit Stand 52.

For enquiries about the PIA events at the World Water Congress, visit us at the PIA Winners Pavilion. For more information about the PIA, visit www.iwa-pia.org

The 2012 Project Innovation Awards is sponsored by global sponsors - ARCADIS Malcolm Pirnie, GHD, KWR, Nagaoka International Corporation, SKM - and regional sponsor - Veolia Water Solutions and Technologies.
**Impediments to achieving improved sustainability in the urban water sector include existing institutional structures**

**Dr Paul Greenfield**
Chair
Australian Nuclear Science & Technology Organisation; International WaterCentre
Australia

Dr Greenfield has research interests in environmental management, wastewater management, biotechnology and technology innovation. Dr Greenfield has worked in the private sector, with CSIRO and in Australian/US universities. He currently works with industry and government to address water-related issues associated with coal seam gas, and exploring connections between energy and water management in urban settings.

**New language, new thinking, new possibilities**

**Linda Macpherson**
Vice President
CH2M HILL
US

Linda Macpherson, a globally recognised reuse communications expert and strategist, has pioneered public engagement and educations programs that have transformed how public acceptance is developed and maintained. Linda is CH2M Hill's vice president, serves on the Board of Directors of the WaterReuse Association and Research Foundation and is chair of IWA's Professional Women in Water Committee. She is at the forefront of bridging the gap between the engineering/scientific community and the general public.
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<th>Time</th>
<th>Room 1</th>
<th>Room 2</th>
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<tr>
<td>08:15 – 09:00</td>
<td>Impediments to achieving improved sustainability in the urban water sector include existing institutional structures Paul Greenfield Australia</td>
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<td>09:15 – 10:45</td>
<td></td>
<td>COF workshop: The role of ratings for water-smart, resilient and livable cities Chair Don Begbie Australia</td>
<td>Monitoring microconstituent occurrence at full scale Chair Maria Fürhacker Austria</td>
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<td>09:15 Introduction Steve Kenway Australia</td>
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<td>09:20 Assessment frameworks used in evaluating cities— what works and what doesn’t Rob Skinner Australia</td>
<td>09:20 Should rules for calculating removal rates of trace organic and inorganic compounds in wastewater plants be upgraded? Jean-Marc Choubert France</td>
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<td>09:30 How important is efficiency in the overall schema of cities and water? How do we avoid getting lost in the fog? Francis Pamminger Australia</td>
<td>09:40 Occurrence and fate of N-nitrosamines and their formation potential in three WWTPs in Japan Suchul Yoon Japan</td>
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<td>09:40 The LEED system— pros and cons for evaluating the water-performance of cities</td>
<td>10:00 The transport of three emerging pollutants through agricultural soil irrigated with raw wastewater Juan Carlos Duran-Alvarez Mexico</td>
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<td>09:50 What is the water-smart city? How do conceptual frameworks help us? Is there a gap at city-scale? What are the steps towards quantitative assessment? Don Begbie Australia</td>
<td>10:20 A new insight for micropollutants in activated sludge: variability of influent concentrations and effects of operating parameters on removal performances Maxime Pomies France</td>
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<td>10:00</td>
<td>10:00 Why should utilities care about their indirect energy consequences? Mary-Ann Dickinson USA</td>
<td>10:00 Facilitated roundtable discussions and report back</td>
<td>10:40 Closing summary</td>
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<td>10:45 – 11:15</td>
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<td>10:45 – 11:15 Morning break</td>
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<td>11:15 – 12:45</td>
<td></td>
<td>FOST workshop: Biosolids management— challenges and solutions. Charting the frontiers of biosolids management Chair Rajeshwar Dayal Tyagi Canada</td>
<td>Removal of micropollutants in conventional wastewater treatment Chair Helmut Kroiss Austria</td>
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<td>11:15 Future of biosolids management— where are we headed? Ludovico Spinosa Italy</td>
<td>11:15 Introduction</td>
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<td>11:30 Biosolids management in developing countries Heidi Snyman South Africa</td>
<td>11:20 Removal characteristics of retinoic acids and 4-oxo-retinoic acids in wastewater by activated sludge treatment Daisuke Inoue Japan</td>
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<td>11:45 Pathogens in biosolids— can we really kill them? Bara Ormeci Canada</td>
<td>11:40 Biodegradation of sulphamethazine by activated sludge Weiwei Ben China</td>
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<td>12:00 Emerging contaminants— implications for disposal Shane Snyder US</td>
<td>12:00 Role of abiotic transformations in the removal of oestrogens from wastewater: effects in conventional and pre-denitrification wastewater treatment Ruth Marfil-Vega US</td>
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<td>12:15</td>
<td>12:15 Panel discussion</td>
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<td>12:20 Elimination of micropollutants by adsorption— focusing on the particle separation of powdered activated carbon Sebastian Platz Germany</td>
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<td>12:45 – 14:15</td>
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<td>Slide show</td>
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<td>14:15 – 15:45</td>
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<td>Chairman</td>
<td>14:15 Closing summary</td>
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<td>FOST workshop: Biosolids management— challenges and solutions. Recent advances in biosolids research and treatment technologies Chair Blanca Jimenez Mexico</td>
<td>Removal of micropollutants in advanced wastewater treatment Chair Hansruedi Siegrist Switzerland</td>
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<td>14:15 Pretreatment research and emerging technologies Richard Tsang US</td>
<td>14:15 Introduction</td>
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<td>14:30 Stabilisation research and emerging technologies Jae Woo Lee Korea</td>
<td>14:20 Reduction of refractory-micropollutants in treated wastewater by advanced tertiary treatments Samuel Martin France</td>
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<td>14:45 Dewatering research and emerging technologies Steve Dentel US</td>
<td>14:40 Oxidation of illicit drugs by extracellular fungal oxidoreductases Gernot Kayser Germany</td>
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<td>15:00 Combustion research and emerging technologies Guoren Xu China</td>
<td>15:00 Comparison and optimisation of the advanced oxidation processes UV/H2O2, UV/O3 and O3/H2O2 with a multiple-responses approach Ulf Schulze-Hennings Germany</td>
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<td>16:15 – 17:00</td>
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<td>15:40 Closing summary</td>
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<td>19:00</td>
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<td>Slide show</td>
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<td>19:00</td>
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<td>Project Innovation Awards ceremony and dinner Paradise Hotel Busan</td>
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Impediments to achieving improved sustainability in the urban water sector include existing institutional structures

**08:15 – 09:00**  
**Room 1**

**09:15 – 10:45**  
**Room 4**

**Advances in biological processes and technology**
Chair **Jonathan Parkinson** IWA

09:15 Introduction
09:20 The variation of volatile fatty acid compositions in sewer length, and its effect on the process design of biological nutrient removal  
Zuwhan Yun  
Korea
09:40 Two-stage anaerobic fluidised-bed membrane bioreactor treatment of settled domestic wastewater  
Jaeho Bae  
Korea
10:00 Long-term effects of antibiotics on C- and N-removal and viable bacteria in lab-scale wastewater treatment plants  
Claudia Gallert  
Germany
10:20 Watering the globe—MBBR/IFAS provides enhanced removal efficiency for upgrading WWTPs  
Afnan Din  
United Arab Emirates
10:40 Closing summary

**Workshop: Brown surface water and measures against it**
Chair **Kenneth Persson** Sweden

Increasing concentrations of humic acids in surface waters cause water to be brown, increasing risks for microbial contamination and disinfection by-products formed due to chlorination.
Outcomes will be presented through:
- Case studies on Africa  
  Nelson Matsinhe  
  Mozambique
- Case studies on South America  
  Antonio Benetti  
  Brazil
- Case studies on Europe  
  Björnar Eikebrokk  
  Norway

The case studies will provide a global overview of the browning process of surface waters and a number of different short- and long-term measures to cope with browning processes.

**10:45 – 11:15** Morning break  
**Exhibition**

**11:15 – 12:45**  
**Room 4**

**Innovative tools and technologies for membrane treatment**
Chair **Roger Ben Aim** France

11:15 Introduction
11:20 Enzymatic quorum-quenching for effective biofouling control in MBR for wastewater treatment  
Sun-ki Lee  
Korea
11:40 How different is the composition of the fouling layer of wastewater reuse and seawater desalination RO membranes?  
Muhammad Khan  
Saudi Arabia
12:00 Impact of operating conditions on performance of capacitive deionisation for RO brine recovery  
Jian-Jun Qin  
Singapore
12:20 Monitoring the condition of membrane bioreactors with a combined PCA–FC algorithm  
Ingmar Nopens  
Belgium
12:40 Closing summary

**Workshop: Brown surface water and measures against it (continued)**
Chair **Kenneth Persson** Sweden

New and emerging technologies for the treatment of raw water will be presented together with an overview of how to modify and develop conventional water treatment technologies—particularly flocculation, sedimentation and filtration—for changing water qualities. From this discussion, knowledge gaps and new research and development needs will be identified, and a white paper on the subject will be presented.

**12:45 – 14:15** Lunch  
**Exhibition**

**14:15 – 15:45**  
**Room 4**

**Membrane systems for wastewater treatment and reuse—forward osmosis**
Chair **Val Frenkel** US

14:15 Introduction
14:20 The role of sulphonated polymer and macroporous-free structures in the support layer of thin-film composite membranes towards the improvement of forward osmosis for seawater desalination  
Tai-Shung Chung  
Singapore
14:40 Development of desirable CTA/CA-based membranes for forward osmosis  
Thi Phuong Nga Nguyen  
Korea
15:00 Characteristics of forward osmosis on concentrating nutrients from wastewater  
Wenchao Xue  
Japan
15:20 Full-scale simulation of fertiliser-driven forward osmosis processes for direct fertigation  
Suhun Kim  
Korea
15:40 Closing summary

**Workshop: Upstream work in wastewater networks to reduce heavy metals and other priority pollutants to the environment**
Chair **Lena Söderberg** Sweden

We will present and discuss results from practical work on reducing heavy metals and other contaminants in wastewater, such as persistent organic pollutants, through upstream control in wastewater networks.

14:15 Introduction  
Glen Daigger  
US
14:30 How Käppala organises upstream work toward connected industries and households—results obtained during the last 30 years  
Sari Vienola  
Sweden
14:45 Working upstream: information campaigns in Finland—three recent projects  
Saijariina Toivikko  
Finland
15:00 Upstream strategy: Actipol, a treatment solution—heavy metal reduction in a small WWTP  
Bruno Tisserand  
France
15:15 Panel discussion

**15:45 – 16:15** Afternoon break  
**Exhibition**

**16:15 – 17:00**  
**Room 1**

**New language, new thinking, new possibilities**  
Linda Macpherson  
US

**19:00** Project Innovation Awards ceremony and dinner  
Paradise Hotel Busan
Wednesday technical programme

08:15 - 09:00  Impediments to achieving improved sustainability in the urban water sector include existing institutional structures  
Paul Greenfield  
Australia

09:15 - 10:45  Policy-based, sustainable management of water basins  
Chair  
Alan Vicory  
US
09:15  Introduction  
09:20  Private- public partnership in the water sector in Romania: success or failure?  
Florin Iliescu  
Romania
09:40  Searching for a compromise between ecological quality targets, social and ecosystem costs for heavily modified water bodies (HMWBs): the Lambro-Seveso-Olona system case study  
Valeria Mezzanotte  
Italy
10:00  Water: the hidden cost of energy  
Gustaf Olsson  
Sweden
10:20  Transformation of flood control in the north-east China Baicheng region: from safety orientation to comprehensive utilisation  
Feng Feng  
China
10:40  Closing summary

10:45 - 11:15  Morning break

11:15 - 12:45  SWC workshop: Important processes for alluvial groundwater resources use and protection  
Chair  
Milan Dimkic  
Serbia
11:15  Significant processes and methods for alluvial groundwater use and protection  
Milan Dimkic  
Serbia
11:45  Innovative approaches for groundwater treatment  
Saroj Sharma  
Netherlands
12:05  The role of microbiological agents in a process of well colmation— practical examples  
Vesna Obradovic and Prvoslav Marjanovic  
Serbia
12:20  Panel discussion

12:45 - 14:15  Lunch

14:15 - 15:45  Management of groundwater and wetlands as water resources  
Chair  
Gary Amy  
Saudi Arabia
14:15  Introduction  
14:20  Groundwater trading in Australia  
Scott Lawson  
Australia
14:40  Constructed wetlands to help recovery of effluent-dominated streams: application to ozonated and non-ozonated treated effluents  
Valeria Mezzanotte  
Italy
15:00  Brackish groundwater: a sustainable source for drinking water in coastal areas?  
Jan Willem Kooiman  
Netherlands
15:20  Biodegradation of organophosphate pesticides in riparian wetlands in agricultural watersheds: implications for wetland management  
William Stringfellow  
US
15:40  Closing summary

15:45 - 16:15  Afternoon break

16:15 - 17:00  New language, new thinking, new possibilities  
Linda Macpherson  
US

19:00  Project Innovation Awards ceremony and dinner  
Paradise Hotel Busan
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<th>Time</th>
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<tbody>
<tr>
<td>08:15 - 09:00</td>
<td>Impediments to achieving improved sustainability in the urban water sector include existing institutional structures</td>
<td>Paul Greenfield</td>
<td>Australia</td>
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<tr>
<td>09:15 - 10:45</td>
<td>WCE workshop: Wastewater as a multifaceted resource for producing energy, chemicals, water and nutrients</td>
<td>Chair Herve Suty</td>
<td>France</td>
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<tr>
<td>09:15</td>
<td>Introduction</td>
<td>David Garman</td>
<td>US</td>
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<tr>
<td>09:20</td>
<td>The big picture— wastewater as a multifaceted and under utilised resource</td>
<td>Herve Suty</td>
<td>France</td>
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<tr>
<td>09:35</td>
<td>Wastewater as a multifaceted resource— innovative biotechnologies</td>
<td>Mark van Loosdrecht</td>
<td>Netherlands</td>
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<td>09:55</td>
<td>Chemicals recovery and production from wastewater— going beyond energy recovery</td>
<td>Jurg Keller</td>
<td>Australia</td>
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<tr>
<td>10:15</td>
<td>Panel discussion</td>
<td>Panelists: Herve Suty, David Garman, Mark van Loosdrecht, Jurg Keller</td>
<td>Australia</td>
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<tr>
<td>10:40</td>
<td>Closing remarks</td>
<td>Herve Suty</td>
<td>France</td>
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<td>10:45 - 11:15</td>
<td>Morning break</td>
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<tr>
<td>11:15 - 12:45</td>
<td>WCE workshop: Municipal wastewater, solid waste and energy. Institutional barriers to jointly optimising food waste and wastewater digestion in generating energy from municipal wastewater plants</td>
<td>Chair Dave Parry</td>
<td>US</td>
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<tr>
<td>11:15</td>
<td>Introduction</td>
<td>Paul Reiter</td>
<td>IWA</td>
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<tr>
<td>11:20</td>
<td>Challenges and opportunities in the context of North America</td>
<td>Dave Parry</td>
<td>US</td>
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<tr>
<td>11:50</td>
<td>Challenges and opportunities in the context of the European Union</td>
<td>Norbert Jardin</td>
<td>Germany</td>
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<td>12:05</td>
<td>Challenges and opportunities in the context of China</td>
<td>Guang Hao Chen</td>
<td>China</td>
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<tr>
<td>12:20</td>
<td>Panel discussion: Breaking down the barriers to joint optimisation of food waste and wastewater digestion</td>
<td>Facilitator: Dave Parry</td>
<td>US</td>
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<tr>
<td>12:50</td>
<td>Closing remarks</td>
<td>Dave Parry</td>
<td>US</td>
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<td>12:45 - 14:15</td>
<td>Lunch</td>
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<tr>
<td>14:15 - 15:45</td>
<td>WCE workshop: Wastewater as an important source of fuel and energy production in the context of changing scales of system designs</td>
<td>Chair Peter Cornel</td>
<td>Germany</td>
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<tr>
<td>14:15</td>
<td>Introduction</td>
<td>Andreas Hauser</td>
<td>Singapore</td>
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<td>14:30</td>
<td>Technical challenges of Siemens’ smart water-energy grid</td>
<td>Andreas Hauser</td>
<td>Singapore</td>
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<tr>
<td>14:45</td>
<td>Energy issues in alternative water resources in urban areas</td>
<td>Bambos Charalambous</td>
<td>Cyprus</td>
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<td>15:00</td>
<td>Panel discussion: Challenges and opportunities at the smart energy-water nexus</td>
<td>Paul Fanner, Bambos Charalambous, Bill Curran</td>
<td>US, Cyprus</td>
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<td>15:40</td>
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<td>15:45 - 16:15</td>
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<td>16:15 - 17:00</td>
<td>New language, new thinking, new possibilities</td>
<td>Linda Macpherson</td>
<td>US</td>
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</table>
### 08:15 - 09:00
#### Impediments to achieving improved sustainability in the urban water sector include existing institutional structures

**Paul Greenfield**
Australia

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### 09:15 - 10:45
#### FOST workshop: Treatment of drinking water for public systems— how safe is safe?

**Chair Rhodes Trussell**
US

- **09:10** Introduction  
  Paul Reiter IWA

- **09:20** The big picture— how safe is safe in the treatment of drinking water for public systems?  
  Rhodes Trussell US

- **09:30** Initial interventions from the panelists  
  Shane Synder US, Blanca Jimenez Mexico, Joan Rose US, Michael Rouse UK

- **09:45** Panel discussion  
  Facilitator Hallvard Odegaard Norway  
  Interlocutor Jerry Gilbert US

- **10:35** Closing remarks  
  Rhodes Trussell US, Paul Reiter IWA

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### 10:45 - 11:15
#### Morning break

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### 11:15 - 12:45
#### Workshop: Health-based investment in drinking water is complex— how can science inform us?

**Chair Gertjan Medema**
Netherlands

- **11:15** Health as a basis for investment decisions in the Netherlands  
  Patrick Smeets Netherlands

- **11:30** Controlling harmful pollutants in drinking water in China  
  Min Yang China

- **11:45** Using water safety plans and quantitative risk assessment for operational decisions in France  
  Zdravka Doquang France

- **12:00** Steps towards healthy water supplies in developing countries  
  Michael Rouse UK

- **12:15** Panel discussion

- **12:40** Closing remarks

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### 12:45 - 14:15
#### Lunch

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### 14:15 - 15:45
#### FOST workshop: Frontiers of toxicology— new imperatives for health

**Chair David Garman**
US

- The workshop will present some of the new methods of, and results from, assessing trace contaminants and discuss the implications for the health of humans, ecosystems and water treatment. The use of safety factors based on observations of high-level toxic or chronic effects in target or model species has been used as a surrogate in the absence of suitable evidence of adverse impacts. New testing methods are providing evidence that impacts arising at very low levels (typically "background" levels) are not related to the high-level impacts. Some of these are related to physical (neurological) and other developmental damage in model animal systems. Speakers will discuss the possible environmental and human health implications as well as the cover the treatment options that could remove these contaminants.

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### 15:45 - 16:15
#### Afternoon break

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### 16:15 - 17:00
#### New language, new thinking, new possibilities

**Linda Macpherson**
US

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### 19:00
#### Project Innovation Awards ceremony and dinner

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Paul Greenfield  
Australia |                                                                                             |
| 09:15 - 10:45 | Emerging issues related to health and the environment  
Chair  
Rivka Kfir  
South Africa | Adsorption and ion exchange—removal of microconstituents  
Chair  
Amir Adin  
Israel |
| 09:15 - 10:45 | 09:15 Introduction  
09:20 Free-living amoebae and amoeba-resistant bacteria in the drinking water of low-cost housing in Johannesburg, South Africa  
Catheleen Bartie  
South Africa  
09:40 Drugs of abuse and tranquillisers in Dutch drinking water, surface waters and wastewater  
Pim de Voogt  
Netherlands  
10:00 Elevated Pb (II) release from the reduction of lead dioxide induced by bromide-catalysed monochloramine decomposition  
Yi-Pin Lin  
Singapore  
10:20 Effects of total alkaloids from aquatic plants on algal growth  
Yu Hong  
China  
10:40 Closing summary | 09:15 Introduction  
09:20 Submicron-sized activated carbon: shell adsorption and branched-pore kinetic model analyses to optimise particle size for enhancing geosmin and 2-methylisoborneol removal  
Soichi Nakao  
Japan  
09:40 Environmental implications and applications of carbon nanomaterials in water treatment  
Soryong Chae  
Australia  
10:00 Adsorption of 2,4,6-trichloroacetic acid on amino-modified HMS Zhonglin Chen  
China  
10:20 Mechanisms of less-severe competitive adsorption between geosmin and natural organic matter on super-powdered activated carbon than on powdered activated carbon  
Soichi Nakao  
Japan  
10:40 Closing summary |
| 10:45 – 11:15 | Morning break                                                                                      |                                                                                             |
| 11:15 – 12:45 | Emerging issues related to health and the environment  
Chair  
Rivka Kfir  
South Africa | Adsorption and ion exchange—organic-matter removal  
Chair  
Yoshikito Matsui  
Japan |
| 11:15 – 12:45 | 11:15 Introduction  
11:20 Stability of nano-sized titanium dioxide in aqueous environments: the effects of pH, humic acid and divalent cations  
Xiaonan Yang  
China  
11:40 Silver nanoparticle removal from drinking water: flocculation and sedimentation, or filtration?  
Ijung Kim  
US  
12:00 Galvanic corrosion in drinking water distribution systems  
Ding-Quan Ng  
Singapore  
12:20 Human health risks associated with constructed lakes in Australian peri-urban developments  
Jane-Louise Lampard  
Australia  
12:40 Closing summary | 11:15 Introduction  
11:20 Natural organic-matter removal with anion exchange resins  
Madjid Mohseni  
Canada  
11:40 Isotherm and kinetic studies on the adsorption of humic acids onto chitosan-modified attapulgite  
Nan Sun  
China  
12:00 Granular activated carbon filters: analytical tools for a better understanding of organic-matter removal  
Xavier Bernat  
Spain  
12:20 Removal of perfluorooctanoate from surface water by coagulation and adsorption  
Shubo Deng  
China  
12:40 Closing summary |
| 12:45 – 14:15 | Lunch                                                                                              |                                                                                             |
| 14:15 – 15:45 | Development of online sensing monitoring systems  
Chair  
Frans Schulting  
Netherlands | Adsorption and ion exchange—removal of pollutants  
Chair  
Katsuki Kimura  
Japan |
| 14:15 – 15:45 | 14:15 Introduction  
14:20 The TECHNEAU Windhoek case study: new developments in monitoring systems in water reclamation  
Chris Swartz  
South Africa  
14:40 Integration of online and offline methodologies for the assessment of river water quality  
Susana Gonzalez  
Spain  
15:00 Carbon-fibre nitrite micro-sensor for in situ biofilm monitoring  
Woo Hyoung Lee  
US  
15:20 Novel microbial fuel cell-based biosensor for continuous measurement of BOD in wastewater  
How Yong Ng  
Singapore  
15:40 Closing summary | 14:15 Introduction  
14:20 Effect of a water matrix on adsorptive removal of heavy metals from groundwater  
Valentine Uwamariya  
Netherlands  
14:40 Granulation of Fe-Al-Ce nano-adsorbent for fluoride removal from drinking water using an inorganic binder  
Ting-Jie Wang  
China  
15:00 Simultaneous removal of arsenate and fluoride from groundwater by Al-Fe binary (hydr)oxides  
Xiaohong Guan  
China  
15:20 Removal characterisation of 133Cs and 127I in a water treatment plant using a lab-scale experiment  
Hee Suk Lee  
Korea  
15:40 Closing summary |
| 15:45 – 16:15 | Afternoon break                                                                                      |                                                                                             |
| 16:15 – 17:00 | New language, new thinking, new possibilities  
Linda Macpherson  
US |                                                                                             |
| 19:00 | Project Innovation Awards ceremony and dinner  
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<td>Desalination—forward osmosis process <strong>Chair Joon Ha Kim</strong> Korea</td>
<td>FOST workshop: Frontiers in the identification and quantification of microorganisms <strong>Chair Per Halkjaer Nielsen</strong> Denmark</td>
</tr>
<tr>
<td>09:15</td>
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<tr>
<td>09:20</td>
<td>Seawater desalination using the forward osmosis process <strong>How Yong Ng</strong> Singapore</td>
<td>09:25</td>
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<tr>
<td>09:40</td>
<td>Seawater desalination by forward osmosis: investigation of flux patterns and natural organic matter-related fouling <strong>Zhenyu Li</strong> Saudi Arabia</td>
<td>09:25</td>
</tr>
<tr>
<td>10:00</td>
<td>The fabrication of cellulose triacetate (CTA)-based membranes for forward osmosis applications <strong>Ong Rui Chin</strong> Singapore</td>
<td>09:45</td>
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<tr>
<td>10:20</td>
<td>Osmosis followed by filtration (OF) systems with osmotically active macromolecules and the effect of reflection coefficient and viscosity on the polyethylene glycol (PEG)/water separation <strong>Sarper Sarp</strong> Korea</td>
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<tr>
<td>10:40</td>
<td>Closing summary</td>
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**10:45 - 11:15** Morning break

**11:15 - 12:45**

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<tr>
<td>Disinfection and disinfection by-products in wastewater treatment <strong>Chair Blanca Jiménez Cisneros</strong> Mexico</td>
<td>FOST workshop: Frontiers in the identification and quantification of microorganisms <strong>Chair Per Halkjaer Nielsen</strong> Denmark</td>
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<td>Introduction</td>
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<tr>
<td>11:20</td>
<td>Ozone disinfection: main parameters for process design in wastewater treatment and reuse <strong>Valentina Lazarova</strong> France</td>
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<tr>
<td>11:40</td>
<td>A review of the ultraviolet disinfection of wastewater for reuse <strong>Elliott Whitby</strong> Canada</td>
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<tr>
<td>12:00</td>
<td>UV disinfection of wastewater flocs: the effect of secondary treatment conditions <strong>Yaldah Azimi</strong> Canada</td>
</tr>
<tr>
<td>12:20</td>
<td>Implementation of a modified protocol for the validation of UV disinfection systems for wastewater applications <strong>Mike Newberry</strong> UK</td>
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<td>12:40</td>
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**12:45 - 14:15** Lunch

**14:15 - 15:45**

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<tbody>
<tr>
<td>Advanced oxidation processes <strong>Chair Zdravka Do-Quang</strong> France</td>
<td>FOST workshop: Current status of groundwater planning and management <strong>Chair Shafick Adams</strong> South Africa</td>
</tr>
<tr>
<td>14:15</td>
<td>Introduction</td>
</tr>
<tr>
<td>14:20</td>
<td>Combination of H2O2/O3 and LP-UV for multiple-barrier organic micropollutant treatment <strong>Ton Krol</strong> Netherlands</td>
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<tr>
<td>14:40</td>
<td>Scale-up of UV AOP reactors from bench tests using CFD modelling <strong>Keith Bircher</strong> Canada</td>
</tr>
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<td>15:00</td>
<td>Degradation of contaminants of emerging concerns using the UV and UV/H2O2 process: prediction model and kinetic study <strong>Minhwan Kwon</strong> Korea</td>
</tr>
<tr>
<td>15:20</td>
<td>Effect of MAR and pretreatment by AOP on the removal of organic micropollutants <strong>Ton Krol</strong> Netherlands</td>
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**15:45 - 16:15** Afternoon break

**16:15 - 17:00** New language, new thinking, new possibilities **Linda Macpherson** US

**19:00** Project Innovation Awards ceremony and dinner **Paradise Hotel Busan**
### Impediments to achieving improved sustainability in the urban water sector include existing institutional structures

**Paul Greenfield**

Australia

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<td>09:15 - 10:45</td>
<td>Focus on Korea workshop: Highlights of Korea’s effort to contribute to development activities</td>
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<td></td>
<td><strong>Chair</strong> Changwon Kim Korea</td>
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<td>09:20</td>
<td>Looking back towards a sustainable future— water environment in the developing world Euiso Choi Korea</td>
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<td>09:35</td>
<td>Water and sanitation programs of the World Bank Jaehyang So World Bank</td>
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<td>09:50</td>
<td>Korean government efforts for aiding developing countries Seung-Joon Yoon Korea</td>
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<td>10:05</td>
<td>Panel discussion: Paul Reiter IWA, Carlos Rosito Brazil, Vasilie Ciomos Romania</td>
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<td>10:20</td>
<td>Discussion</td>
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<td>Closing remarks</td>
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<td>09:15 - 10:45</td>
<td>Focus on Africa Forum: cities of the future opportunities</td>
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<td><strong>Chair</strong> Ger Bergkamp IWA</td>
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<tr>
<td>09:30</td>
<td>Introduction</td>
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<td>09:40</td>
<td>Africa’s rapid urbanisation will result in new water-management challenges for its cities. How is best to address these challenges and what are innovative ways to address water management in urban areas in Africa? This workshop will highlight some of the recent work coming from the cooperation between the World Bank, IWA, University of South Florida and African partners.</td>
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<td>Integrated urban water management in Africa Kala Vairamooty US</td>
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<td>10:00</td>
<td>Panel discussion: Julia Bucknall World Bank, Peter Macy South Africa, Sylvain Usher Cote d’Voire, Silver Mugisha Uganda, Kalia Vairamooty US</td>
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<td>Focus on Korea workshop: Large-scale and rapidly implemented sewage rehabilitation in Korea</td>
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<td><strong>Chair</strong> Kim Si Hyeon Korea</td>
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<td>11:15</td>
<td>Opening remarks</td>
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<td>11:20</td>
<td>London’s Thames Tideway Tunnel David Butler UK</td>
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<td>11:35</td>
<td>Government-directed sewer projects in China— past, present and future Guan Yuntao China</td>
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<tr>
<td>11:50</td>
<td>Asset management of sewers in Japan Takao Murakami Japan</td>
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<td>12:05</td>
<td>A mega-scale sewerage rehabilitation project in Korea Cho Ig Hyun Korea</td>
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<tr>
<td>12:20</td>
<td>Panel discussion: Speakers plus Park Kyoo Hong Korea, Kim Si Hyeon Korea</td>
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<td>Focus on Africa Forum: a breakthrough in urban sanitation</td>
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<td><strong>Chair</strong> Sarah Tibatemwa Uganda</td>
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<td>11:20</td>
<td>As Africa is urbanising, the existing challenges around sanitation, including treatment of wastewater, are rapidly escalating. Yet, new and innovative ways of dealing with sanitation in decentralised manners and recovering resources from waste streams are emerging. Can these new approaches be multiplied and upscaled throughout Africa and beyond?</td>
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<tr>
<td>11:30</td>
<td>Experiences of innovative sanitation in South Africa Neil McLeod South Africa</td>
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<td><strong>Chair</strong> Eun Namkung Korea, Co-chair Sangho Lee Korea</td>
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<td>14:15</td>
<td>Opening remarks Eun Namkung Korea</td>
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<td>14:20</td>
<td>Current status and issues of MF/UF membrane technology Takashi Ogawa Japan</td>
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<td>14:40</td>
<td>Future of membrane technology Byeong Gweon Yun Korea, Roger Ben Aim France</td>
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<td>15:05</td>
<td>Towards groundbreaking technology Sangho Lee Korea</td>
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<td>15:15</td>
<td>Panel discussion: Speakers plus Soryong Chae Australia, Taesik Moon Korea</td>
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<td>15:30</td>
<td>Open discussion</td>
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<td>15:40</td>
<td>Closing remarks</td>
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<td>14:15 - 15:45</td>
<td>Focus on Africa Forum: the water- energy nexus</td>
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<td><strong>Chair</strong> Hamanth Kasan South Africa</td>
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<td>14:20</td>
<td>For African utilities, large parts of their operating budget is used on purchasing energy. The rising energy bill provides an opportunity to invest in energy efficiency and in producing energy from wastewater. What are the opportunities for the African water sector to adopt new energy-saving and energy-producing technologies to reduce energy consumption?</td>
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<td>14:30</td>
<td>Management of the water- energy nexus in Uganda Alex Grisagara Uganda</td>
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<td>14:40</td>
<td>Panel discussion: Mamadou Dia Senegal, Claude Jamati France, Julia Bucknall World Bank</td>
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<td>15:40</td>
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<td>15:45 - 16:15</td>
<td>Afternoon break</td>
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<td>16:15 - 17:00</td>
<td>New language, new thinking, new possibilities</td>
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<td></td>
<td>Linda Macpherson US</td>
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<td>19:00</td>
<td>Project Innovation Awards ceremony and dinner</td>
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<td>Paradise Hotel Busan</td>
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### Wednesday technical programme

<table>
<thead>
<tr>
<th>Time</th>
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<th>Industry forum</th>
<th>IF stage A</th>
<th>Industry forum</th>
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</thead>
<tbody>
<tr>
<td>08:15 – 09:00</td>
<td>Impediments to achieving improved sustainability in the urban water sector include existing institutional structures Paul Greenfield Australia</td>
<td>Industry forum</td>
<td>IF stage A</td>
<td>Industry forum</td>
<td>IF stage B</td>
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</tbody>
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| 10:00 – 10:45 | **SUEZ ENVIRONNEMENT**  
Smart-water metering solutions for efficient cities  
This session will demonstrate, through real cases from SUEZ ENVIRONNEMENT’s experience all over the world, how smart-metering solutions can be used for enabling new relationships and better awareness between utilities, municipalities and water consumers. The criticality of the technical choices, their cost-effectiveness and their inter-operability with other utilities, such as gas, will be addressed. | 10:00 – 10:45 | **Japan Water Works Association (JWWA)**  
Pioneering global water solutions— Japanese developments, public sector best practice, private sector solutions (part 1)  
The Japan pavilion consists of some ten co-exhibitors, who will give you opportunities to share your best practice and innovative solutions from either public or private sector. In particular, PPP policies, NRW improvement practices, and energy efficiency operations will be shared. |
| 11:15 – 12:00 | **Miya**  
Challenges and solutions for non-revenue water reduction (part 1)  
In the first part of this workshop, participants will be given a platform to discuss their NRW challenges and will be introduced to the concept of ‘Rapid NRW Assessment’. | 11:15 – 12:00 | **Japan Water Works Association (JWWA)**  
Pioneering global water solutions— Japanese developments, public sector best practice, private sector solutions (part 2)  
The Japan pavilion consists of some ten co-exhibitors, who will give you opportunities to share your best practice and innovative solutions from either public or private sector. In particular, PPP policies, NRW improvement practices, and energy efficiency operations will be shared. |
| 12:00 – 12:45 | **Miya**  
Challenges and solutions for non-revenue water reduction (part 2)  
The second part of the workshop will cover the components of a successful NRW management strategy and will be illustrated by examples from projects from around the world. | 12:00 – 12:45 | **Oslo Water and Sewerage Works**  
Adjusting to climate change and population growth— addressing water challenges in Norway using tunnels and mythological creatures (part 1)  
This session will address how the design, project management, operation and maintenance of storm and wastewater infrastructure must be adaptable to climate change and population growth. Using examples from Norway, the panel will present highlights of modern Norwegian innovations in stormwater management and wastewater treatment. |
| 13:15 – 14:00 | **Oslo Water and Sewerage Works**  
Adjusting to climate change and population growth— addressing water challenges in Norway using tunnels and mythological creatures (part 2)  
This session will address challenges to the management and supply of water supply in a cold climate. This session will end with a 17-minute film about where tap water comes from, how it is treated and made safe to drink. | 13:15 – 14:00 | **CSM Woongjin Chemical**  
Chemical-resistance membrane materials for water purification  
Presented by Hyun Chul Hur and Hyun-Woong Lee  
This session will focus on state of art of high performance membrane materials. |
| 14:15 – 15:00 | **GS E&C**  
New trends in large-scale membrane water treatment (part 1)  
The first half of this forum features:  
- Design, construction and operation of smart-water systems as a total water supply solution Park Sung Hyuk  
- Advanced intelligent water-distribution systems Park Sung Hyuk  
- Wastewater treatment sludge reduction using lysozyme-producing mesophilic bacteria Kim Hye Sang  
- Economical SWRO operation with optimised cleaning frequencies and reduction of pump power consumption and cleaning-chemical amounts Park Yong Gyun | 14:15 – 15:00 | **Empresa Portuguesa das Aguas Livres, Lisbon, Portugal**  
AQUAmatrix® — creating, applying and marketing technologies to improve customer management in water and wastewater utilities  
Presented by Luis Branco  
AQUAmatrix® is a flexible and fully integrated billing and customer information system, supporting all commercial activity and providing necessary business information. It also interfaces with other information systems supporting operational functions related to customers, namely GIS or ERP. |
| 16:15 – 17:00 | **Emerson Process Management**  
Wireless analytical solutions for the water industry  
There is stranded diagnostics information from analysers in the water industry. By unlocking stranded variable information using wireless technology, water utilities can reduce their operation expenses as well as enhancing environmental compliance. The presentation will touch on some case studies. | 16:15 – 17:00 | **Poltank**  
Water treatment challenges for GRP products  
Presented by Toni Prats  
There’s a trend to change steel products into composite to avoid corrosion. Composite makes it possible to redesign these products. It offers greater chemical and mechanical resistance, has lower maintenance costs and minimises environmental impact. Research and development on these new, sustainable composite materials and suitable manufacturing processes are crucial to cover new engineering challenges. |
| 19:00 | **Project Innovation Awards ceremony and dinner** | Room 1 | Project Innovation Awards ceremony and dinner | Room 1 | Project Innovation Awards ceremony and dinner |
Proceedings— on USB
In your delegate bag you will find a USB of congress proceedings. The USB contains full papers of platform presentations, electronic versions of posters, and extra resources from IWA.

To easily find materials on the USB, search the files using keywords. This will bring up presentations associated with those keywords, and their papers.

Wi-fi internet— free access
Free wi-fi is available in the exhibition hall in areas shown on page 76, during the open hours of the exhibition. The password is busan. If you unable to log on, the network may be too busy—so please try again shortly.

Mobile app for schedule, map, community
The easy-to-use app shows you:
• up-to-the-minute information on its ‘dashboard’
• a customisable ‘schedule-at-a-glance’ to get organised
• an interactive map of the exhibition
• real-time alerts from congress organisers
• a built-in Twitter feed to follow and join in on the event chatter

You can also:
• rate and comment on sessions you attend
• take photos to share your experiences
• connect with colleagues using the ‘friends’ feature
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• For all other phones: go online to www.m.core-apps.com/iwa2012busan to download the app or bookmark the page for future reference.
Keynote speakers

Sunday 16:30
Yoo Young Sook
Minister for the Environment
Korea

Monday 11:30
Jaehyang So
World Bank

Monday 11:00
Yong Soo-Gil
Presidential Committee on Green Growth
Korea

Monday 17:15
Pavel Kabat
International Institute for Applied Systems Analysis (IIASA)
Austria

Tuesday 08:15
Water industry leaders panel
• Suez Environnement
• Doosan
• Samsung Engineering
• Xylem
• and others

Tuesday 16:15
Staffan Kjelleberg
Singapore Centre on Environmental Life Sciences Engineering, Centre for Marine Bio-Innovation University of NSW Singapore and Australia

Wednesday 08:15
Paul Greenfield
Australian Nuclear Science & Technology Organisation, International WaterCentre Australia

Wednesday 16:15
Linda Macpherson
CH2M HILL
United States

Thursday 08:15
Wim van Vierssen
KWR Watercycle Research Institute
Netherlands

Thursday 16:00
Hansruedi Siegrist
Swiss Federal Inst. of Aquatic, Science and Technology Switzerland

Thursday 16:00
Shane A. Snyder
University of Arizona
United States
08:15 – 09:00  Collaboration in the water sector—do we need a Higgs particle?  
Wim van Vierssen  
CEO  
KWR Watercycle Research Institute  
Netherlands

Keynote speakers

Collaboration in the water sector—do we need a Higgs particle?

Wim van Vierssen
CEO  
KWR Watercycle Research Institute  
Netherlands

Professor Wim van Vierssen, who began his career in water management, is CEO of KWR Watercycle Research Institute and a professor at the Delft University of Technology. He has developed major national research initiatives, is a former board member of the World Water Council and the PEER group. He chairs the Netherlands’ Climate Changes Spatial Planning program.

Harremoes lecture: Trace organic contaminants, an international perspective on an emerging issue

Hansreudi Siegrist
Swiss Federal Institute of Aquatic, Science and Technology  
Switzerland

Hansreudi Siegrist has had a successful career in environmental engineering, urban hydraulics and advanced wastewater. His specialty is in aerobic and anaerobic wastewater; sludge and sludge liquid treatment; and processes and technologies to improve water, nutrients and energy reuse. He has sat on many water research committees and task groups, and implemented pilot- and full-scale applications.

Shane A. Snyder
University of Arizona  
United States

Dr Shane A. Snyder is a professor at the University of Arizona and is the co-director of the Arizona Laboratory for Emerging Contaminants. For over 15 years, Dr Snyder’s research has focused on the identification, fate, and health relevance of emerging water pollutants. At the National University of Singapore he also leads research on water reuse technologies and implications for public health.

16:00 – 17:30  Closing session  
Harremoes lecture: Trace organic contaminants—an international perspective on an emerging issue  
Hansreudi Siegrist  
Switzerland &  
Shane Snyder  
US

19:00 Gala dinner  
Floor 3 BEXCO Exhibition Center 2
## Thursday technical programme

### 08:15 - 09:00
**Collaboration in the water sector—do we need a Higgs particle?**
*Wim van Vliet*  
_Netherlands*

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<td><strong>10:15 - 11:45</strong></td>
<td><strong>10:15 - 11:45</strong></td>
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</tbody>
</table>
| **Workshop: Research and development status for water treatment as a green convergence technology**  
Chair: Dongil Jung Korea and Seokheon Lee Korea  
09:15 Opening remarks Dongil Jung Korea and Seokheon Lee Korea  
09:20 R&D status for water treatment technology and its prospects in Korea — past, present and future JaeSeok Kim Korea  
09:35 Convergence trends in water treatment technology JooHyung Kim Korea  
09:50 Environmental technology as a green convergence technology and its prospective Jaesang Lee Korea  
10:05 Panel discussion: Seung-Hyun Kim Korea, Ick Tae Yeom Korea, Sang Ho Lee Korea  
10:30 Open discussion  
10:40 Closing remarks | **Granular sludge**  
Chair: Jürg Keller *Australia*  
09:15 Introduction  
09:20 Simultaneous nitrogen and phosphorus removal in aerobic granular sludge reactors operated at different temperatures Joao Bassin Brazil  
09:40 Granulation of biological flocs under elevated pressure— characteristics of granules Jie-Yuan Chen Chinese Taiwan  
10:00 Aerobic granular sludge— fractal dimension and microbial characterisation Norhayati Abdullah *Malaysia*  
10:20 Development of nitrifying granular sludge for treating a phosphorus-deficient urine-seawater mixture Hamish Mackey Hong Kong, China | **Activated sludge population dynamics**  
Chair: Yeshi Cao *Singapore*  
11:15 Introduction  
11:20 The microbial database for Danish wastewater treatment plants with nutrient removal—a tool for understanding activated sludge population dynamics and community stability Artur Tomasz Mielczarek *Denmark*  
11:40 Westwater bacterial community shifts in response to different microalgal populations Joonhong Park Korea  
12:00 Characterisation of the microbial community of moving-bed biofilm reactors operated under different COD/N ratios Joao Bassin Brazil  
12:20 Comparison of nutrient-removing microbial communities in activated sludge from full-scale MBRs and conventional plants Aaron Marc Saunders *Denmark*  
12:40 Closing summary |

### 10:45 - 11:15 **Morning break**

### 11:15 - 12:45
**Workshop: Directions of national research and development programs for water and wastewater technologies**  
Chair: ZuWHan Yun Korea  
11:15 Opening remarks  
11:20 Directions of national research and development programs for water and wastewater technologies in Japan Hiroaki Furumai Japan  
11:35 Directions of national research and development programs for water and wastewater technologies in Korea In Kim Korea  
11:50 Directions of national research and development programs for water and wastewater technologies in China Min Yang China  
12:05 Panel discussion: Hirokai Tanaka Japan, Xiaochang Wang China, Sungil Choi Korea  
12:20 Open discussion  
12:40 Closing remarks | **Activated sludge population dynamics**  
Chair: Yeshi Cao *Singapore*  
11:15 Introduction  
11:20 The microbial database for Danish wastewater treatment plants with nutrient removal—a tool for understanding activated sludge population dynamics and community stability Artur Tomasz Mielczarek *Denmark*  
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12:20 Comparison of nutrient-removing microbial communities in activated sludge from full-scale MBRs and conventional plants Aaron Marc Saunders *Denmark*  
12:40 Closing summary | **Alternative sanitation options**  
Chair: Marcos von Sperling *Brazil*  
14:15 Introduction  
14:20 A rock filter system as a decentralised wastewater treatment system Euiso Choi Korea  
14:40 Evaluation of the potential of a multimedia filter for treatment of greywater generated in an urban slum area using uPVC columns Alex Katukiza *Netherlands*  
15:00 Design of human composting latrines for robust solar disinfection, including inactivation of Ascaris lumbricoides Craig Adams *US*  
15:20 Biological sulphate reduction in an innovative sanitation concept for treatment of saline blackwater Tessa van den Brand *Netherlands*  
15:40 Closing summary |

### 12:45 - 14:15 **Lunch**

### 14:15 - 15:45
**Workshop: The importance of international partnering for global water cycle research critical to our future**  
Chairs: David Garman *US*, Marielle van der Zouwen *Netherlands*  
People assume innovation networks require close collaboration between science, policy and industry— often a challenging undertaking in practice. In spite of many barriers, there are aspiring networks around the globe that successfully develop innovative knowledge and tackle contemporary water challenges. This workshop aims to identify both enabling and constraining factors to the success of these networks and to the innovation processes that they seek to accelerate.  
14:15 Introduction David Garman *US*  
14:25 Partnering, networks and innovation Wim van Vliet *Netherlands*  
14:45 Panel participants: Speaker, regional and global research coalition leaders represented in Busan, IWA Innovation Program Steering Group members  
15:15 Audience discussion  
15:40 Closing remarks | **Alternative sanitation options**  
Chair: Marcos von Sperling *Brazil*  
14:15 Introduction  
14:20 A rock filter system as a decentralised wastewater treatment system Euiso Choi Korea  
14:40 Evaluation of the potential of a multimedia filter for treatment of greywater generated in an urban slum area using uPVC columns Alex Katukiza *Netherlands*  
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15:20 Biological sulphate reduction in an innovative sanitation concept for treatment of saline blackwater Tessa van den Brand *Netherlands*  
15:40 Closing summary | **Closing session**

### 16:00 - 17:30
**Closing session**  
Harmsmees lecture: Trace organic contaminants—an international perspective on an emerging issue *Harmen Uijtmann* Switzerland & Shane Snyder *US*  

### 19:00 **Gala dinner**

**Floor 3 BEXCO Exhibition Center 2**
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<td>Collaboration in the water sector— do we need a Higgs particle? Wim van Vlissingen</td>
<td>Netherlands</td>
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<td>09:15 – 10:45</td>
<td>Membrane systems for wastewater treatment and reuse— optimisation</td>
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<td>Industrial wastewater treatment</td>
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<td>Chair Valentina Lazarova France</td>
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<td>Chair Val Frenkel US</td>
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<td>09:15 Introduction</td>
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<td>09:20 Energy optimisation in membrane bioreactors Samuel Martin Ruel France</td>
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<td>09:20 Biological treatment of pharmaceutical wastewater from the antibiotics industry Olivier Lefebvre Singapore</td>
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<td>09:40 A new concept for a completely underground MBR plant in urban area—</td>
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<td>09:40 Start-up of a granular sludge sequencing batch reactor for the treatment of 2,4-dichlorophenol- contaminated wastewater Stefano Milia Italy</td>
<td>09:15 Introduction</td>
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<td>Suyeong, world's largest underground MBR plant in Busan Jongsok Choi Korea</td>
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<td>10:00 Treatment of tapioca starch wastewater by a novel combination of physical and biological processes Joachim Fettig Germany</td>
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<td>10:00 Singapore's Jurong WRP membrane bioreactor facility— industrial and</td>
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<td>10:20 Industrial flue-gas desulphurisation waste may offer an opportunity to facilitate SANIA application for significant sludge minimisation in freshwater and wastewater treatment Qian Jin Hong Kong, China</td>
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<td>retrofit challenges Yien Phin Liew US</td>
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<td>10:20 Effects of rapid coagulation and sedimentation on phosphorous removal in a full-scale MBR Hyougn Gun Kim Korea</td>
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<td>10:40 Closing summary</td>
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<td>11:15 – 12:45</td>
<td>Membrane systems for wastewater treatment and reuse— control of fouling</td>
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<td>Industrial wastewater treatment</td>
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<td>Chair Chung-Hak Lee Korea</td>
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<td>11:15 Introduction</td>
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<td>11:40 Physical aspects of GAC fluidisation on membrane fouling in an anaerobic fluidised membrane bioreactor jeonghwan Kim Korea</td>
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<td>11:40 Effect of different electron acceptors on anaerobic azo dye biodegradation: oxygen Kesver Cirk Turkey</td>
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<td>12:00 Role of MBR supernatant fractions in membrane fouling evolution Kang Xiao China</td>
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<td>12:00 Treatment of textile wastewaters using eutectic freeze crystallisation Dylion Randall South Africa</td>
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<td>12:40 Closing summary</td>
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<td>12:45 – 14:15</td>
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<td>14:15 – 15:45</td>
<td>Microbial fuel cells</td>
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<td>Industrial wastewater treatment</td>
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<td>Chair Changwon Kim Korea</td>
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<td>Chair Darren Sun Singapore</td>
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<td>14:15 Introduction</td>
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<td>14:20 A large-volume, submergible, microbial fuel cell with pseudo-membrane electrode assemblies for practical application Minsoo Kim Korea</td>
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<td>14:20 Recovery of chromium from electroplating solutions by cetyltrimethylammonium bromide MEUF and electrodialysis Wen-Shing Chang Chinese Taiwan</td>
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<td>14:40 Sulphonated poly(ether ether ketone) (SPEEK)-based composite proton-exchange membrane reinforced with nanofibers for microbial electrolysis cells Kyu-Jung Chae Korea</td>
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<td>14:40 Recovery of palladium from palladium-ion wastewater using a microbial fuel cell Chansoo Choi Korea</td>
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<td>15:00 Factors affecting microbial fuel-cell acclimation and operation in temperate climates Iain Michie UK</td>
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<td>15:00 Rhodium recovery from simulated platinum-group metals refinery wastewater using sorption Henry Roman South Africa</td>
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<td>15:20 Operation of a bioelectrochemical system on the effluent of a two-stage anaerobic process for additional energy recovery Jung Rae Kim UK</td>
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<td>15:20 Combined wastewater treatment and recovery of copper from ash leachate Oskar Modin Sweden</td>
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<td>15:40 Closing summary</td>
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<td>16:00 – 17:30</td>
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<td>Harremoes lecture: Trace organic contaminants— an international perspective on an emerging issue Hammeruddi Siegenthaler Switzerland &amp; Shane Snyder US</td>
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<td>19:00</td>
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<td>Collaboration in the water sector—do we need a Higgs particle?</td>
<td>Room 1</td>
<td>Wim van Vlietessen, Netherlands</td>
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<td>09:15 - 10:45</td>
<td>Impacts on water resources management</td>
<td>Room 6</td>
<td>Chair: Mark Beuhler US, US</td>
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<td>How human diet effects water and resources</td>
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<td>Simon Thaler, Austria</td>
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<td>The importance of accident control on water quality in the Netherlands</td>
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<td>Arthur Meuleman, Netherlands</td>
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<td>Thermodynamic analysis for the impact assessment of organics discharge</td>
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<td>Li Luo, China</td>
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<td>Modelling of the role of rice paddy fields and their implication in water management</td>
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<td>Hyunju Park, Korea</td>
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<td>10:45 - 11:15</td>
<td>Morning break</td>
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<td>11:15 - 12:45</td>
<td>Monitoring and modelling reservoirs and river basins</td>
<td>Room 6</td>
<td>Chair: Dongil Sae, Korea</td>
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<td>Remote sensing of cyanobacteria in Lake Champlain, USA</td>
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<td>Mi-Hyun Park, US</td>
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<td>Parameter estimation for eutrophication models in reservoirs</td>
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<td>José Luis da Silva Pinho, Portugal</td>
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<td>Modelling of overland flow using areally averaged, local-scale inter-rii and riff flow equations</td>
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<td>Gijung Pak, Korea</td>
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<td>Contribution of point and nonpoint source phosphorus and nitrogen loads in a mixed land-use watershed</td>
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<td>Jhee Son, US</td>
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<td>12:45 - 14:15</td>
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<td>14:15 - 15:45</td>
<td>Water resources management on watershed scales</td>
<td>Room 6</td>
<td>Chair: Bruce Beck, US</td>
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<td>Conditional simulation to represent rainfall uncertainty: an example in South Korea</td>
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<td>Etienne Leblois, France</td>
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<td>Perspective and challenges for desalination in developing countries: where, when and how should desalination be implemented?</td>
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<td>Sergio G Salinas Rodriguez, Netherlands</td>
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<td>Developing ecosystem-specific water quality guidelines for suspended particulate matter: evidence from UK environment agency monitoring</td>
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<td>Gary Bilotta, UK</td>
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<td>Integrated watershed management efforts: a case study from Melen watershed experiencing interbasin water transfer</td>
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<td>08:15 - 09:00</td>
<td>Collaboration in the water sector— do we need a Higgs particle?</td>
<td>N. van Vierssen, Netherlands</td>
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<td>09:15 - 10:45</td>
<td>Workshop: Uncertainty in wastewater treatment design and operation—</td>
<td>Addressing current practices and future directions</td>
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<td>Chair Peter Vanrolleghem Canada and Sudhir Murthy US</td>
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<td>09:15</td>
<td>Introducing the DOUT initiative—the need for uncertainty analysis</td>
<td>Peter Vanrolleghem, Canada</td>
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<td>09:30</td>
<td>Current practice— uncertainty in current engineering practice</td>
<td>Sudhir Murthy, US</td>
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<td>09:45</td>
<td>Incorporating uncertainty in model-based design— what can we do now?</td>
<td>Leiv Rieger, Canada</td>
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<td>10:00</td>
<td>Quantifying key sources of uncertainty at the influent generator</td>
<td>Charles Bott, US</td>
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<td>Panel discussion</td>
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<td>10:35</td>
<td>Summary and future directions</td>
<td>Peter Vanrolleghem, Canada</td>
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<td>operation: Addressing current practices and future directions</td>
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<td>FOST workshop: New molecular tools in action in water engineering</td>
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<td>Chair Joan Rose US</td>
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<td>11:15</td>
<td>Short introduction to the Bio-Cluster Per Nielsen Denmark</td>
<td>Per Nielsen, Denmark</td>
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<td>11:30</td>
<td>Who’s who and who does what in wastewater treatment? Per Nielsen</td>
<td>Per Nielsen, Denmark</td>
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<td>12:00</td>
<td>Interactions between denitrifying anaerobic methane oxidation and</td>
<td>Zhiguo Yuan, Australia</td>
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<td>Discussion</td>
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<td>SNC workshop: Optimising data quality management in water networks</td>
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<td>Chair Alejandro Vargas Mexico</td>
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<td>11:15</td>
<td>Welcome and introduction</td>
<td>Alejandro Vargas, Mexico</td>
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<td>11:20</td>
<td>Smart-water grid opportunities for ICA</td>
<td>Gustaf Olsson, Sweden</td>
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<td>11:35</td>
<td>iTUWmonitor—a monitoring network platform for automated data</td>
<td>Andreas Winkelbauer, Austria, Stefan Winkel, Austria</td>
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<td>plausibility assessment and data integration</td>
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<td>Monitoring for integrated urban water system modeling</td>
<td>Ingmar Nopens, Belgium</td>
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<td>Open discussion</td>
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<td>14:15</td>
<td>Dead or not-so-dead bacteria and their health relevance Per Nielsen</td>
<td>Per Nielsen, Denmark</td>
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<td>14:45</td>
<td>Imposing ecological stratification on microbial biofilms</td>
<td>Barth Smets, Denmark</td>
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<td>15:15</td>
<td>Microbial ecology of biofuel cells</td>
<td>Satoshi Okabe, Japan</td>
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<td>Sensor localisation, sensor technologies and sensor data validation in</td>
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<td>urban drainage systems</td>
<td>Dirk Muschalla, Austria and Martin Pleau, Canada</td>
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<td>14:30</td>
<td>Advanced data management for wastewater treatment plants</td>
<td>Eduardo Ayesa, Spain</td>
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<td>14:45</td>
<td>Automatic data quality assessment: practical application using in situ</td>
<td>Peter Vanrolleghem, Canada, Jean Philippe Steyer, France</td>
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<td>measurement stations for river water quality monitoring</td>
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<td>Online sensors in practice— pitfalls and solutions</td>
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<td>16:00 - 17:30</td>
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<td>Harremoes lecture: Trace organic contaminants— an international</td>
<td>Harpreet Sings isolated, Switzerland &amp; Shane Snyder, US</td>
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<td>perspective on an emerging issue</td>
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<td>19:00</td>
<td>Gala dinner</td>
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## Thursday technical programme

### 08:15 - 09:00  Collaboration in the water sector—do we need a Higgs particle?  
**Wim van Vierssen**  
Netherlands

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<tr>
<th>Time</th>
<th>Room 10</th>
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</table>
| 09:15 - 10:45    | FOST workshop: Drugs, drugs of abuse and their transformation products in the water cycle  
Chair **Pim de Voogt**  
Netherlands  
Prescription drugs and drugs of abuse are new emerging contaminants in the water cycle. The workshop focuses on their occurrence, their transformation products and the health relevance of their presence in water. It also covers the use of prescription data and transformation biomarkers for estimating surface water concentrations, as well as consumption data.  
09:15 Identification and health relevance of pharmaceuticals in water  
Shane Snyder  
US  
09:45 Presence and risks of pharmaceuticals and their transformation products in surface waters and drinking water  
Annemarie van Wezel  
Netherlands  
10:15 Panel discussion: Relevance of drugs and drugs of abuse for drinking water quality  
Annemarie van Wezel  
Netherlands |
| 09:15 - 10:45    | Asset maintenance and management  
Chair **Enrique Cabrera**  
Spain  
09:15 Introduction  
09:20 A utility-tailored methodology for integrated asset management of urban water infrastructure  
Helena Alegre  
Portugal  
09:40 Application of a time-dependent covariate model to predict water-pipe failures in the Bordeaux area  
Karim Claudio  
France  
10:00 Assessing water infrastructure vulnerabilities and risks in South Africa  
Jay Bhagwan  
South Africa  
10:20 Evaluation of an intrusive technology to diagnose buried pipelines  
Philippe Brent  
France  
10:40 Closing summary |

### 10:45 - 11:15  Morning break

### 11:15 - 12:45  FOST workshop: Drugs, drugs of abuse and their transformation products in the water cycle  
Chair **Annemarie van Wezel**  
Netherlands  
11:15 Estimation of illicit drug use by analysis of sewage waters—methodologies and uncertainties  
Alexander van Nuijs  
Belgium  
11:45 Comparing illicit drug use in 19 European cities through sewage analysis  
Kevin Thomas  
Norway  
12:15 Panel discussion: Relevance of drugs and drugs of abuse for drinking water quality  
12:40 Closing remarks

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<th>Time</th>
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| 11:15 - 12:45    | Strategic asset management and long-term planning  
Chair **Helena Alegre**  
Portugal  
11:15 Introduction  
11:20 Sustainability demystified  
Peta Maddy  
Australia  
11:40 Quantitative risk analysis for long-lived water assets  
Ben Ward  
UK  
12:00 Application of asset management principles in prioritising capital investments for water and wastewater utilities  
Thor Young  
US  
12:20 From ecological sustainability in the 20th Century to complete sustainable planning of water resources in the next century  
Rian Kloosterman  
Netherlands  
12:40 Closing summary |

### 12:45 - 14:15  Lunch

### 14:15 - 15:45  Strategic asset management and long-term planning  
Chair **Helena Alegre**  
Portugal  
14:15 Introduction  
14:20 Shared failure data for strategic asset management  
Jan Vreeburg  
Netherlands  
14:40 Assessment of the importance of input variables on yield of urban water supply systems—using the Morris method of sensitivity analysis  
Chris Perera  
Australia  
15:00 Sustainable management of groundwater abstraction infrastructure at the Flemish Water Supply Company (VMW) in Belgium  
Nico Vanhove  
Belgium  
15:20 Replacement of pump stations with VSD in water networks instead of elevated tanks  
Vâli Agha Aghabeygi  
Republic of Iran  
15:40 Closing summary

### Closing session

**Harremoes lecture: Trace organic contaminants—an international perspective on an emerging issue**  
Hansreudi Siegrist  
Switzerland & Shane Snyder  
US  
16:00 - 17:30  
Room 1 |

**19:00 Gala dinner**  
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<td>Collaboration in the water sector— do we need a Higgs particle?</td>
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<td>Wim van Vierssen, Netherlands</td>
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<td>09:15</td>
<td><strong>Improving the energy efficiency of drinking water supply</strong></td>
<td><strong>Workshop: Ecobusiness parks</strong></td>
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<td>Chair Rolf Gimbel, Germany</td>
<td>developing effective regulatory</td>
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<td><strong>Room 12</strong></td>
<td>regimes</td>
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<td>09:15 Introduction</td>
<td>Chair Brian D’Arcy UK</td>
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<td>09:20 Adapting to climate change by using low-energy, fit-for-purpose</td>
<td>Co-chair/s Peter Steen Mikkelsen</td>
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<td>water recycling systems Chris Hertle, Australia</td>
<td>Denmark, Marla Maniquiz Korea</td>
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<td>09:40 Tying greenhouse gas emission reductions to water efficiency—a</td>
<td>09:15 Managing priority pollutants</td>
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<td>model for analysing and tracking water utility conservation benefits</td>
<td>Peter Steen Mikkelsen Denmark</td>
<td>09:35 Planning and design for</td>
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<td>Mary Ann Dickinson, US</td>
<td>Lee Hyung Kim Korea and Marla</td>
<td>the ecobusiness parks of Seong</td>
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<td>10:00 A strategy for efficient water supply systems Kyoji Iwasaki, Japan</td>
<td>Maniquiz Korea</td>
<td>City, Korea</td>
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<td>10:20 Energy without borders: photovoltaic-powered water supply on the</td>
<td>09:55 Comparison of SUDS</td>
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<td>high plateau in Cameroon Steven Dentel, US</td>
<td>regulatory regimes within the UK—</td>
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<td>10:40 Closing summary</td>
<td>why the differences? Brian D’Arcy</td>
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<td>11:15</td>
<td><strong>Workshop: Human-resource capacity gaps and how to close them.</strong></td>
<td><strong>Workshop: Urban sanitation</strong></td>
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<td>Overcoming the human-resource capacity gaps in the WASH sector</td>
<td>initiative— effective demonstration</td>
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<td>Chair Tom Williams, IWA</td>
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<td>11:15 Global review of capacity-building in water and sanitation for</td>
<td>Chair Neil McCloed, South Africa</td>
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<td>developing countries Themba Gumbo, South Africa</td>
<td>11:15 Introductory remarks from</td>
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<td>11:30 Methodological framework for national human-resource capacity</td>
<td>the Chair</td>
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<td>assessments Kirsten de Vette, Netherlands</td>
<td>11:20 Implementing decentralised</td>
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<td>11:35 Human-resource requirements— results of assessments in four Asian</td>
<td>wastewater management systems</td>
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<td>countries Regina Souter, Australia</td>
<td>at scale Gert Kreutzer, Germany</td>
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<td>11:50 Capacity development of municipal and water utility staff members</td>
<td>11:35 Panel discussion</td>
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<td>in Bosnia— Herzegovina Igor Palandzic, Bosnia</td>
<td>Bjorn Aas, Norway</td>
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<td>12:05 Panel discussion</td>
<td>Jay Baghwan, Africa</td>
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<td>12:40 Closing remarks</td>
<td>Peter Cornel, Germany</td>
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<td><strong>Workshop: AquaRating— an innovative system for assessing utility</strong></td>
<td><strong>Workshop: Urban sanitation</strong></td>
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<td>initiative— integrated sanitation</td>
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<td>Chair Tom Williams, IWA</td>
<td>planning and implementation</td>
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<td>14:15 Introduction: scene-setting and rationale for the rating system</td>
<td>Chair Jaehyang So, World Bank</td>
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<td>Paul Reiter IWA</td>
<td>14:15 Opening remarks</td>
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<td>14:25 Overview of AquaRating system: Francisco Cubillo, Spain and</td>
<td>14:20 Application of a city-wide</td>
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<td>Enrique Cabrera Jr., Spain</td>
<td>framework for sanitation</td>
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<td>14:45 AquaRating products entity and strategy Matthias Krause, IDB</td>
<td>planning and monitoring of</td>
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<td>15:00 Moderated discussion with panel and audience:</td>
<td>implementation effectiveness</td>
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<td>Alexander Danilenko, World Bank, Andréa Ferreira, Brazil, Vasile</td>
<td>Meera Mehta India</td>
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<td>Ciomos, Romania</td>
<td>14:35 Panel discussion</td>
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<td>15:40 Closing remarks</td>
<td>Philip Gichuki, Kenya, Pierre</td>
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<td>Flamand Japan, Meera Mehta</td>
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<td>India, Bruno Tisserand, France,</td>
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<td>Petrus Du Picani, Namibia</td>
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<td>15:05 Questions and discussion</td>
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<td>involving workshop participants</td>
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<td>15:35 Rapporteurs’ observations</td>
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<td>Jonathan Parkinson, IWA</td>
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<td>15:40 Closing remarks</td>
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<td><strong>Closing session</strong></td>
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<td>Harremoes lecture: Trace organic contaminants— an international</td>
<td>Harremoes lecture: Trace organic</td>
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<td>perspective on an emerging issue: Hannevi Siersna, Switzerland &amp; Shane</td>
<td>contaminants— an international</td>
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<td>Snyder, US</td>
<td>perspective on an emerging issue:</td>
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<td>Shane Snyder, US</td>
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<td>19:00</td>
<td><strong>Gala dinner</strong></td>
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</table>
### Thursday Technical Programme

#### 08:15 - 09:00
**Collaboration in the water sector—do we need a Higgs particle?**  
**Wim van Vierssen**  
**Netherlands**

#### 09:15 - 10:45
**Photocatalysis in drinking water treatment**  
Chair: **Jonathan Clement**  
**Netherlands**
- 09:15 - 09:40  Photodesorption of specific organic compounds from titanium dioxide in aqueous media  
  **Ho Kyong Shon**  
  **Australia**
- 09:40 - 10:00  TiO2-mediated photocatalytic degradation of 1,4-dioxane with coagulants in drinking water treatment  
  **Kwang-Ho Choo**  
  **Korea**
- 10:00 - 10:20  Silica-modified TiO2 nanomaterials for photocatalytic virus inactivation in drinking water  
  **Qilin Li**  
  **US**
- 10:20 - 10:40  Development of a visible-light photocatalytic membrane material  
  **Gerald Heinicke**  
  **Denmark**
- 10:40 - 10:50  Closing summary

**Improvement of conventional water treatment technologies—clarification**  
Chair: **Aik Num Puah**  
**Singapore**
- 09:15 - 09:35  Computational simulation of flocculent sedimentation based on experimental results  
  **Nomcebo Sithebe**  
  **South Africa**
- 09:35 - 09:55  Chemical feed control using coagulation computer models and a streaming current detector  
  **Alex Yavich**  
  **US**
- 09:55 - 10:15  Evaluating the influence of outlet configuration on short-circuit effects in a mechanical flocculator using pilot-scale testing  
  **Marcelo Libanio**  
  **Brazil**
- 10:15 - 10:35  Dissolved air flotation drinking water treatment as an emerging technology in Sri Lanka  
  **Ian Dunn**  
  **Australia**
- 10:35 - 10:50  Closing summary

#### 10:45 - 11:15  
**Morning break**  
**Exhibition**

#### 11:15 - 12:45
**Oxidation and advanced oxidation processes—catalytic oxidation**  
Chair: **Hervé Suty**  
**France**
- 11:15 - 11:35  Transformation of bromine species in catalytic ozonation process over MnOx/Al2O3  
  **Yulun Nie**  
  **China**
  **Salim Derrouiche**  
  **France**
- 11:55 - 12:15  Kinetics of aqueous degradation of bisphenol A by permanganate and enhancements of coexisting chemicals  
  **Jing Zhang**  
  **China**
- 12:15 - 12:35  A synthesised, heterogeneous fenton-like goethite (FeOOH) catalyst for degradation of p-chloronitrobenzene  
  **Jimin Shen**  
  **China**
- 12:35 - 12:50  Closing summary

**Improvement of conventional water treatment technologies—organic matter removal**  
Chair: **Sudhir Murthy**  
**US**
- 11:15 - 11:35  Molecular-weight distribution of dissolved organic matter at several stages of a drinking water treatment plant  
  **Xavier Bernat**  
  **Spain**
- 11:35 - 11:55  Modelling the water treatment efficiency of emerging contaminants by QSARs  
  **Dirk Vries**  
  **Netherlands**
- 11:55 - 12:15  Occurrence of phenolic compounds in drinking water: assessment of treatment efficiency with conventional treatment processes  
  **Gen-Shuh Wang**  
  **Chinese Taiwan**
- 12:15 - 12:35  Advanced design and technologies for in situ reprovisioning of the Sha Tin water treatment works  
  **Tser Kuan Ting**  
  **Hong Kong, China**
- 12:35 - 12:50  Closing summary

#### 12:45 - 14:15  
**Lunch**  
**Exhibition**

#### 14:15 - 15:45
**Oxidation and advanced oxidation processes—catalytic oxidation**  
Chair: **Hervé Suty**  
**France**
- 14:15 - 14:35  Phenol degradation in heterogeneous catalytic oxidation using Co-MCM48 and Co-natural zeolite catalysts  
  **Hongqi Sun**  
  **Australia**
- 14:35 - 14:55  Catalytic activity of aluminium silicate for ozonation of chloronitrobenzenes in aqueous solutions  
  **Yu Liu**  
  **China**
- 14:55 - 15:15  Enhancement of ozone efficiency in drinking water treatment  
  **Byoung Ho Lee**  
  **Korea**
- 15:15 - 15:35  Catalytic efficiency and stability of pumice for the degradation of p-chloronitrobenzene in an aqueous solution  
  **Zhonglin Chen**  
  **China**
- 15:35 - 15:50  Closing summary

**Workshop: Governance and regulation**  
Chair: **Jennifer McKay**  
**Australia**
- 14:15 - 14:35  Restructuring Australia’s utilities over the past decade  
  **Darryl Day**  
  **Australia**
- 14:35 - 14:55  Water governance for performance improvement in France  
  **Pierre Alain Roche**  
  **France**
- 14:55 - 15:05  Institutional settings for water management in the Netherlands  
  **Piet Jonker**  
  **Netherlands**
- 15:05 - 15:20  Panel discussion
- 15:20 - 15:40  Closing remarks

#### 16:00 - 17:30
**Closing session**  
**Harremoes lecture: Trace organic contaminants—an international perspective on an emerging issue**  
**Hansreudi Siegrist**  
**Switzerland**  
**Shane Snyder**  
**US**

#### 19:00  
**Gala dinner**  
**Floor 3 BEXCO Exhibition Center 2**
### 08:15 – 09:00
Collaboration in the water sector—do we need a Higgs particle?
*Wim van Vierssen*
Netherlands

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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Room 1</th>
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<tbody>
<tr>
<td>09:15 – 10:45</td>
<td>Focus on Korea workshop: Establishing innovative, decentralised water supply systems</td>
<td>Room 16</td>
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<tr>
<td></td>
<td><strong>Chair</strong> JeongHyun Kim Korea</td>
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<tr>
<td>09:15</td>
<td>Opening remarks</td>
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<tr>
<td>09:20</td>
<td>Introduction to decentralised water supply systems No-Suk Park Korea</td>
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<td>09:35</td>
<td>Lessons learnt from decentralised case studies in Western Australia Goen Ho Australia</td>
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<td>09:50</td>
<td>Urban water resources and their clever use for sustainability and resilience Hiroaki Furumai Japan</td>
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<td>10:10</td>
<td>Panel discussion:</td>
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<td>Ja-kyum Kim Korea</td>
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<td>Goen Ho Australia</td>
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<td>Hiroaki Furumai Japan</td>
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<td>10:40</td>
<td>Closing remarks</td>
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### 10:45 – 11:15
Morning break

### 11:15 – 12:45
Focus on Korea workshop: Appropriate technology for scientists and engineers without borders
*Chair Jeyong Yoon* Korea

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<th>Time</th>
<th>Session</th>
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<tr>
<td>11:20</td>
<td>Overview of appropriate technology (AP) in developing countries Euiso Choi Korea</td>
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<td>11:40</td>
<td>What are the advantages and disadvantages for application of AP in developing countries? Nguyen Van Phuoc Vietnam</td>
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<td>12:00</td>
<td>Panel discussion: Takizawa Satoshi Japan, SungHyun Kim Korea, Jegathesan Australia, Sungwhan Lee Korea</td>
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<td>12:40</td>
<td>Closing remarks</td>
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### 11:15 – 12:45
COF workshop: Transitioning to new paradigms in urban water—institutional
*Chair Carol Howe* Netherlands

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<th>Time</th>
<th>Session</th>
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<tr>
<td>09:15</td>
<td>Transitioning to new paradigms in economic and institutional systems Nick Apostolidis Australia</td>
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<td>09:30</td>
<td>Innovations in cost and benefit allocation across institutions and consumers Stuart White Australia</td>
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<td>09:50</td>
<td>Challenges of introducing innovations—views from the pricing regulator Amanda Chadwick Australia</td>
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<td>10:20</td>
<td>Reflections and discussion: Economics of aesthetics and environmental values Vicki Elmer US</td>
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<td>Fitting public–private partnerships into new paradigms Rama Singh Rasogi India</td>
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<td>Profitability of new systems—how to make win–wins Vivian Castro France</td>
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<td>10:40</td>
<td>Closing remarks</td>
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### 12:45 – 14:15
Lunch

### 14:15 – 15:45
Focus on Korea workshop: Evaluation of NPS BMPs in Korea
*Chair Kyungsook Min and LeeHyung Kim* Korea

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<th>Time</th>
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<tr>
<td>14:15</td>
<td>Opening remarks</td>
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<tr>
<td>14:20</td>
<td>Urban NPS BMPs in the United States Michael Stenstrom US</td>
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<td>14:40</td>
<td>National NPS BMP monitoring projects in urban Korea LeeHyung Kim Korea</td>
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<td>14:55</td>
<td>National NPS BMP monitoring projects in agricultural Korea Youngcheol Kim Korea</td>
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<td>15:10</td>
<td>Panel discussion: Brian D’Arcy UK, Yingxia Li China, Hyunsuk Shin Korea</td>
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<td>15:25</td>
<td>Open discussion</td>
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<td>15:40</td>
<td>Closing remarks</td>
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### 14:15 – 15:45
Workshop: Ballast water—new opportunities for water treatment at sea

The 2004 Water Ballast Convention requires all ships to implement a Ballast Water and Sediments Management Plan, implying all ships need to handle and clean ballast water to a given standard. In the coming years, thousands of ships and hundreds of harbours need to be equipped with water treatment technology to ensure ballast water no longer contaminates local seawater. In this workshop, representatives from ship owners, harbour authorities, technology and services providers, as well as the International Maritime Organisation, will exchange recent experiences with ballast water management and discuss the future outlook of the technologies and the market opportunities.

Organisations represented: International Maritime Organisation, Busan Port Authority, GEA Westfalia, Veolia Water, Suez Environment, Xylem WEDECO, Woo Yang Shipping, Keoyang Shipping, Chang Duck Shipping, Shin Heung Shipping

### 16:00 – 17:30
Closing session
Harremoes lecture: Trace organic contaminants—an international perspective on an emerging issue
*Hammerud Sigbrit* Switzerland & Shane Snyder US

### 19:00 Gala dinner
### Thursday Technical Programme

#### Industry Forum

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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| 10:00 – 10:45 | **Ministry of Environment**  
Membrane technologies—process applications  
HTM is an advanced drinking water treatment process consisted of in-line mixing, coagulation and direct filtration by submerged hollow-fibre MF membrane. It is a very compact and energy-efficient system. In this forum, an example of full-scale application of this system in Korea will be presented. | IF stage A            |
| 11:00 – 11:45 | **SUEZ ENVIRONNEMENT**  
NRW reduction—the global and integrated solution to improve water utilities’ efficiency  
SUEZ ENVIRONNEMENT has developed a unique approach to reduce non-revenue water (NRW) by implementing specific and tailor-made business solutions. We will present them through success stories from Algiers, Saudi Arabia, Macao and China. | IF stage B            |
| 13:00 – 13:45 | **ReThink Water/Danish Water Technology Group**  
How Danish utilities and suppliers cooperate to live up to strict Danish environmental policies—case studies (part 1)  
Denmark introduced strict environmental legislation in the 1970s, but is tirelessly working on continuous improvements even today—especially regarding sustainability and energy efficiency. This session will take you through case studies of how utilities and suppliers of services and components comply with today’s policies. The session will also present a number of white papers in development. | IF stage A            |
| 13:45 – 14:45 | **ReThink Water/Danish Water Technology Group**  
How Danish utilities and suppliers cooperate to live up to strict Danish environmental policies—case studies (part 2)  
Denmark introduced strict environmental legislation in the 1970s, but is tirelessly working on continuous improvements even today—especially regarding sustainability and energy efficiency. This session will take you through case studies of how utilities and suppliers of services and components comply with today’s policies. The session will also present a number of white papers in development. | IF stage B            |
| 14:45 – 15:00 | **C&H**  
Use of 3D water quality measurement systems  
3D water quality measurement systems make water quality and GPS data possible and very easy to measure. We will present a solution. Simply enter the water quality and GPS data into the Hydrograph program to easily check the distribution of water and GPS coordinates. | IF stage A            |
| 14:15 – 15:00 | **Veolia Water Korea** | IF stage B            |

#### Industry Forum

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<th>Time</th>
<th>Session</th>
<th>Location</th>
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| 10:00 – 10:45 | **Salsnes Filter**  
Innovative method of primary treatment by use of mechanical filtration  
Presented by Bjørn Aas  
Salsnes filter processes have proven performance, replacing the traditional clarifiers to achieve lower costs and footprint. The technology may reduce investment in secondary stages, and is an important new approach for upgrade or renovation. A Salsnes filter combined with deep sea outfalls is a cost-effective first-stage solution for settlements and cities. | IF stage B            |

#### Winners Forum Programme (subjected to change)

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<td>10:45 – 10:50</td>
<td><strong>Welcome and Introduction to the 2012 Project Innovation Awards</strong></td>
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<td>10:50 – 11:20</td>
<td><strong>Presentations by Global Winner and Honour Award for Applied Research</strong></td>
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<tr>
<td>11:20 – 11:50</td>
<td><strong>Presentations by Global Winner and Honour Award for Design</strong></td>
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<tr>
<td>11:50 – 12:20</td>
<td><strong>Presentations by Global Winner and Honour Award for Operations/Management</strong></td>
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<tr>
<td>12:20 – 12:50</td>
<td><strong>Presentations by Global Winner and Honour Award for Planning</strong></td>
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<td>12:50 – 13:20</td>
<td><strong>Presentations by Global Winner and Honour Award for Small Projects</strong></td>
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<tr>
<td>13:20 – 13:50</td>
<td><strong>Presentations by Global Winner and Honour Award for Marketing and Communications</strong></td>
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<tr>
<td>13:50 – 14:00</td>
<td><strong>Summary and closing</strong></td>
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#### Closing Session

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| 16:00 – 17:30 | **Harremoes lecture: Trace organic contaminants—an international perspective on an emerging issue**  
Hansreudi Siegrist, Switzerland & Shane Snyder, US | Room 1                |

#### Gala Dinner

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<th>Time</th>
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| 19:00      | **Gala dinner**  
Floor 3 BEXCO Exhibition Center 2 | Room 1                |
Proceedings—on USB

In your delegate bag you will find a USB of congress proceedings. The USB contains full papers of platform presentations, electronic versions of posters, and extra resources from IWA.

To easily find materials on the USB, search the files using keywords. This will bring up presentations associated with those keywords, and their papers.

Wi-fi internet—free access

Free wi-fi is available in the exhibition hall in areas shown on page 76, during the open hours of the exhibition. The password is busan. If you unable to log on, the network may be too busy—so please try again shortly.

Mobile app for schedule, map, community

The easy-to-use app shows you:
• up-to-the-minute information on its ‘dashboard’
• a customisable ‘schedule-at-a-glance’ to get organised
• an interactive map of the exhibition
• real-time alerts from congress organisers
• a built-in Twitter feed to follow and join in on the event chatter

You can also:
• rate and comment on sessions you attend
• take photos to share your experiences
• connect with colleagues using the ‘friends’ feature
• keep up with industry news

Get the app

• For iPhone, iTouch, iPad and Android: visit the App Store or Android Market and search for ‘IWA2012busan’.
• For all other phones: go online to www.m.core-apps.com/iwa2012busan to download the app or bookmark the page for future reference.

Technical programme themes

Integrated urban water systems
Managing utilities and their assets
Water treatment technologies
Wastewater treatment and reuse
Water and health
Water resources supply and sustainability
Water, climate and energy

Workshops

BOF Basins of the Future
COF Cities of the Future
FOST Frontiers of Science and Technology
SNC Smart Networks Cluster
SWC Smart Water Cluster
WCE Water, Climate and Energy

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부산광역시

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Earth, isn't it too small for us?

This earth is too small to build our future here.
For the place, where makes your life beautiful,
where increases city's value,
where shows future of construction.

Today, GS E&C continues
to build the tomorrow of a bigger earth.
Poster session and reception

18:00 - 19:30 Monday Poster lounge in exhibition hall
This is an opportunity for a special viewing of the posters and to meet and engage with the poster presenters. The presenters will be on hand to explain their posters and answer any of your questions. Drinks will be served.

Poster awards

Voting will close on 17:00 Tuesday
On Monday and Tuesday of the congress you have the opportunity to vote for your favourite poster using the voting system which you will find in your delegate bag. Place your completed voting cards in the boxes provided in the poster lounge in the exhibition.

The winners will be notified on Wednesday and presented with their awards at the plenary session on Wednesday afternoon.

Poster presentations

Water, climate, and energy

1 A study on energy characteristics of pumps for water distribution system Yoshihiro Arai Japan
2 Effect of TTHM on drinking water quality during autoclaving treatment Saeed Shahabi Iran, Islamic Republic of
3 Evaluation of metronidazole photodegradation under UV irradiation and ozonation process in water A. R. M. Mostafa and E. E. El-Sayed Egypt
4 Photocatalysis-based water treatment processes for heavy metal removal: a comparative study with different nanomaterials and nanomaterial composites S. S. J. Agarwalla and S. S. J. Bhattacharyya India
5 A review of the functioning of microalgae in wastewater treatment and its application for bioenergy production Mohamed El Dokki Egypt
6 A comparison of reverse osmosis and nanofiltration for water treatment in small industrial plants Soumya Chatterjee and Shailesh Acharya India
7 Development and implementation of the most energy-efficient triangle for energy efficiency evaluations Scott Phipps US
8 The impact of climate change on water demand and supply in the Middle East and North Africa J. M. B. van Odijk Netherlands
9 Development of new water treatment technologies for improving water quality in industrial wastewater and waste reduction Shuji Fukahori Japan
10 The effect of coagulant type on the performance of membrane filtration processes for water treatment Abbott. Onno van Oort and B. van der Graaf Netherlands

Water treatment technologies

11 Optimization of membrane filtration systems for water treatment using artificial intelligence and machine learning technology S. S. J. Bhattacharyya and S. S. J. Agarwalla India
12 A comparative study of different membrane technologies for water treatment in small industrial plants Soumya Chatterjee and Shailesh Acharya India
13 Development and implementation of the most energy-efficient triangle for energy efficiency evaluations Scott Phipps US
14 The impact of climate change on water demand and supply in the Middle East and North Africa J. M. B. van Odijk Netherlands
15 Development of new water treatment technologies for improving water quality in industrial wastewater and waste reduction Shuji Fukahori Japan
16 The effect of coagulant type on the performance of membrane filtration processes for water treatment Abbott. Onno van Oort and B. van der Graaf Netherlands
Impact of anthropogenic reactive nitrogen on Nitrogen Budget—a model development for Turkey Selim Sanin Turkey
Investigating influential factors in nitrate concentration variations of Shiraz’s potable water resources Mahtalat Sharifi Republic of Iran
National database design for integrated water quality management in Korea Hynoh Song Korea
Diffuse pollution from rare earth elements in phosphogypsum-amended Brazilian soils Eduardo von Sperring Brazil
Distribution of Microcystis and microcystin in the southern Sacramento–San Joaquin Delta, California William Stringfellow US
Riparian wetlands as buffer zones for protecting river water quality William Stringfellow US
New ultra-flexible data logger and communication hub for meteorological and hydrological sensors Anders Tangberg Norway
Assessing environmental impacts of water use with a simplified single indicator—the water impact index Francois Vince France
Pond and wetland systems as offline processors of drinking water source Weidong Wang China
Study on integrated pollution-control technology for infl ow rivers of Taihu Lake Basin Yimin Zhang China
Respiration and eco-toxicity studies for waste phosphogypsum S.H. Park Korea
Integrated wastewater sanitation management in urban and rural centres of Iran Hamid Reza Tashahoei Republic of Iran

Water and Health

Combination of dispersive liquid–liquid microextraction (DLLME) and graphite-furnace atomic absorption spectrometry (GFAAS) as a sensitive method for determining trace values of Bi in natural water Samane Abkarzade Republic of Iran
Method development for the determination of 36 pharmaceutical compounds in water by UPLC-(ESI)-MS/MS Maria João Benaliel Portugal
Efficacy of fast methods for Escherichia coli counts in drinking water of a depressed area Sergio Canobbio Italy
Removal and analysis of perfluorinated compounds in surface water by online solid-phase extraction liquid chromatography tandem mass spectrometry Keun-joo Choi Korea
Impact of new membrane technologies in the water quality of the Barcelona metropolitan area distribution network Susana González Spain
Reasonable assessment method of biomanipulation using hydropshire model of ecosystem microcosms Hideaki Hayashi Japan
Statistical evaluation of the chemical quality of bottled and tap water Stijn Van Hulle Belgium
A study on mineral characteristics of drinking water in Busan Jae-eun Jeong Korea
Comparison of ecotoxicity strength and concentration of chemicals in river water Takashi Kameya Japan
Toxicity assessment of size-fractionated urban road dust using oestradiol Heterocycris incongruens Rajendra Khanal Japan
Evaluation of ecotoxicity in industrial effluent using Daphnia magna Si Young Kim Korea
Screening of six acidics drugs in tributaries of the Han River Jun-Il Kim Korea
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- **Catering 1**: Morning and afternoon coffee and tea
  - Water dispenser
  - Sandwich lunch bag (including vegetarian) for lunch ticket holders

- **Catering 2**: Morning and afternoon coffee and tea
  - Water dispenser
  - Sandwich lunch bag (including vegetarian) for lunch ticket holders

- **Catering 3**: Morning and afternoon coffee and tea
  - Water dispenser
  - Korean-style lunch box (choice of two) for lunch ticket holders
  - Some seating available

- **Catering 4**: Morning and afternoon coffee and tea
  - Coffee and food items available for purchase
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- **Catering 5**: Coffee and food items available for purchase
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### Korean Pavilion

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HERE IS THE CITY OF WATER

Busan is a city of water, located in the south eastern corner of the Korean peninsula along the delta of the Nakdong River and directly facing the sea. The clean and environmentally friendly city of Busan, through scientific management and its advanced water quality processes, will emerge as a leading city in the worldwide quest to find answers to the issues of water sustainability by hosting the 2012 IWA World Water Congress & Exhibition.
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Korean Pavilion

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872 Urban Sewer and Drainage System Research Centre

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Stand 716
Aarhus Water Ltd.
Bautavej 1, 8210 Aarhus V, Denmark
Tel. +45 8947 1000
Contact – Lars Schroder
Email aarhusvand@aarhusvand.dk
www.aarhusvand.dk

Aarhus Water supplies more than 15 million cubic metres of drinking water. About 85 per cent of the inhabitants of Aarhus Municipality receive their water from us. We purify more than 30 million cubic metres of wastewater a year, thereby contributing to public health and a steadily improving aquatic environment. We work on the basis of the entire water cycle, and at Aarhus Water sustainability, efficiency and development are key words. We constantly focus on making a good workplace even better, and our vision is to be Denmark’s leading water company.

Stand 310
Apsfi Co. Ltd.
858, Jangdeok-dong, Hwaseong-si, Kyunggi-do, 445-130 Korea
Tel. +82 31 3556 838
Contact – Daniel Kim
Email daniel@apsfi.com
www.apsfi.com

Apsfi will manufacture a variety of filter elements that are useful for a wide business field such as semi-conductors, electronic displays, food and beverages, and desalination plants. We also design and fabricate many kinds of filtration equipment for total water treatment systems. Currently, we export our own products to more than 25 countries. The primary company-wide product focus is on industrial filter elements, water treatment filtration systems, and engineering.

Stand 620
AGRU Korea
543-1 Mugap-ri, chowol-eup, Gwang Ju, 464-863 South Korea
Tel. +82 2 2333 0818
Contact – Jae-Hyun Kim
Email ak@agrukorea.com
www.agrukorea.com

AGRU Kunststofftechnik
Peschendorfer-Strasse 31, Bad Hall, 4540 Austria
Tel. +43 7258 790 0
Contact – Albert Lueghamer
Email office@agru.at
www.agru.at

AGRU Kunststofftechnik ranks among the most important international manufacturers of innovative plastic products as piping systems, fittings, semi-finished products, concrete protective liners and geomembranes. In building construction, the application of AGRU products is manifold— from the concrete protection of buildings; to warm- and cold-water supply indoors; sewage, heating and air condition installation; and ventilation and roof sealing for tunnels or sewage and irrigation channels, channels and retention ponds. AGRU products are environmentally friendly, resistant against corrosion and adhesion, and there is a system flexible for every application.

Stand 328
American Water Works Association
6666 West Quincy Avenue, Denver Colorado 80235-3098 US
Tel. + 303 734 3427
Contact – John Anderson
Email janderson@awwa.org
www.awwa.org

The American Water Works Association (AWWA) is an international non-profit educational association dedicated to safe water. Founded in 1881 as a forum for water professionals to share information and learn from each other for the common good, AWWA is the authoritative resource for knowledge, information, and advocacy for improving the quality and supply of water in North America and beyond.

Stand 217
AMS-SYSTEIA
SYSTEIA SpA, Via Paduni, 2A, 03012, Anagni, Italy
Tel. +39 0775 776058
Contact – Luca Sanfilippo
Email info@ysytea.it
www.ams-systea.com

AMS-SYSTEIA is a leader in analytical instruments for clinical, food and environmental analysis based on continuous flow analysis, discrete, loop flow analysis and containment systems for nuclear and biological application. Brands: AMS, SYSTEIA, Alliance Instruments and Ysebaert. Main environmental applications: TN, TP, phenol, cyanides, detergents, nitrate, nitrite, ammonia, phosphates, silicate, chromium, COD, TOC, iron, sulphide, fluoride and lead. Products: Smartchem and Easychem discrete analysers; Futura, Proxima and Fluxys continuous flow analysers; Micronac C on-line analysers; Micronac 1000 portable analysers and the WIZ in-situ probe. For lab, on-line or in-situ analysis, AMS-SYSTEIA will provide you with the right analytical solution.

Stand 211
Andritz Singapore
25 Tuas Avenue 4, 639375 Singapore
Tel. +65 6512 1800
Contact – Krytal Kong
Email separation.sg@andritz.com
www.andritz.com

Andritz Separation specialises in solid/liquid separation for water treatment, municipal and industrial sludge treatment, food and beverages, pharmaceutical, chemical, minerals and mining industries. We provide a complete range of products to meet our customers’ stringent requirements for
separation processes. Our product range includes decanter centrifuges, filter presses, belt presses, screens, thickeners, separators, centrifuges, dryers and more.

Stand 722
Aquafin nv
Dijkstraat 8, 2630 Aartselaar, Belgium
Tel. +32 34 50 45 72
Contact – Ingrid Van Tendeloo
Email ingrid.vantendeloo@aquafin.be
www.aquafin.be
Aquafin collects wastewater from municipalities in collector sewers and transports it to wastewater treatment plants where it is treated in accordance with European standards. This know-how and experience is also offered abroad.

Stand 411
Aqualogy
Avenida Diagonal 211, 08018, Barcelona, Spain
Tel. +34 93 342 20 00
Email contacto@aqualogy.net
www.aqualogy.net
Aqualogy is the leading global brand of integrated solutions for the water sector that improve efficiency and optimise the use of water resources to serve people and improve their quality of life. Aqualogy provides innovative, flexible, comprehensive and easily adaptable solutions and technologies for any type of socio-economic context in four main areas. Environment— we provide solutions to companies in the water sector and the environment sector. Infrastructure— we develop construction projects for hydraulic engineering. Solutions— we specialise in services and solutions to improve the management of companies. Knowledge-centered services— we offer services based on knowledge management and people.

Stand DH10
AquaRating
1300 New York Avenue, NW, Washington, DC 20577, US
Contact – Matthias Krause / Raimon Puigjaner
Email matthiask@iadb.org / raimonp@iadb.org
www.aquarating.org
The Inter-American Development Bank and the International Water Association have begun pilot testing AquaRating, a third-party validated rating system for water and sewerage service providers. AquaRating will provide utilities with a rating (0–100) based on a comprehensive assessment of eight areas. The system evaluates utilities’ management practice as well as key performance indicators, with a special emphasis on efficiency, sustainability and recommendations for improvement. AquaRating is participating in this event to present, discuss and promote the basic concepts of this new approach.

Stand 300
ARCADIS
Symphony, Gustav Mahlerplein 97-103, 1082 MS Amsterdam, 1082 Netherlands
Tel. +31 (0)20 2011 011
Contact – Bill Dee
Email info@arcadis.com
www.arcadis.com
ARCADIS is an international company providing consultancy, design, engineering and management services for infrastructure, water, environment and buildings. We work diligently to retain our core values as a trusted consultant, employer, and corporate citizen. With more than 21,000 employees and more than $3.2 billion in revenue, we have an extensive international network supported by strong local market positions. We rank among the top ten management and engineering consultancies in the world, the top five in Europe, Brazil and Chile, and the top three in the global environmental market.

Stand 133
A.R.I. Flow Control Accessories
Kibbutz Kfar Charuv, Kibbutz, 12932 Israel
Tel. +972 4 6761988
Contact – Pini Vardy
Email ari@ari.co.il
www.arivalves.com
ARI Flow Control Accessories is a leading company with expertise in planning, developing and implementing advanced solutions for desalination plants’ protection from transient pressures, entrapped air and unmeasured non-revenue water. These solutions are accomplished with the design, development and manufacture of valves and accessories for fluid piping systems. We can also execute an in-depth analysis of these systems for implementing proper air valve sizing and location. While addressing the ever-changing needs of the market place, we pledge to uphold: high quality, service and training, innovation and development, and long-lasting products with minimal maintenance.

Stand 522
ASIO
Turanka 1, 627 00 Brno, Czech Republic
Tel. +420 548 428 111
Contact – Jiri Palcik
Email asio@asio.cz
www.asio.cz
ASIO was established in 1993 as a Czech engineering supplies company with international operations. The company is involved in the development, production, and delivery of technologies for treating water, wastewater and air. The wide range of water management products that it offers are used in the treatment of wastewater from family houses, villages, towns, hospitals, and businesses.

In the desalination industry with an innovative line of air valves, check valves and bladder tanks that:

Save on energy costs
Control pipeline & system surge
Prevent vacuum damages in the pipeline system
Protect membranes from pressure transients

www.arivalves.com    ari@ari.co.il

Creating the difference
Stand 716
AVK Valves Korea Co. Ltd.
Unit 1304, 13F, ACE Hightech21 Bldg., 1470 Woo-dong, Haenam-gu, Busan 812-020, Korea
Tel. +82 51 744 4939
Contact – Phillip Yuen
Email info@avkvalves.co.kr
www.avkvalves.co.kr
In 1969 AVK introduced the very first gate valve for water, and has been offering butterfly valves since the 1980s. AVK has built a complete range of valves and accessories with quality approvals from all the leading national and international testing institutes. Our dedication to high quality and continuous product development is widely recognised by customers around the world. More than 3000 people in the AVK group are doing their utmost to ensure that AVK remains one of the world’s leading valve manufacturers for water and wastewater treatment.

Stand 722
Belgium/Flanders Pavilion
Graaf Karel de Goedelaan 34, 8500 Kortrijk, Belgium
Tel. +32 56 24 12 80
Contact – Stéphanie De Man
Email info@vlakwa.be
www.vlakwa.be
The Belgium/Flanders Pavilion represents a number of Flemish organisations who are active in aerobic and anaerobic wastewater treatment, water reuse, effluent polishing, drinking water production and recycling municipal wastewater. The pavilion is organised by the Flanders Knowledge Water Centre. At the Pavilion, visitors can be informed about activities and projects of the following organisations: Aquafin, Avecom, IWASA, Enterprise Flanders, ABS, BB, Essenscia, Fedustria, FIT, HOWNET, INAGRO, IWU, KATHO, KBHO, KULAK, KULeuven, LNE, POM, Province West-Vlaanderen, University Antwerp, Universiteit Gent, Unizo, Vegebe, Vito, Vlakwa, Vlario, VIZZ, VOKA and Water-Link.

Stand 300
Berghof Membrane Technology
Agora 4, 8934 CJ Leeuwarden, Netherlands
Tel. +31 58 2100 912
Contact – Eric Wildeboer
Email membraneotechnology@berghof.com
www.berghof.com
We have extensive know-how based on more than 35 years experience in industrial wastewater treatment. We supply innovative MBR sidestream concepts and are a market leader for successful installation of industrial wastewater treatment systems. Our global sales network includes technical OEM partners, agents and distributors. We deal with MBR-applications, industrial wastewater, municipal wastewater, oily wastewater and beverages, and offer high quality products and competitive pricing. We supply membranes, modules, connections parts, complete assembled UF racks, lab-scale and pilot research, engineering, design support and start-up supervision.

Stand 301
Berson UV-techniek
PO Box 90, NL-5670 AB Nuenen, Netherlands
Tel. +31 40 290 7777
Contact – Paul Buijs
Email buijs@bersonuv.com
www.bersonuv.com
Berson UV-techniek is a manufacturer and global supplier of ultraviolet (UV) technology. Established in 1972, Berson is part of the water division of Halma plc. In conjunction with affiliated Halma plc companies Hanovia (UK) and Aquionics (US), Berson is the leader in UV disinfection and has over 85 years experience in the manufacture, application, and development of UV equipment. Berson focuses on the municipal market, with applications in drinking water production, waste water effluent treatment and effluent recycling. It has a worldwide distribution network, and factory-trained technicians provide sales and high standards of service locally.

Stand 303
BORDA
Fahnenstrasse 9, Bremen, Germany
Tel. +49 421 317 10
Contact – Maren Heuvels
Email heuvels@borda.de
www.borda-net.org
Established in 1997 as a not-for-profit organisation, BORDA (Bremen Overseas Research & Development Association) is a specialist organisation active in the fields of decentralised wastewater treatment systems (DEWATS), community-based sanitation and decentralised solid waste management within development cooperation and private-public-partnership frameworks. BORDA contributes towards poverty alleviation, sustainable protection of natural resources and the strengthening of social structures. During the last ten years, around 1,000 DEWATS projects have been developed and facilitated with partners in Asia and Africa who employ a total export workforce of more than 250 people.

Stand 115
Bucher Unipetkin
Murdienstrasse 80, CH 8166, Niederweningen, Switzerland
Tel. +41 44 857 23 00
Email info@bucherunipetkin.com
www.bucherunipetkin.com
Bucher Unipetkin is one of the world’s leading manufacturers of machines and systems for efficient solid-liquid separation. The patented technology of Bucher hydraulic presses has been put to use in over 2000 systems worldwide. At Bucher Unipetkin our team of experienced engineers and technicians work to meet the needs of tomorrow for the benefit of our customers and the environment. Proven and robust, Bucher presses offer decisive advantages: High degree of dewatering, low disposal and drying costs, reliable process and system control, self-optimizing process operation, continuous operation without supervision, minimal labour costs and low maintenance cost.

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Bureau of Waterworks, Tokyo Metropolitan Government
8-1, Nishi-Shinjuku 2-chome, Shinjuku-Ku, Tokyo, 163-8001 Japan
Tel. +81 3 5320 6336
Contact – Tatsue Shimamura
Email international_affairs@waterworks.metro.tokyo.jp
www.waterprofessionals.metro.tokyo.jp
The Tokyo Metropolitan Waterworks Bureau has always been a top-class organisation in terms of scale and technological prowess, both domestically and internationally. As we present our advanced technology and presence in a proactive manner at this exhibition—we ask that you please stop by.

Stand 600
Busan Metropolitan City
2001 Jungangno, Yeonje-Gu, Busan 611-735 South Korea
Tel. +82 51 888 3584
Contact – Dilm Kim
Email dokkim8454@korea.kr
www.busan.go.kr
Busan is a city of water, located at the south-eastern tip of the Korean Peninsula along the delta of the river and directly facing the sea. The largest port city in Korea is home to the world’s fifth-largest container port. Based on its strategic location along three major trunk routes connecting the world’s oceans and continents, it is striving to become a leading centre of port logistics in north-east Asia.

Stand 316
Calgon Carbon Corporation
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www.calgoncarbon-us.com
Calgon Carbon Corporation (NYSE: CCC) is a global leader in services and solutions for making water and air safer and cleaner, and for purifying food, beverage and industrial process streams. Headquartered in Pittsburgh, Pennsylvania (US), Calgon Carbon employs approximately 1,100 people at more than 15 carbon manufacturing, reactivation, and equipment fabrication facilities in the USA, Asia and Europe. The company also has more than 20 sales and service centres throughout the world. In Europe, Calgon Carbon is known as Chemviron Carbon.

Stand 413
CDM Smith
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www.cdmsmith.com
CDM Smith provides lasting and integrated solutions in water, environment, transportation, energy and facilities to public and private clients worldwide. As a full-service firm, we deliver exceptional client service, quality results and enduring value across the entire project life cycle. CDM Smith is consistently ranked as a top global service provider in water-sector engineering. Our 6,000 employees located in offices around the world apply advanced technologies and integrated approaches to address public health and environmental challenges. We are expanding and optimising limited resources, extending and renewing water infrastructure for growing populations, and providing access to water of exceptional quality.

Stand 205
Center for Eco-Smart Water Systems
Wanju Eco Environment Technology Center 1F, Yonsei University 1 Yonseidae-gil, Wanju, Gangwon-do, 220-710 South Korea
Tel. +82 33 760 5566
Contact – Seung–Lee Lee
Email sl19905@yonsei.ac.kr
http://ecoest.yonsei.ac.kr
The Center for Eco-Smart Water Systems was established in Yonsei University with support of the Ministry of Environment Korea as a part of Global Top Project in May 2011. The main goals of the center are to develop advanced hybrid membrane water treatment systems for safe and sustainable water supply even in the situation of rapid climate change, and to assist domestic water companies to acquire total water solutions. The center puts its main focus on developing new fouling and chemical-resistant membrane modules with low energy consumption, the integration of eco-smart water systems, and developing optimised water treatment packages.

Stand 522
Cetaqua
Carretera d’Esplugues 75, Cornella de Llobregat, Barcelona 08940 Spain
Tel. +34 9331 24800
Contact – Carlos Montero
Email info@cetaqua.com
www.cetaqua.com
Cetaqua Water Technology Centre is a private foundation which centres its research, development and innovation projects on the entire water cycle. Research areas include: alternative water resources, impact of global change, efficient infrastructure management, health and the environment, water and energy, and water demand. Cetaqua’s success is based on collaborative research, combining the efforts of the private, public and academic spheres. Its research projects aim to provide companies, society and governments with innovative and sustainable solutions to face environmental and technological issues at each step of the water cycle.

Stand 410
CH2M HILL
1919 South Jamaica St., Englewood, CO 80112 US
Tel. +1 720 296 2435
Contact – Ina Cunningham
Email ina.cunningham@ch2m.com
www.ch2mhill.com
Since CH2M HILL’s founding in 1946—with water as its core business— its scientists, engineers, and construction experts have been planning, designing, and constructing the world’s most technically complex water projects. With US$6.4 billion in revenue, and the addition of Halcrow in February 2011 and the acquisition of CH2M’s water business in January 2012, CH2M HILL is a US$6.4 billion, billion-water firm. CH2M HILL’s success is rooted in the world’s oceans and continents, it is striving to become a leading centre of port logistics in north-east Asia.
2011, CH2M HILL has 30,000 employees and projects in more than 117 countries. CH2M HILL is an industry-leading program management, construction management and design firm, as consistently ranked by Engineering News-Record. In 2012 the firm received the Global Water Award for Water Company of the Year, recognising its significant contributions to developing and advancing the global water sector.

Stand 326
Chief Environmental Products Inc.
611 Willow Street, Grand Island, NE 68801 US
Tel. +1 308 381 0585
Contact – Shawn Jaeger
Email environmentalproducts@chiefind.com
www.environmentalproducts.chiefind.com
Since 1972, Chief Industries has offered the Ecolo-Chief pre-engineered wastewater treatment system around the globe. The Ecolo-Chief system is designed for smaller cities and villages as well as a variety of other individualised uses— ranging from subdivisions, apartment buildings and motels to manufacturing and processing operations. The biological process employed by the Ecolo-Chief system can also be of use in certain industrial wastewater applications. Building on the corporation’s commitment to quality through innovation, Chief Industries strives to meet the ever-changing environmental challenges of wastewater treatment around the world.

Stand 300
Convergence Beheer
Munsterstraat 18, 7418 EV, Deventer, Holland
Tel. +31 (0) 570 607695
Contact – M. de Wit
Email mdewit@convergence.com
www.convergence.com
Convergence develops and supplies fully customised fluid and gas testing systems for industry and laboratories. Our solutions are based on quality equipment (we only work with reliable suppliers), fairness (we only recommend the equipment best suited for the purpose) and pro-activity (we act before problems occur, giving feedback to customers on their equipment requests, and assisting with setting up tests and research programs).

Stand 318
Cosmo Koki Co.
9-5, NishiShimbashi 3-chome, Minato-ku, Tokyo 105-0003 Japan
Tel. +81 3 3435 8805
Contact – Tuzuki Imano
Email pr@cosmo-koki.co.jp
www.cosmo-koki.co.jp
Cosmo Koki Co. fulfills a duty to protect lifelines (pipelines) utilising our state-of-the-art technology. We are a pioneer of work under pressure, an indispensable technique in all fields related to water such as drinking water, sewer, agricultural water and industrial water.

Stand 517
CSM (Woongjin Chemical)
23F Kukdong Bldg. Jung-gu, Chungmuro 3ga, Woongjin Chemical Filter Division, Seoul, Seoul 100-705 South Korea
Tel. +82 2 3279 7368
Contact – David Kim
Email davidki@wjchemical.co.kr
www.csmfilter.com
CSM products, manufactured by Woongjin Chemical, are innovative and cost-effective reverse-osmosis, nanofiltration and ultrafiltration membranes, cartridge filters and micro-filters for municipal, industrial and residential markets. Supported by a global network of branch offices and subsidiaries in the US, China, India, Singapore, UAE, and Spain, and with numerous authorised dealerships throughout the world, we are committed to ensuring better quality, reliable technical support, competitive prices and responsive delivery time for our customers.

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Tel. +31 313 880406
Contact – Miriam Balaban

Stand 126
Desalination Pavilion
University Campus Bio-Medico of Rome, Faculty of Engineering, via Alvaro del Portillo, 21, 00128 Rome, Italy
Phone +39 348 88 48 406
Email miriambalaban@yahoo.com

Desalination Pavilion, prominently located in the World Water Congress & Exhibition, desalination will be presented and discussed in many of the thematic sessions and workshops. The Desalination Pavilion allows delegates to also exchange ideas on the exhibition floor.

Stand 716
DHI
Agern Allé 5, Hoersholm, DK 2970, Denmark
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DHI is an independent, international consulting and research organisation advancing technological development and competence in the fields of water, environment and health. DHI offers a wide range of solutions, leading-edge IT, laboratories, test facilities as well as field surveys and monitoring programs. DHI work in close dialogue and partnership with our clients—government authorities, municipalities, contractors, consulting companies and industries—and is committed to helping its clients increase efficiency, safety and profitability through customised decision-support systems, advanced water modelling software, comprehensive training and professional support. DHI has 30 offices around the globe and around 1100 employees.

Stand 516
Doosan Heavy Industries & Construction
Korea Life Building, 10th Floor, 311 Gangnam-daero, Seocho-gu, Seoul, South Korea
Phone +82 2 513 6237
Email candhinc@naver.com

One of the principal sponsors at this year’s IWA World Water Congress, Doosan Heavy Industries & Construction’s corporate stand is grand in scale and innovative in design. The stand showcases Doosan’s global business portfolio and its leading position in the water industry through an array of visualisations, real-life plant models help visitors to better understand the broad process flows of desalination plants as well as specific mechanisms behind the three major types of desalination technology—MSF, MED, and RO.

Stand 102
Dr.2O
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One of the principal sponsors at this year’s IWA World Water Congress, Doosan Heavy Industries & Construction’s corporate stand is grand in scale and innovative in design. The stand showcases Doosan’s global business portfolio and its leading position in the water industry through an array of visualisations, real-life plant models help visitors to better understand the broad process flows of desalination plants as well as specific mechanisms behind the three major types of desalination technology—MSF, MED, and RO.

Stand 208
Emerson Process Management Korea
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Phone + 82 2 3438 4600
Contact – A Reum Lee
Email Reception.Korea@emerson.com

Emerson Process Management is a leading, global supplier of products, services and solutions that measure, analyse, control, automate, and improve process-related operations. Our company evolved from the business previously known as Fisher-Rosemount, which was already a recognised leader in process automation products and technology. As Emerson Process Management, we now offer even broader capabilities to help customers control, connect and manage their process and business. Specifically, we’ve augmented our best-in-class measurement, analytical and control products, and innovative PlantWeb® architecture with a broad array of engineering, consulting, maintenance and project management services.

Stand 322
Environmental & Water Resources Institute
1801 Alexander Bell Drive, Reston, VA 20191, US
Phone +703 295 6380
Contact – Brian Parsons
Email ewri@asce.org

Created in 1999, the Environmental & Water Resources Institute (EWRI) is a civil engineering specialty institute of the American Society of Civil Engineers (ASCE), the country’s oldest national engineering society. EWRI services are designed to complement ASCE’s traditional civil engineering base and to attract new categories of members (non-civil engineer allied professionals) who seek to enhance their professional and technical development. ASCE-EWRI is an active member of the World Water Council and one of over 40 American public, private and civil society organisations united to form the US Water Partnership.

Stand 400
EPAL - Empresa Portuguesa das Águas Livres, SA
Av. da Liberdade 24, 1250-144 Lisbon, Portugal
Phone +35 12 1325 1521
Contact – António Bento Franco
Email epal@epal.pt

EPAL - Empresa Portuguesa das Águas Livres, SA, is the oldest and largest water supply company in Portugal. EPAL supplies water to around three million people and provides household water to Lisbon’s 480,000 inhabitants. With 140 years of experience, EPAL is seen as the reference company in Portugal, having developed modern management strategies with the objective to improve overall efficiency of the company and attain sustainable management from social, environmental and economic perspectives.

Stand 300
European Benchmarking Cooperation
C/C- Sir Winston Churchilllaa 273, 2280 EA Rijswijk, Netherlands
Phone +31 70 414 47 59
Contact – Dieneke Krijbolder
Email info@waterbenchmark.org

The European Benchmarking Cooperation (EBC) is a not-for-profit partnership of four European national water associations. EBC facilitates water utilities in their continuous effort to improve services by offering an international benchmarking programme, and providing a platform to exchange knowledge and best practices in management and operations. EBC annually runs benchmarking exercises for water and wastewater services. The programme targets primarily European water utilities. However, utilities from abroad are welcome to participate too. At the IWA World Water, EBC welcomes visitors at its meeting point in the Netherlands country pavilion.

Stand 126
European Desalination Society
University Campus Bio-Medico of Rome, Faculty of Engineering, via Alvaro del Portillo, 21, 00128 Rome, Italy
Phone +39 348 88 48 406
Contact – Miriam Balaban

The European Desalination Society is a unique organisation dedicated to the promotion and development of seawater desalination, brackish water desalination and the recycling of industrial and municipal wastewaters. EDS is the European Desalination Society and IWA. It features leading global companies in the field of desalination. An important topic in this World Water Congress & Exhibition, desalination will be presented and discussed in many of the thematic sessions and workshops. The Desalination Pavilion allows delegates to also exchange ideas on the exhibition floor.

Stand 621
European Project Trust
info@trust-i.net

www.trust-i.net

The central objective of the European Project Trust is to deliver co-produced knowledge to support transitions to the urban water services of tomorrow, enabling communities to achieve a sustainable, low-carbon water future without compromising service quality. We provide technical and financial assistance through research-driven innovations in governance, modelling concepts, technologies, decision-support tools, and novel approaches to integrated water, energy, and infrastructure asset management. Mine city pilot regions are demonstrating trust and legitimising these innovations by implementing the most promising interventions in their urban water systems.

Stand 318
Federation of Japan Water Industries Inc.
4-8-9 Kudan Minami, Chiyoda-ku, Tokyo, 102-0074 Japan
Phone +81 3 3264 2294
Contact – Ikuo Mitake
Email koukai@jwwa.or.jp
www.suidanren.or.jp

Since its foundation in 1966, the Federation of Japan Water Industries Inc. has contributed to continuous development of waterworks enterprise as the sole representative of waterworks, industrial water supply and sewerage industries at national level.

Stand 104
Festo Korea Co. Ltd.
470-1 Gasan-dong Geumcheon-gu, Seoul 153-803 South Korea
Phone +82 1666 0202
Contact – Gun-young Chung
Email sales_krf@festo.com
www.festo.co.kr

Festo Korea Co. Ltd, as a pioneer of automation in Korea, has supplied total automation system solutions with various pneumatic, electrical products and special services since 1980. Festo provides about 30,000 products in several hundred thousand variants with pneumatic, servo-pneumatic, electrical technology to provide a total automation system solution.

Stand 722
Flanders Knowledge Water Centre
Graaf Karel de Goedelaan 34, 8500 Kortrijk, Belgium
Phone +32 56 24 12 00
Contact – Stephanie De Man
Email info@vlakwa.be

www.vlakwa.be

Providing Flanders with sufficient water of good quality at a reasonable price is a major challenge. The key to success is an optimal cooperation between enterprises, researchers and government. The Flanders Knowledge Center Water (VLAKWA) is the driving force. As not-for-profit organisation, VLAKWA is an independent link in the integrated water cycle. At those areas in the market where water problems
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Paddy Padmanathan, ACWA Power

www.globalwaterintel.com
constitutes a threat to the economy, VLAKWA looks for solutions that initiate, coordinates and facilitates such as: collecting/ channeling needs of problem owners, networking with solution/product providers; stimulating exchange of knowledge/experience; and listing and joining the knowledge/technology about water in Flanders/abroad.

**Stand 211**

**FLOWSERVE**

2300 Vernon Avenue, Vernon, CA 90058 US
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Contact – Fred Grondhuis
Email fgrondhuis@flowserver.com
www.flowserve.com

FLOWSERVE Corporation is one of the world’s leading providers of fluid motion and control products and services. Over 50 years, FLOWSERVE has offered pumps, energy recovery devices, valves, valve automation and seals to the global desalination industry. With the addition of Celler AG, FLOWSERVE has expanded this offering to include the DWER™ and ERT energy recovery devices. FLOWSERVE also operates a network of quick-response centers around the world to provide aftermarket services. Information about FLOWSERVE can be obtained by visiting www.flowserve.com.

**Stand 318**

**Fukuoka City Waterworks Bureau**

1-28-15, Hakataekimae, Hakata-ku, Fukuoka, 812-0011 Japan
Tel. +81 92 483 3107
Contact – Hisashi Inohata
Email k-kikuak.WB@city.fukuoka.lg.jp
www.city.fukuoka.lg.jp/mizu/soum

In 1978 Fukuoka suffered a serious drought, which restricted the water supply for 287 days. The Fukuoka City Government established the Fukuoka City’s Outline of Measures for Economical Water Use to facilitate stable water supply in the following year. Later, in 1994, a severe drought hit the city again. Due to the possibility of unstable precipitation and increasing population, the city saw a need to redouble its efforts. Therefore in 2003, they enacted the ‘Ordinance for the Promotion of Water Conservation’. Since then, the city government has been working with citizens to realise the sustainable use of scarce water resources.

**Stand 301**

**GE Water and Process Technologies**

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Contact – Camille Hutchinson
Email camille.hutchinson@ge.com
www.ge.com/water

With operations in 130 countries and nearly 8000 employees, GE brings together experienced professionals and advanced technologies to solve the world’s most complex challenges related to availability and quality, increased productivity, cost-reduction, and environmental regulations. We invest in forward-looking technologies, leveraging the best practices of ‘eco-magination’, to help customers balance environmental and economic goals. We offer the broadest portfolio of water and process technologies including separation equipment, membranes, filters, diagnostic tools, specialty chemicals, mobile water capabilities, service and financing. Our team develops partnerships and delivers reliable, long-term solutions for communities, governments and industries to maximise water and energy resources.

**Stand 202**

**GEA Westfalia Separator Group**

Werner-Habig-Str. 1, Delwe, NRW 59302 Germany
Tel. +49 2522 77 0
Contact – Heinrich Weseler
Email info@gea.com
www.gea.com

GEA Westfalia Separator Group is the world’s leading company for mechanical separation technology. Our comprehensive expertise enables us to offer our customers top solutions for economy, efficiency and long-term environmental protection. We specialise in the recovery of drinking water and in the treatment of water, wastewater, manure and industrial fluids. Application areas of our centrifuges are: dewatering and thickening of sewage sludge, treatment of municipal and industrial wastewater, recovery of valuable substances from production flows, treatment of fermentation residues and liquid manure, and treatment of drinking water.

**Stand 522**

**GHD**

16701 Melford Blvd, Suite 330, Bowie, MD 20715, US
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Email info@ghd.com
www.ghd.com

GHD has been at the forefront of the water industry for many years. We proudly deliver sustainable water solutions across the globe, covering every element of the water cycle—from catchment to tap—for urban, rural and industrial water applications. We assist a range of stakeholders to optimise infrastructure and adapt to environmental and political changes in ways that balance the needs of communities. Importantly, we enable clients to meet compliance obligations, improve cost effectiveness and maintain their commitment to sustainability. We’re proud of our formidable knowledge base, and we’ve won many industry awards for innovation and outstanding project delivery.

**Stand 110**

**Global Water Intelligence**

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www.globalwaterintell.com

Global Water Intelligence (GWI) provides analysis and project-tracking data on the international water market. Our flagship publication, the monthly industry journal Global Water Intelligence, has established itself as the market-leading publication for developers, suppliers, financiers, governments, utilities and municipalities seeking information and analysis on water projects with an element of private sector participation. American Water Intelligence (AWI) magazine is dedicated to providing this information for North America. We also publish highly informative in-depth market reports. You can find out more about all of our services, download sample chapters, or sign up for free trials at www.globalwaterintell.com/publications-guide/

**Stand 301A**

**Goldstar Carbon Tech**

348 Dalongfang 1st Rd Taichung District, 41756 Taichung City, Taiwan
Tel. +886 4 2535 9618
www.goldstarcarbon.com.tw

Goldstar Carbon Tech Inc. is a Taiwan-based company, established in 2005. It has become one of the major international activated carbon suppliers, and our clients are from all over the world. We believe and follow the spirit of ‘honesty, quality and professional’. Goldstar Carbon Tech Inc. has held the USA international NSF certificate and patent authentication from China and Taiwan. Goldstar Carbon Tech Inc. has the aim of creating the best products and services for our customer, ensuring the products are maintained at the highest quality and to live up the clients’ expectations.

**Stand 716**

**Gronntmij**

Granskoven B., 2600 Glostrup, Denmark
Tel. +45 4348 6060
www.gronntmij.dk

Goldstar Carbon Tech Inc. is a Taiwan-based company, established in 2005. It has become one of the major international activated carbon suppliers, and our clients are from all over the world. We believe and follow the spirit of ‘honesty, quality and professional’. Goldstar Carbon Tech Inc. has held the USA international NSF certificate and patent authentication from China and Taiwan. Goldstar Carbon Tech Inc. has the aim of creating the best products and services for our customer, ensuring the products are maintained at the highest quality and to live up the clients’ expectations.

**Stand 305**

**Grundfos**

Pool Due Jersens Vej 7, Bjerringbro, 8850 Denmark
Tel. +45 51 44 92 70
Contact – Morten Riis
Email corpm@grundfos.com
www.grundfos.com/water-utility

An annual production of more than 16 million pump units makes Grundfos one of the world’s leading pump manufacturers. Circulator pumps for heating and air conditioning— as well as other centrifugal pumps for the industry, water supply, sewage and dosing— are the main products. Today Grundfos is the world’s largest manufacturer of circulators, covering approximately 50 per cent of the world market of these pumps. Grundfos Water Utility will present our demand-driven distribution, flow-dependent pressure-management solution.

**Stand 710**

**GS Engineering & Construction Corporation**

11F, GS Tower, 679, Yeoksam-dong, Kangnam-gu, Seoul 135-985, South Korea
Tel. +82 2 2005 8758
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www.gsconst.co.kr

GS Engineering & Construction Corporation has successfully carried out engineering, procurement, construction, operation and maintenance and development services, internationally. It offers it’s best water services in the fields of water supply, hydropower and dams, sewage system maintenance, sewage and wastewater treatment, waste treatment and recycling, desalination and demineralization, and groundwater remediation. Recently, GS Engineering & Construction Corporation acquired Inima which is one of the top 10 global water desalination treatment companies. The acquisition of Spain’s Inima secured resources to penetrate the water treatment market in US and South America, as well as Europe and North Africa.

**Stand 712**

**G-tech**

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G-tech provides the most innovative, reliable water-control solutions for valves and actuators (for water and sewerage, HVAC and fire fighting) with excellent technical support and service to our customers. We are distributors of Singer Valve (pilot operated automatic control valve), Bray (butterfly valve and actuator), Val-matic (air release and check valve) and National Pump (all sorts of pump). Water loss and leakage isn’t only a matter of great concern but also has to be solved. G-tech will take the lead to reduce this problem by providing the water control solutions. We promise to help our customers with solutions for water works.

**Stand 318**

**Hitachi Ltd.**

Akihabara Daibiru Building, 18-13, Soto-Kanda 1-chome, Chiyoda-ku Tokyo, 101-808 Japan
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Contact – Takahiro Tachi
Email takahiro.tachi@y3l.hitachi.com
www.hitachi.com

Hitachi Ltd. supports the social infrastructure by contributing to the safe and reliable drinking water supply. Based on the advanced technology and reliable products, Hitachi is contributing integrated solutions to water infrastructure for approximately 100 years. We offer an integrated solutions in various fields in the drinking water supply such as planning, water quality, monitor and control, maintenance and service contract.
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Exhibitor profiles

Stand 123
Itron
7 rue ampezi, ZI des bruayeres, Europe Mâcon, France
Tel. +33 3853 93914
Contact – Lucile Montant
Email lucile.montant@itron.com
www.itron.com

Itron is a leading provider of energy and water resource management solutions for nearly 8,000 utilities around the world. We offer end-to-end solutions that include electricity, gas, water and thermal energy measurement, and control technology; communications systems; software; and professional services. With more than 9,000 employees doing business in more than 130 countries, Itron empowers utilities to responsibly and efficiently manage energy and water resources.

Stand 500
IWA – International Water Association
Alliance House, 12 Canon Street, London SW1H 0QS, UK
Tel. +31 70 315 0792
Contact – Chloe Menhinick
Email water@iwahq.org
www.iwahq.org

The exhibition stand of the International Water Association (IWA) and IWA Publishing will host a series of presentations and activities to inform exhibitors and delegates on the breadth of our programmes, regional activities, publications and membership packages. We are hosting the Specialist Groups Hub (stand no. 100), Development Hub (stand nos DH1–10) and Young Water Professionals Hub (stand no. 101) in the exhibition hall. Each hub will have a comprehensive programme of activities and dialogues planned throughout the week to give delegates and exhibitors opportunities to learn about our core activities.

Stands DH1–10
IWA Development Hub
IWA, Alliance House, 12 Canon Street, London SW1H 0QS, United Kingdom
Tel. +31 70 315 0792
Contact – Chloe Menhinick
Email water@iwahq.org
www.iwahq.org

The Development Hub is a space where international organisations, IWA members and partners can establish dialogues and create opportunities to innovate across issues related to research, development, small and medium enterprises, and water and sanitation service delivery in lower- and middle-income countries. The dialogue sessions, organised by the participating organisations, will run throughout the congress. The Development Hub also offers individual presentations about participating organisations.

Stand 522
IWA Project Innovation Awards Winners Pavilion
IWA Asia & Pacific Regional Office, 80 Tah Guan Road East, Waterhub, T03-03, Singapore 608575
Tel. +65 6316 9935
Contact – Gladys Ng
Email Gladys.ng@iwahq.org
www.iwahq.org

The IWA Project Innovation Awards recognise and honour engineering excellence and innovation in water and wastewater engineering projects throughout the world. Awards are given in six categories — applied research, design, operations and management, planning, small projects, and marketing and communications. The 2012 winners will showcase their work at the Winners Pavilion, where you can meet them and learn about their projects. Each day during tea-breaks and lunch they will present their projects, and marketing and communications. The 2012 winners will showcase their work at the Winners Pavilion, where you can meet them and learn about their projects.

Stand 519
K-water
560 Sintan-in-ro Kwater, Daedeok-Gu, Daejeon 306-711
South Korea
Tel. +82 42 629 3704
Contact – Jwoneong Kim
Email jak722@kwater.or.kr
www.kwater.or.kr

Clean water that is free of taste, odour and disease is an indispensable lifestyle for human lives and social and economic activities. Therefore, Japan Water Works Association (IWA) is making positive efforts in collaboration with water utilities in Japan to respond to strong community demand for a safe and stable water service, as well as high-quality water.

Stand 318
Kitakyushu Overseas Water Business Association
1-1 Ohtemachi, Kokurakita, Kitakyushu, Fukuoka, 803-8510 Japan
Tel. +81 93 581 2166
Contact – Yugi Imou
Email yijou@o31@lime.ocn.ne.jp

Established in 2010, KOWBA has secured the participation of private companies, agencies, academics and four municipal bureaus of Kitakyushu City, as well as the attendance of related national agencies as observers to form the first-ever municipal level public-private organisation in Japan for the promotion of international water business. We are presently active in countries such as Cambodia, Vietnam and China. Specialising in water supply and waste water treatment, the members of KOWBA offer services to provide a total water system from design to management by fully utilising innovative technologies and knowledge shared among participating companies and agencies.

Stand 416
Korea Environmental Corporation
Environment Research Complex, Gyeongseo-dong S5-4, 404-108 Incheon, Korea
Tel. +82 3 2590 4000
Contact – Kyung-Hee Kang
Email keec.or.kr/02/en

Korea Environmental Corporation (KECO) was founded to contribute to environmentally friendly national development by preserving the environment and introducing the resource recirculation system. It works by efficiently operating programs preventing environmental pollution, improving the environment and promoting resource recirculation.

Stand 525
Korea Water Forum & 7th World Water Forum Planning Office
1303 Oficio Shinnmunno 1-ga, Jongno-gu, Seoul, South Korea
Tel. +82 2 736 0430
Contact – Hyejoyong Kim
Email hjejoyong216@gmail.com
www.koreawaterforum.org

Korea Water Forum (KWF) is a non-profit organisation whose primary purpose is to establish cooperative relations with international water enterprises. In doing so, KWF serves as a leading organisation in preparing the 7th World Water Forum, which will be held in Daegu/Gangbuk, South Korea, in 2015. KWF also provides water education to the general public in its efforts to promote awareness and knowledge of water as the resource that we must need to manage. KWF is also a think tank, holding regular symposiums and workshops in its advisory role to Korea’s policymakers.

IWA World Water Congress & Exhibition Busan 2012

Book launch and meet the authors
15:45 - 16:15 Wednesday Exhibition stand no. 500
Join IWA Publishing at the IWA exhibition stand for a drinks reception during the break on Wednesday afternoon.

IWA authors and staff will be attending, offering tips on how to publish in IWA books and journals.

The reception will also celebrate the launch of the following books— come along to hear the authors introduce their work.

Water and Energy - Threats and Opportunities
Gustaf Olsson
Prof. Emer. Lund Univ., Former Editor-in-Chief Water Science & Technology
Animal Waste: Water Quality and Human Health
Jesper Christensen
Technical Officer, Water, Sanitation, Hygiene and Health, World Health Organization
Internal Corrosion Control of Water Supply Systems: Code of Practice
Mads Hald
Swanneske Unat, Chair of IWA Specialist Group on Metals and Related Substances in Drinking Water
Water-Energy Interactions in Water Reuse
Valentina Lazzeroni
Suez Environment, Chair of IWA Specialist Group on Water Reuse

Several journal editors and book authors will also be at the IWA stand – don’t miss the opportunity to meet them face to face. Including: Helmut Krämer, Vienna University of Technology, Editor-in-Chief Water Science & Technology; Young Ho Choi, Kyungpook National University, Korea.
Ever since our establishment in 1890, KUBOTA group has been engaged in the water business. Under our group slogan, ‘For Earth, For Life’, we contribute globally through our business to solving the problems in the fields of water, food and environment. The products of our pipe system division include: ductile iron pipes and joints, valves and pumps. The products of the water engineering and solution division are: water treatment plants, submerged membrane units and wastewater treatment tanks.

Due to the water-cycle knowledge we have gathered in the Netherlands, the quality of our tap water is extremely high. This makes us one of the world’s leading nations in the field. The Dutch knowledge enterprise KWR Watercycle Research Institute plays an important role as an interface between society, the water sector and science. To improve the match between knowledge and application in countries abroad, KWR launched the Watershare® concept. In Watershare®, we have packed 40 years of experience with applied knowledge into ‘handy packages’. When you open the packages up, a whole world of useful insights and practical solutions is revealed. Come and visit us at stand 520.

Membrana is a market-leading, independent membrane producer. Membrana is one of the largest membrane and membrane device manufacturers in the world. It supplies microporous membranes for medical applications such as dialysis, oxygenation and plasma separation. Membrana is also a supplier of membrane products for filtration and specialty applications deployed in semiconductor, power, pharmaceutical, food and beverage, and water treatment markets. The primary company-wide product focus is: hollow-fibre and flat-sheet membranes for medical applications, flat-sheet microfiltration membranes for process filtration, Liqui-Cell® membrane contactors for liquid gasification/degasification, and Liqui-Flux® ultrafiltration modules for water treatment.

KOLON GLOBAL’s diverse technologies Illuminate the world from every corner.
Miya, an Arison group company, is a global provider of water system audit and comprehensive economic and sustainable water efficiency solutions. Miya's extensive experience includes projects in the Philippines, Brazil, Canada, South Africa and the Bahamas.

**Stand 131**

**Mueller Co International Holdings LLC**
21 Bukit Batok Crescent 25-75 Wcega Tower 658065
Singapore
Tel. +65 6631 8999
Contact – Ms Lilian Ngo
Email Lngo@muellercompany.com
www.muellercompany.com
Mueller Co. is North America’s largest and only full-line supplier of potable water distribution products. Mueller’s superior products cut across various water infrastructure segments and even the gas distribution segment. Our Mueller and Jones fire hydrants, our Henry Pratt and Hydro Gate products, and our butterfly and ball valves, plug valves and brass water products are market leaders in their respective applications. We also offer pipe repair products, water meters, tapping machines and tools, and, under Echologics, non-invasive leak detection and pipe condition assessment technology and services. Our products and services are used by municipalities and construction industries globally.

**Stand 716**

**Mycometer A/S**
Lersoe Park Alle 40, DK 2100 Copenhagen, Denmark
Tel. +45 3916 1072
Contact – Morten Miller
Email info@mycometer.com
www.mycometer.com
For more than ten years, Mycometer has developed user-friendly, rapid and robust onsite microbiology methods for environmental and industry professionals. Our products are USEPA verified. Timely results are essential for utilities and industry to maintain control of water microbiological quality. The BactiQuant® is a state-of-the-art onsite technology for rapid and robust determination of total numbers of bacteria in water samples. It provides the operator with a result within 10-30 minutes. The system is well suited for HACCP (hazard analysis and critical control points) and water safety plan based systems in utilities and the industry.

**Stand 214**

**Nagaoka International Corporation**
6-1 Nagisa-cho, Izumisato-city, Osaka 595-0055 Japan
Tel. +81 725 21 5750
Contact – Katsuhiko Yamada
Email inter@nagaokajapan.co.jp
www.nagaokajapan.co.jp
Nagaoka is proud to be the leading engineering and consulting firm providing total solutions for water intake, purification and treatment. Our groundwater intake technology is the standard in Japan and our biological groundwater treatment can remove high-concentration iron, manganese and ammonia nitrogen; and is beneficial for rural or small-scale wastewater systems for sustainable supply of safe drinking water. Our new technology for high-speed sub-seabed infiltration system will bring high efficiency, cost-saving and environmentally friendly processes in seawater intake. Nagaoka’s continuous challenge and technology development contributes to the world of water.

**Stand 421**

**Milwaukee Water Council**
710 N. Plankinton Avenue, Suite 340, Milwaukee WI 53203 US
Tel. +01 414 291 2773
Contact – Dean Armbus, President
Email damhaus@thewatercouncil.com
www.thewatercouncil.com
Milwaukee is one of the world’s most significant hubs for water research and industry. With more than 150 water technology companies, over 100 scientists and researchers, and the only School of Freshwater Sciences in the US, the region has the expertise and resources needed to succeed in the world water marketplace. Created by leaders in both business and education, the Milwaukee Water Council is convening the region’s existing water companies and research clusters, developing education programs to train our talent, and building partnerships that cut across all sectors and geographic boundaries.

**Stand 700**

**Ministry of Environment**
47 Gwanmoon-ro, Gwacheon-si, Gyeonggi-do, 427-729 Republic of Korea
Tel. +82 2 2110 6878
Contact – Jin-Hyun Jung
Email gry0924@korea.kr
www.me.go.kr
The Ministry of Environment is the branch of government charged with environmental protection and green growth. To protect the national territory from threats of environmental pollution and improve the quality of life for the public, the Ministry enforces regulations, sponsors ecological research, and manages the national parks. In February 2008, the Korean Meteorological Administration became an affiliate of the Ministry of Environment to facilitate counterm easures against climate change. Furthermore, the Ministry aims to contribute to the global efforts to protect the earth.

**Stand 314**

**Miya**
4th Floor, DMC1 Homes Corporate Center, 1321 Apollinen Street, Brgy Bangkal Makati City 1233 Philippines
Tel. +63 2403 1358
Contact – Noa Uni
Email info@miya-water.com
www.miya-water.com
Miya, an Arison group company, is a global provider of urban water efficiency solutions, with an emphasis on non-revenue water (NRW) management. Miya helps utilities increase water supply revenues and profits through comprehensive economic and sustainable water efficiency projects. Miya’s solutions includes water system audit and analysis, comprehensive project planning, management, implementation, maintenance and training. The global group of Miya companies includes leading water-efficiency technology and engineering consulting companies. Miya’s extensive experience includes projects in the Philippines, Brazil, Canada, South Africa and the Bahamas.

**The Korea Environment Corporation**

works to improve quality of life through the preservation of the national environment and sustainable resource recirculation.
National Oilwell Varco (NOV) is a leading supplier of flexible pipe systems for drinking water. If drinking water is a limited resource or expensive due to desalination, or of low quality due to use of surface water, and you need to move water to where you need it, then a flexible subsea pipe from NOV could be a solution. If you are in a region with tropical monsoons, a sloping seabed, or tsunamis, then a flexible subsea pipe could be the solution for a steady, reliable water supply.

Netherlands Water Partnership
PO Box 82327, 2508 EH Den Haag Netherlands
Tel. +31 70 304 37 00
Contact – Sandra Borst
Email info@nwp.nl
www.dutchwatersector.com / www.nwp.nl
Wind, water and wide open spaces have shaped the Netherlands and its history. The Dutch are skilled water managers. Over the years we have reclaimed land, increased our freshwater resources, and made it possible to reuse our wastewater. We like to share our knowledge and skills internationally to achieve more in confronting global water-related challenges. The Dutch water sector is organised in the Netherlands Water Partnership (NWP). This non-commercial partnership is a comprehensive network that unites private, government, knowledge institute and NGO Dutch water expertise as a centre of information on water expertise, policy developments and market opportunities.

Oslo Water and Sewerage Works
PO Box 4707, Sofienberg, N-0506 Oslo Norway
Tel. +47 2343 7262
Contact – Sonya Jenssen
Email sonya.jenssen@vav.oslo.kommune.no
www.vann-og-avlopsstaten.oslo.kommune.no/iwa_2012
Oslo Water and Sewerage Works is a publicly run utility responsible for the supply of drinking water, stormwater management and wastewater treatment. Oslo Water and Sewerage Works has three water treatment plants, two wastewater treatment plants, and 3,750 kilometers of water and sewerage mains. We are responsible for the provision of clean drinking water, sewage treatment and stormwater management. Our stand in Busan, Korea, focuses on the complete cycle of stormwater and wastewater treatment from building a plant tunnelled in the mountains of Norway to upgrading the capacity of wastewater pipelines in downtown Oslo.

Oskanews Inc.
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The new line of *QuantumFlux* high rejection SWRO membranes result in better water quality than industry counterparts.

Featuring NanoH₂O’s newly designed bi-directional brine seal and anti-telescoping device (ATD) with raised lip for easy handling, *QuantumFlux* membranes can be loaded/removed from either end of the pressure vessel.

Contact NanoH₂O today to find out how *QuantumFlux* can help you lower the cost of desalination.

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Changing the Economics of Desalination

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---

### Key Features
- High salt and boron rejection
- Newly designed ATD and bi-directional seal for easy loading/removal
- Standard 4- and 8-inch spiral-wound elements
- NSF Standard 61 Certified

### Product Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Qfx SW 400 R</th>
<th>Qfx SW 400 SR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permeate Flow Rate</td>
<td>34 m³/d</td>
<td>24.6 m³/d</td>
</tr>
<tr>
<td>Stabilized NaCl Rejection</td>
<td>99.85%</td>
<td>99.85%</td>
</tr>
<tr>
<td>Stabilized Boron Rejection</td>
<td>93%</td>
<td>93%</td>
</tr>
</tbody>
</table>
Exhibitor profiles

Stand 716
VCS Denmark
Vandværksvej 7, DK-5000 Odense, C, Denmark
Tel. +45 63 13 23 33
Contact – Henrik Wechmeister
Email hew@vcsdenmark.com
www.vcsdenmark.com

VCS Denmark is the third largest water and wastewater utility in Denmark. A frontrunner in our sector, we manage water resources from catchment to consumer to recipient, adopting a holistic approach to water and wastewater management, and applying the most advanced technologies and methods. Our main activities are water catchment, treatment and distribution; and wastewater removal, treatment and disposal. We also work in water resource and recipient protection; hydrogeological surveying and establishment of well fields; leakage detection and network modelling; pipeline registration; and rehabilitation. We offer our expertise nationally and internationally. Our subsidiary company DanAqua operates in South East Asia.

Stand 616
Veolia Water
Direction France, 52 rue d’Anjou, 75008 Paris, France
Tel. +33 01 49 24 35 06
Contact – Atika Doukkali
www.veolia.com

The world’s leading operator of water services, Veolia Water operates water and wastewater services on behalf of public authorities and companies, and designs technical solutions and builds facilities for those services. Veolia Water covers the entire water cycle with a constant focus on protecting resources and saving water. Veolia Water’s activities range from water withdrawal, to production and distribution of drinking water and industrial process water, and from the collection and transportation of wastewater, to treatment for subsequent recycling or discharge. Veolia Water is a division of Veolia Environnement, which also provides services in waste management, energy and transportation.

Stand 300
VEWIN – Association of Dutch water companies
Sir Winston Churchilllaan 273, 2288 EA Rijswijk, Netherlands
Tel. + 31 70 414 47 59
Contact – Dieneke Krijbolder
Email info@vewin.nl
www.vewin.nl

VEWIN is the association of drinking water companies in the Netherlands. Vewin represents the common interests of its member utilities in national and international politics and institutions. The 10 Dutch drinking water companies provide water of outstanding quality. Their unique selling point is the absence of chlorination, due to a long-standing focus on water quality from source to tap. Next to water quality, the sector pays much attention to providing sustainable and efficient services. In addition to their core task, the Dutch utilities are extensively involved in capacity-building initiatives in developing regions to contribute to achieving Millennium Development Goal 7C.

Stand 125
Water & Wastewater Asia
Block 16 Kallang Place 07-01, 339156 Singapore, Singapore
Tel. +65 6396 7877
Contact – Beth Wee
Email bethwee@pabloasia.com
www.pabloasia.com

Water & Wastewater Asia is a globally circulated magazine that provides a complete coverage of the water resource management and water resource maintenance. It is the international stage for global news, professional articles, analysis and stories of the hottest issues of the water sector. It is a professional, accurate and current source for Israeli companies and Israeli developments in the water technology sector. WaterBiz is distributed to corporations, governments, municipalities, companies, distributors and agents in the water resource management and maintenance. It’s the most economical way to reach clients from around the world who seek the knowledge and innovations of the water world.

Stand 423
Water Environment Federation
601 Wythe Street, Alexandria, VA 22314-1994 US
Tel. +1 800 666 0206
Contact – Laila Sukkariyyah
Email LSukkariyyah@wef.org
www.wef.org

Founded in 1928, the Water Environment Federation is a not-for-profit technical and educational organisation of 38,000 individual members and 75 affiliated member associations representing water quality professionals around the world. Our members, member associations, and staff proudly work to achieve our mission to provide bold leadership, champion innovation, connect water professionals, and leverage knowledge to support clean and safe water worldwide. Our conference and exhibition, WATERTEC, to be held in New Orleans this October, has grown into the world’s largest annual event on water quality.

Stand 302
WESS Global
2303 Venture Hall, Cheonan Valley, 43-5 Samunri Jiksaneup, Cheonan, Korea 331-858 South Korea
Tel. +82 41 584 8820
Contact – Sophy Yoon
Email sales@wessglobal.com
www.wessglobal.com

WESS Global has been enjoying good reputation in its quality and warranty service since its establishment in 2004. It has various sales and R&D networks all over the world.
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6th Award (2014)

Prince Sultan Bin Abdulaziz
International Prize for Water

Recognizing Innovation
Nominations open online until 31 December 2013

www.psipw.org  e-mail: info@psipw.org
WESS produces measuring instruments used in water and wastewater, chemical, refinery, steel, food, beverage, and more. Our products consist of level, flow and environmental measuring instruments using various types of technologies such as ultrasonic, microwave, capacitance, RF, and more. WESS will do its best to develop field-oriented and value added products.

Stand 414
Xylem Inc.
1133 Westchester Avenue Suite N200, White Plains New York 10604 US
Tel. +1 914 323 5700 Fax +1 914 323 5800
Contact – Tom Glover
Email tom.glover@xyleminc.com
www.xyleminc.com

Xylem is a global water leader deeply involved in every stage of the cycle of water. Doing business in more than 150 countries, the company plays an important role in serving the municipal water, wastewater, residential and commercial building services, and industrial markets. Xylem produces highly efficient products and systems that require less maintenance, use less energy and provide environmental benefits to users and communities. Through its social investment arm, Watermark, Xylem offers critical assistance in water emergency and helps provide safe water, sanitation and hygiene education for children and families through school-based programs in developing countries.

Stand 318
Yokohama Water Business Conference
23 Yamashita-cho, Naka-ku, Yokohama, Kanagawa 211-0023 Japan
Tel. +81 45 663 0161 Contact – Masato Kato
Email su-jigyo@khatstu@city.yokohama.jp

The City of Yokohama, second-largest city in Japan with a population of 3.7 million, has been nominated by the World Bank as one of the first six global best practice Eco2 Cities whose balanced development was sustainable. Yokohama fosters economic urban growth. Japan’s modern waterworks and City of Yokohama has been operating its facilities efficiently and effectively. Yokohama Water Business Conference contributes to water supply and sewerage utilities overseas, making use of advanced technology of private sector and know-how of public sector in planning, construction, operation and maintenance, and management.

Stand 425
Zoeller Pump Company
3649 Cane Run Road, Louisville, Kentucky 40211 US
Tel. +1 5 2 778 2731 Contact – Newt Kuo
Email newkt@zoeller.com
www.zoeller.com

Founded in 1939, Zoeller Pump Company is the oldest independently owned professional pump manufacturer in North America. Based in Louisville (Kentucky, USA), Zoeller’s product offering ranges from potable water pumps, wastewater pumps, municipal pumping station, sewage pumps, to effluent pumps and wastewater treatment systems. Zoeller is one of the few companies that can provide such dynamic solutions and services for all your applications. All pump products are 100 per cent factory-tested underwater for dependability from the instant they are plugged in.

Korean Pavilion

Stand 808
ATIK
1010 Ace High Hendon Tower, 235-2, Guro-3-dong, Guro-gu, Seoul, South Korea
Tel. +82 2 6220 6300 Fax +82 2 6220 6305
Contact – Softom Kim
Email ati@atikorea.com
www.atikorea.com

Since 1994, ATIK has supplied various advanced products for water industries based on their experience and knowledge of: particle counter from F55, UV-based online water analyser from TETHYS, I-OC-OD system from DOC-Labor, zeta-potential analysers from CAO. ATIK also offers membrane filter and activated carbon characterisation instruments: Porometer 3G-series, Autosorb-IQ and Quadsorb-Si from Quadrachrome. ATIK has developed an online particle counting system—AquaCounter540— for new demands on Korean customers in the field. ATIK also offers lab services to their customers. Visit the ATIK booth to experience state of the art products and consult them about your enquiries.

Stand 807
BKT
5F, Alliances Bldg. 789-6, Yeoksam-dong, Gangnam-Gu, Seoul, South Korea
Tel. +82 2 3011 7151 Fax +82 2 356 2205
Contact – Suk Hun
Email hswww@bkt21.com
www.bkt21.com

BKT provides biological wastewater treatment, membrane filtration, and energy solutions. We have more than 100 wastewater treatment references (including 130 MGD and 190 MGD facilities under construction) for BNR process, retrofitting, CSOs, and TMDL using biological filtration (BBF) or customizable SBR, ICP technologies. Our revolutionary anti-fouling membrane system, FXM, specialises in the liquid-solid separation for high-density, high-viscosity, and high-solid applications, and our clients include many Fortune 500 companies globally. Our Energy Systems has focused on renewable energy projects and launched new energy savings/recycling businesses with turbo-blower (BKTurbo) and heat-pump technologies.

Stand 833
BLTEC Korea Ltd.
1-1607, ACE High Tech City, 55-20 Mullae-Dong 3Ga, Yeongdeungpo-Gu, Seoul, South Korea 150-972
Tel. +82 2 722 0706 Contact – Hyun-Keun Park
Email hkpark@bl-tec.co.kr
www.bi-tec.co.kr

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Stand 858
Centre for Intelligent Water Network
239 College of Life Sciences and Biotechnology, Green Campus Building, Korea University, Seoul
Tel. +82 2 768 5575 Fax +82 2 3920 3976
Fax +82 2 392 7430 Contact – Prof. Suining-li Choi
Email echo@cbi.korea.ac.kr
www.gwbcenter.org

The Centre for Intelligent Water Network (CIWN), established in August 2011, is aiming to develop world-leading, global technologies through GBEST, one of its advanced eco-innovation projects. Over five years, from 2011 to 2016, the project will receive US$ 21 million from the Korean Government’s Ministry of Environment. The project consists of six core research and development institutions with about 310 researchers participating, together, the centre and the six R&D institutions manage over 30 participants from industry, academia, and research institutions.

Stand 839
Center for Seawater Desalination Plant
101 Samsung bdgil, GIST, 123 Cheongdan-gwagi, Buk-gu, Gwangju, South Korea
Tel. +82 6 715 2580 Fax +82 6 715 2584
Contact – Prof. N Sin Kim
Email seawho@gist.ac.kr
www.seawho.org

Increased global scarcity of freshwater and growing demand for drinking, agricultural and industrial water are the main drivers for growth of the seawater desalination market and technologies. CSDP, established in 2007, aims to create worldwide SWRO technologies and launch the SeaHERO (Seawater Engineering and Architecture of High-Efficiency Osmosis) R&D project. From 2007 to 2013, this project is funded by the Ministry of Land, Transport and Maritime Affairs of the Korean Government. The SeaHERO project will become the world-leading R&D program for core SWRO technologies, and contribute to the world’s freshwater supply needs.

Stand 868
Center for Water Resource Cycler of KIST
Hwangarang 14-gil 5, Seongbuk-gu, Seoul 136-791, Korea
Tel. +82 2 958 5825 Contact – Seockheon Lee
Email seocklee@kist.re.kr
www.kist.re.kr

Center for Water Resource Cycler of KIST (Korea Institute of Science and Technology) follows national priorities by finding ways to ensure clean and sustainable water resources to support environmentally friendly economic growth. A goal of the Center is to develop original core technologies related to the field of water and environmental science which are geared toward commercialisation and, ultimately, leadership in the global market. Research activities at the Center include scientific study on water cycle mechanisms and phenomena, development of membrane-based technology for effective water cultivation and treatment, and application of nanomaterials to wastewater treatment for higher efficiency.

Stand 808
Daejeon Metropolitan City
100 Dunsan-ro, 1420, Dunsan-dong, Seo-gu 302-789, South Korea
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Contact – Eul Suk Kim
Email kjuynduk@djeon.korea.kr
www.daejeon.go.kr

Daejeon, South Korea
Daejeon Metropolitan City, the 2013 IWA-ASPIRE venue, is located in the centre of Korea and is known as the advanced science and technology city. Daejeon is called ‘the city of water’ because the three rivers flow through the city. It is also well-known for its hot springs. The fifth IWA-ASPIRE conference will be where the water industry gatherers, and where you can get information about the Asian water market and maximise promotion efforts. We welcome all of you to 2013 IWA-ASPIRE Conference and Exhibition in Daejeon.

Stand 822
Ecodigm
10-6, 339 Expo-ro, Yuseong-gu, Daejeon 305-380, South Korea
Tel. +82 42 934 8670 Fax +82 42 934 8671
Contact – Eung Taek Lee
Email etlee@ecodigm.com
www.ecodigm.com

Ecodigm, established in 1998, is a Korean company specialising in biological wastewater treatment technology which removes organic and nitrogen content from wastewater. It has over 30 patents in Korea and also has foreign patents in over ten other countries. Ecodigm’s technology is innovative because it can reduce energy consumption; can save required area and installation costs; and can enhance price competitiveness, treatability and
stability. We can serve total solutions such as engineering and construction; operation; and after-service, including diagnosis of wastewater treatment plants.

**Stand 860**
**Gaamtech**
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Tel. +82 31 748 3332
Contact – Byung Chel Kim
Email bckim@gaamtech.co.kr
www.gaamtech.co.kr

ObsQ is the brand name of Gaamtech, an outstanding enterprise for the wireless measuring industry. A synthesis of observation and quality, ObsQ means high quality observation, believable measurement and durable performance. ObsQ uses distinct radio frequency technology to reduce electric power consumption and enlarge the audible range. An automatic measuring algorithm based on GPS location improves your job efficiency. The Smart Phone application for Drive by AMR systems will reduce the time required for daily tasks. Reliability and durability are the basis of ObsQ's philosophy.

**Stand 826**
**Genicom**
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Tel. +82 42 862 3982
Contact – Chengyu Lee
Email uvsensor@geni-uv.com
http://geni-uv.com

Genicom is one of the leading manufacturers of ultraviolet (UV) sensors for various applications. Genicom provides high-quality total solutions for UV sensing. Our UV sensor probe and UV radiometer are very useful for UV index monitoring (portable, outdoor); UV lamp and LED monitoring; UV water sterilisation; UV air purification; UV curing and UV absorption, reflection and transmission. Our motto is: ‘We walk the path together!’

**Stand 801**
**Green City Corporation**
11th Floor, Acehitech21 Building, Woo-dong, Haewoondae-Gu, Busan, Korea
Tel. +82 51 519 3700 +82 51 510 7381
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Email seil800@seiltec.com, big815@pusan.ac.kr
www.e-greencity.com

Green City Corporation is an operating holding company composed of eight small- and medium-sized businesses—Seil Technology Corporation, SSENG, Aquacell, Environsoft, Su Engineering, Eunggyung Eng, Bluewater Bio and Busan Fashion Center. Our goal is to provide the total solution for the environment, energy and ecology fields through the development and optimisation of 3R (reduce, recycle, replace) technologies. Our business fields are water supply, wastewater treatment and re-use, waste management, new and renewable energy, total engineering solutions, and cities of the future.

**Stand 803**
**Greenwell**
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Email eastar@nate.com / eastar@greenwell.co.kr
www.greenwell.co.kr

Greenwell is an engineering, construction and operations firm for desalination plant and membrane systems, established in 1997. Greenwell’s technical know-how in fields such as reverse osmosis, nano-filtration, ultra-filtration and micro-filtration have been recognised as the best technology worldwide and these technologies make our company work in partnership with public and private clients worldwide. We can design and manufacture the most efficient system suitable for energy-saving seawater desalination, fine chemical, water purification and water recycling. Greenwell manufactures and markets auto-controller kits, special pumps and cartridge filters.

**Stand 837**
**Hajie Industrial**
76-2 Gujang-Ri, Paltan Myeon, Hwasung-City, Gyunggi-Do 445-911, Korea
Tel. +82 31 352 8491 ext 4
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Email gazeet@hajie.com
www.hajie.com

Hajie Industrial, a manufacturer of submersible motor pumps, has been expanding both its domestic and global markets to encompass countries in Africa and Asia, and even Europe where submersible motor pumps were invented. The company represents Korea at several international exhibitions.

**Stand 864**
**Hanguk Big Technology Co. Ltd.**
405 Suntechcity, 513-15 Sandaewon-dong, Jungwon-gu Sunnam-city, Gyunggi-do, Korea
Tel. +82 31 749 1700
Contact – YongBeom Cho
Email leak@leak.co.kr
www.leak.co.kr

Hanguk Big Technology has been operating in Korea for more than 25 years and is the leading provider of waterworks system monitoring and leakage control. Our services are mainly water leak detection and repair, geological information system (GIS) and leak location equipment sales to most urban utilities around the country. Our business expertise will make it possible to expand our business further to provide a total water network monitoring/management solution to all Korean waterworks utilities.

**Stand 864**
**Hanseo Precision Meter**
E-1001 KwangMyung SK Techno Park, 1345 Soha-Dong KwangMyung-Si, KyungKi-Do, Korea
Tel.: +82 2 2083 1431 ext 4
Contact – JinHyuck Lee
Email lch-sb@nate.com
www.hsmeter.com

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Hanseo Precision Meter is a total-energy-management system company, including self-production systems that facilitate processes such as designing, mould production, casting, injection moulding and machining. With our own casting factory, we produce and supply digital water meters, heat meters, flow meters and wired/wireless remote reading systems for buildings such as government offices and apartment buildings. We try our best to satisfy our customers and prepare for the future every day in good faith.

Stand 835
Jain Technology
1204, E&C Dream Tower 2, 197-10, Guro-dong, Guro-gu, Seoul, South Korea
Tel. +82 2 856 4114
Contact – Charles Kim
Email jain.co.kr
www.jain.co.kr

Jain Technology makes ultrasonic flow meters for liquid and gas applications. Series Xonic 100 is very sophisticated, and has better performance clamp on, transit time, and ultrasonic flowmeters. Series Xonic 10 is a compact model for liquid and gas applications. Single-path, dual-path, and four-path are available. Xonic Series can measure time differences of picoseconds and accuracy is 1.0 per cent of actual flow. Xonic products are a new technology and product from Korea’s knowledge economy.

Stand 850
Kinam Metal Co. Ltd.
6-gil 15, Iryeo-ri, Jillyang-eup, Gyeongsan -Si, Gyeongbuk Korea
Tel. +82 53 815 6114
Contact – Eun Ju Lee
Email namaska@kinam.co.kr
www.kinam.co.kr

Founded in 1999, Kinam Metal Co Ltd makes cast iron and cast-iron products. We specialise in manufacturing manhole covers which are certified to ISO 9001:2000 and to Korean Industrial Standards (KS), and have a certificate of product efficiency from Small & Medium Business Administration. Our main products are locking type manhole covers (serrating, reflux prevention, rotation locking), noiseless manhole covers, harmonised design manhole covers, auto parts, and vacuum pump parts. We care for our precious land in accordance with our company’s management philosophy that we satisfy our customers’ demands for cast iron with the construction of a world-class casting plant.

Stand 805
KJC
289-11, Nakdonggangbyeon Rd, Gumi-City, Gyeongsangbuk-do, Korea
Tel. +82 54 461 3253
Contact – Jai-Park
Email showelan07@gmail.com
www.kjc38.co.kr

KJC has combined water treatment and vacuum evaporative technology and intends to reduce the harmful wastewater from various industries for a zero-discharge system to contribute to the world environmental preservation. We have developed technology for each physical property based on analysis of wastewater samples and provided the optimised solution from the accumulated data. We have technology and human resources for overall management of machine equipment production, construction and trial runs. We reduce harmful wastewater as much as possible and reuse condensation water. We promise to perform responsible equipment production, construction and trial runs. We have technology analysis of wastewater samples and provided the optimised solution from the accumulated data. We have technology development and joint core assignments. Michigan Technology has registered patents in wastewater treatment technology.

Stand 870
Michigan Technology
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Tel. +82 52 249 3533
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www.mdof.co.kr

Michigan Technology has advanced wastewater technologies — dissolved ozone flotation facility and dissolved air flotation facility. We also have developed wastewater treatment processes through joint industrial- academic technology development and joint core assignments. Michigan Technology make ultrasonic flow meters for liquid and gas applications. Single-path, dual-path, and has better performance clamp on, transit time, and accurate flow. Xonic products are a new technology and product from Korea’s knowledge economy.

Stand 820
Nonpoint Source Research Group
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Tel. +82 53 950 4787
Contact – Keho Kwon
Email congksuky@nate.com

Non Point Source Research Group is aiming to develop a significant technique, on the basis of the green technology, that can reduce more than 30 per cent of pollution-load compared with currently generated pollution-loads from non-point sources. Our group is also focusing on improving the management of pollutants of water resources and on controlling various environmental issues caused by climate change.

Stand 802
Pangae21 Ltd.
6F, 685 Sampoong-dong, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
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Contact – Jae Keuk Lee
Email jae@pangae21.co.kr
www.pangae21.co.kr

Pangae21 Ltd. is one of South Korea’s leading engineering and consulting firms, specialising in water resources management. Our services and products cover a wide range of water resources fields including drinking-water plants, wastewater treatment plants, water pipeline networks, river-basin water quality, and more. Pangae21’s advanced water resources management, called Smart Water Management, is structured with three major components: (1) sensing, measuring, and monitoring; (2) integrating and networking; and (3) providing ‘smart’ functions to conventional water resources management. Under the concept of Smart Water Management, Pangae21 seeks the most optimised, time- and cost-effective solutions in all aspects of water resources management.
of a USB port, making it easy to get data—and stores up
we have created an electromagnetic flow meter. It is a state
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1493-10 SongJeong-Dong gangser-Gu, Busan Korea
Seoyong Engineering
Stand 824
Seoyong Engineering
1493-10 Songjeong-Dong gangser-Gu, Busan Korea
Tel. +82 51 831 6171
Email seoyong@seoyong.co.kr
www.seoyong.co.kr
We have created an electromagnetic flow meter. It is a state of the art product in 2012. It is the world’s first adaptation of a USB port, making it easy to get data—and stores up to two megabytes. It has a built-in remote terminal and support system. Its measurement range is between 0.03 and 12 metres per second, and has an alarm function for problem situations. Model: EF-501.

Stand 828
Synopex
709 E&C Habita Tower 1320-2, Sindang-dong, Dalseo-gu Daegu, South Korea
Tel. +82 53 600 8711 Fax +82 53 600 8715
Contact – Myungsook Park
Email angela.park@synopex.com
www.synopex.com
Synopex is a global company which pursues green growth, focusing on water and IT. To improve the quality of life, Synopex has applied a new smart total water solution based on highly advanced membrane technologies to small islands, coastal areas, disaster areas and places suffering from water shortages. We provide mid and small-sized water purification systems, desalination systems, wastewater treatment and reuse systems, and much more. We are continuously making efforts to improve our high-performance filters, developing engineering technologies to secure safe water, and work on global water challenges.

Stand 830
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Tae Sung Engineering Consultants is a future-oriented enterprise that leads the world and future environment. It has grown because of its outstanding work and technology since its founding in 2004. The company is not only playing a leading role in every field of construction engineering for water and sewage, water resource, environment, construction supervision, roads, engineering structure, national land development, ground and plant, but also the large-scale turn-key or SOC projects in both domestic and overseas markets.

Stand 872
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www.usd-rc.re.kr/eng/main
The Urban Sewer & Drainage System Research Center was established to improve the service quality of sewers, maximum performance, and minimum maintenance costs by providing effective sewer asset management, and safe and amenable sewers. The research centre has seven projects: development of an analysis system for sewer service; development of a laser profiling inspection system; a computerised technique of sewer registry; development of storage tank for CSOs control; optimum development of sustainable urban drainage systems; development of deposit control, material and renewal technologies in sewer systems; development of odour-control technology; and sewer policymaking.

Stand 811
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Email wsvav@yahoo.co.kr
www.wsvav.co.kr
Woo-Sung Valve Co. Ltd is a specialised company developing and producing check valves since 1992. We have a wide variety of experience and know-how in the building and shipbuilding industries at home and abroad. ‘PAN Check Valve’, which is our brand, literally means ‘disc’. PAN, which is easy to pronounce and write, stands for a strong will; because the word is connected with all places and people of a particular kind. It can also mean commonplace and global. We always persevere in meeting the needs of our customers for small quantities of a variety of products.

Stand 862
Youbicom
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Contact – Kyungchun Min
Email min772@youbicom.com
www.youbicom.com
Youbicom was established by Korea Telecom and SK Telecom in 2010. Our mission is to commercialise technology developed at the university and maximise profits. Youbicom is leading the way in commercialising cutting-edge technology in Ubiquitous Sensor Networks. We are laying the foundation to become a major player in the environment of the future. We also have commercialised the UbIAMI Advanced Metering Infrastructure for remote metering of water, gas and electricity. It is a 432 MHz-based wireless system. Collected meter data is sent to a server via CDMA, GSM or ethernet. We also provide data management and analysis capabilities.

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