### Technical programme Tuesday

#### U2 Hall I & K

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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</table>
| **KEYNOTE PLENARY SESSION** 8.15 | New and virtual water: trends and challenges  
**Alexander Zehnder** Alberta Water Research Institute Canada  
Introduced by **Helmut Kroiss** TU Vienna Austria |
| **O1 Lounge 5** | **ADAPTING TO THE IMPACTS OF CLIMATE CHANGE**  
Chair **Carol Howe** The Netherlands  
9.00 Integrated systems evaluation of climate change and future adaptation strategies for the Lower River Murray, Australia **John Ward** Australia 663641  
9.20 Influence of climate change on water resources in an alpine region **Carolina Engeland** Austria 665143  
9.40 Living with climate change: adapting to global warming impacts on Australian water supplies **Will Strachan** Australia 664423  
10.00 Impacts of meteorological extreme events on the safety of drinking water supply in Austria **Mario Unterwurzinger** Austria 663663  
10.20 Stochastic soil moisture model derivation with cumulant expansion theory in steady-state condition **Suhee Han** Korea 663845  
10.25 From El Nino to La Nina and back: challenges of managing coastal areas through climate change **Anat Chanen** Australia 665946 |
| **O1 Hall L** | **HEALTH AND THE ENVIRONMENT**  
**Hazard analysis and detection methods 1**  
Chair **Wolfgang Kuehn** Germany  
9.00 Pigcocination of N-nitrosodimethylamine in water **Ruikang Hu** Singapore 664238  
9.20 Use of comprehensive two-dimensional GC for the broad screening of hazardous contaminants in urban wastewaters **Seraud Gaillin** France 662603  
9.40 Emissions of perfluorinated alkylated substances (PFAs) from point sources: identification of relevant branches **Manfred Clara** Austria 664062  
10.00 Multidetection of waterborne pathogens in raw and treated water samples using DNA array technology **Sophie Courbois** France 663931  
10.20 Bacteriophages of bacteroides as faecal source trackers **Muneisa Maite** Spain 663790  
10.40 Assessing the fate of priority substances and pertinent emerging pollutants in wastewater treatment: a challenging task for environmental laboratories **Mar Esperanza** France 664816 |

#### U2 Hall G & H

<table>
<thead>
<tr>
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| **KEYNOTE PLENARY SESSION** 8.15 | Cities of the future  
**Paul Brown** Camp Dresser & McKee Inc USA  
Introduced by **Suzi Environment** |
| **O1 Lounge 5** | **ADAPTING TO THE IMPACTS OF CLIMATE CHANGE**  
Chair **Henk van Schaik** The Netherlands  
11.15 The impact of climate change on drinking water supply by riverbank filtration **Paul Eckert** Germany 669588  
11.35 Analyzing water quality changes due to reservoir management and climate change for optimization of drinking water treatment **Wolfgang Uhl** Germany 664906  
11.55 Water supply planning to face up to climatic change **Raquel Chamochin** Spain 667119  
12.15 Effects of global warming on waterworks: a proposal from Japan **Yoshikoh Misono** Japan 664382  
12.35 Effect of climate change on peak demands **Jan Vreeburg** The Netherlands 663704  
12.40 An action for climate change by Tokyo waterworks **Norikazu Yamamuro** Japan 664382 |

#### Afternoon break 3.45

### Lunch

#### Workshop

**Education in engineering**  
Chair **Jodieann Dawe** Australia  
2.15 Emerging challenges to managing the water cycle coupled with a general shortage of skilled staff provide the sector with a pressing need to enhance the capacity of existing and, moreover, the next generation of sector staff. This workshop provides an international discussion forum for new and innovative concepts in environmental engineering education to ensure that the long-term resource needs of the sector can be met.

#### Workshop

**Risk assessment, disease burden and health surveillance**  
Chair **Rosina Grones** United States  
4.30 Methods and techniques for risk assessment of water supply systems **Ladislav Tuhocak** Czech Republic 664464  
4.50 Experiences of policy makers, regulators, utilities and scientists with implementation of legislative GMOA for drinking water in The Netherlands **Ana Maria de Roa Huisman** The Netherlands 667613  
5.10 Selection and adaptation of a risk assessment method for drinking water supply **Claudia Niewersch** Germany 665925  
5.30 Calculating the risk of contamination of vegetables from irrigation **Katrina Charles** United Kingdom 666319  
5.50 Enteropathogenic viruses and bacterial fecal indicators in German raw waters for drinking water treatment **Beate Hambsch** Germany 665160  
5.55 Waterborne health hazards attributable to drinking water in Japan **Toshiro Yamada** Japan 664980

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**7.00 – 9.00 pm Concert at Musikverein with Vienna Symphony Orchestra, Bösendorferst 12, Musikverein, 1010 Vienna. Bring your ticket to gain entry. Musikverein is five minutes walk from Karlsplatz train station. If you have not purchased a ticket, please go to the Registration Desk and check availability.**
# Technical programme Tuesday

## U2 Hall I & K

### KEYNOTE PLENARY SESSION

8.15 New and virtual water: trends and challenges  
Alexander Zehnder Alberta Water Research Institute Canada  
Introduced by Helmut Kroiss TU Vienna Austria

### O1 Hall M

#### MANAGING AND PLANNING WATER SERVICES

**Chair Mary-Ann Dickinson United States**  
9.00 Modelling the impacts of climate change on a water treatment plant in South Australia Olivia Thorne United Kingdom 668749  
9.20 Water interchange between agriculture and the urban supply Francisco Cubillo Spain 667883  
9.40 Assessing desalination as a sustainable alternative using a multiple criteria decision support model Maria do Céu Almeida Portugal 668886  
10.00 Measuring the metabolism of decentralised urban developments: do they demonstrate increased urban sustainability? Ted Gardner Australia 667580  
10.20 Managing and planning water services Islam Ul-Haque Pakistan 667109  
10.25 Service procurement selection methodology Greg Cashlin Australia 663060

### U2 Hall G & H

### KEYNOTE PLENARY SESSION

8.15 Cities of the future  
Paul Brown Camp Dresser & McKee Inc USA  
Introduced by Suez Environment

### O1 J 565

#### WORKSHOP

**100 years of disinfection**  
Chair Joan Rose United States  
9.00 Dr Harriet Chick’s discovery and the history of disinfection Joan Rose United States  
9.10 100 years of disinfection kinetics in water and beyond Chuck Haas United States  
9.30 Chlorine disinfection: how does it work? Quality assurance and quality control Chuck Haas United States  
9.45 Ozone disinfection: how does it work? Quality assurance and quality control Regina Sommer Austria  
10.00 UV disinfection: how does it work? Quality assurance and quality control Joe Jacangelo United States

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### Morning break 10.30

#### WORKSHOP

**Strategic management of water resources in urban water systems 2**  
Chair Bruno Nguyen France  
11.15 Multi-objective optimization of energy management in water supply systems Helena M Ramos Portugal 665138  
11.35 An integrated design, build, operate alliance for the delivery of the Gold Coast desalination project Greg Cashlin Australia 667116  
11.55 Getting ready for climate change: implications for the United States West Coast Perri Standish-Lee United States 662968  
12.15 Optimum use of gravity springs in water supply systems Katarina Tothova Slovak Republic 668395  
12.35 Institutional challenges and opportunities: decentralized and integrated water resource infrastructure Valerie I Nelson United States 666639  
12.40 Water options as a new tool for facilitation of water allocation efficiency Sergei Schneider Australia 664316

### Lunch 12.45

#### WORKSHOP

**Demand management, water conservation and metering**  
Chair Stuart Hamilton United Kingdom  
2.15 Characterization of end uses and explanatory factors on consumption of water for domestic use Francisco Cubillo Spain 667535  
2.35 Non-intrusive leak detection in large diameter, low-pressure non-metallic pipes: are we close to finding the perfect solution? Malcolm Farley United Kingdom 667125  
2.55 Automatic meter reading system that finds leaks Tim Waldron Australia 667057  
3.15 Partnerships for enhancing the water-saving culture in Zaragoza, Spain Sam Kayaga United Kingdom 663381  
3.35 Water demand reduction for outdoor uses: efficient gardening Raquel Chamochin Spain 667125  
3.40 Major upcoming non-revenue water reduction: performance-based contract for Dar es Salaam, Tanzania Peter Mary United States 666647

### Afternoon break 3.45

#### WORKSHOP

**Disaster preparedness response and recovery**  
Chair Don Broussard United States  
4.30 The response to the Wilma hurricane: Lessons learned by the water and sanitation services in Cancun Gerardo Aguilara Sonato France 665707  
4.50 Added value of online satellite data transmission for flood forecasting, warning systems in medium sized catchments Christophe Ruch Austria 665381  
5.10 The first tier of rapid toxic material assay in response to heightened water security Qiantao Cai Singapore 666376  
5.30 Containerised mobile water treatment unit Ramchandran Natarajan India 662922  
5.50 Some experience of water operations in facing extreme hydro-climatic event consequences Hsiao-Niin Pham France 663779

### U2 World Water Congress & Exhibition 2008
U2 Hall I & K

KEYNOTE PLENARY SESSION
8.15 New and virtual water: trends and challenges
Alexander Zehnder
Alberta Water Research Institute
Canada
Introduced by Helmut Kroiss
TU Vienna
Austria

WATER TREATMENT
Membranes in water treatment 1
Chair Samer Adham
Qatar
9.00 Phenols and dicarbonyl acids removal from aqueous solutions by NF/RO membranes
Arzadu Soto Spain 665395
9.20 Influence of organic and colloidal fouling on the removal of sulfamethoxazole by nanofiltration membranes
Christiane Espenflickr Germany 665421
9.40 Electrostatic repulsion as a mechanism in fouling of ultrafiltration membranes
Vitaly Gibbs Israel 667006
10.00 Cleaning solutions assessment for nanofiltration membrane in drinking water treatment plant
Andreas Famhartl Austria 667110
P 10.20 Fractionation of biofilter effluent and their impact in membrane fouling process
Andreas Famhartl Austria 667110
P 10.25 Towards less than 0.4 kwh m3 energy consumption of membrane bioreactor for water reclamation
Ghulam Yes Singapore 664690

WATER TREATMENT 2
Membranes in water treatment 2
Chair Jean-Marie Laine
France
11.15 Rejection of pharmaceuticals and personal care products (PPCPs) and endocrine disrupting chemicals (EDCs) by low pressure reverse osmosis membranes
Hiroyuki Otsuki Japan 66615
11.35 Influence of calcium on membrane fouling in MF membrane caused by hydrophobic fraction of NOM Hiroshi Yamamura Japan 664198
11.55 Enhancing boron rejection in seawater reverse osmosis facilities
Robert Huehmer
United States 667039
12.15 Protein fouling and chemical cleaning of RO membrane
Hajamir Mr. Singapore 664580
12.35 Ultrasound enhanced backwashing in ultrafiltration modules with ceramic membranes: results with natural surface water
Angela Boly Germany 667463
12.40 Barcelona desalination plant: 200 000 m3/day of drinking water
Federick Gueguen
France 667167

Morning break 10.30

Lunch 12.45

WATER TREATMENT 3
Membranes in water treatment 3
Chair Peer Kamp
The Netherlands
2.15 Investigating membrane biofouling from perspectives of bacteria size and shape using flow-field-flow fraction
Eunkyung Lee Korea 665694
2.35 Risk management approach for monitoring ultrafiltration membrane integrity and experimental validation using MS2-phages
Anne Brethaut France 665304
2.55 Modelling of external and internal concentration polarization effect on flux behaviour of forward osmosis
Chen Huang Tian Singapore 665082
3.15 Multifunctional TFO/IAUF membrane for drinking water treatment
Xiwang Zhang Singapore 664397
P 3.35 Seawater desalination by reverse osmosis: advances in technology and energy efficiency
Wolfgang Neudarm Switzerland 667387
P 3.40 Organic fouling of ultrafiltration membranes: force measurements of organic foulants in systems containing coagulant and divalent cations
Darren Delai Sun Singapore 664698

WATER RESOURCES AND RIVER BASIN MANAGEMENT
Model development and application 1
Chair Qiuwen Chen
China
2.15 Uncertainty effects in a simulation-optimization model and application of a distributed TMDL
Chen-Feng Chen Chinese Taiwan 665954
2.35 A simplified conflict resolution model for reservoir operation considering water quantity issues
Reza Kerachian Iran 665833
2.55 Prediction of the Huangpu River’s water quality, Shanghai in 2010 World Expo based on tidal river network model
Haijiang Tan China 666426
3.15 Hydro-economic analysis of water supply for the binational transboundary region of Baja California, Mexico Leopoldo Mendoza Mexico 665936
3.35 Error analysis of a steady state water quality model, qual2e using a combination of EFDC-hydro and WASP7.2
Se Woong Chung Korea 665586
P 3.40 Dynamic 3D groundwater model for a gravel bar at the Danube River bank
Julia Derx Austria 665023

Afternoon break 3.45

WATER TREATMENT
Conventional and full-scale treatment
Chair Joel Mallevialle
France
4.30 Objectives for optimization and consequences for design, operation and concept of drinking water treatment plants
Lukas C Reinthel The Netherlands 665448
4.50 Customer-demand-based drinking water softening policy towards realisation of
softening plants at WML in The Netherlands
Lucie Polmier The Netherlands 665977
5.00 Experimental study of sand filters conversion into granular activated carbon filters at La Presa water works, Valencia
Javier Macian Cervera Spain 663121
5.30 Effects of several water quality parameters on arsenic removal by coagulation: laboratory experiments and a pilot-scale study
Dora Laky Hungary 665863
P 5.50 Approach to water treatment process selection and design to maximize sustainability and mitigate environmental impact
Jesús García-Aleman Canada 666812
P 5.55 Comparison between iron and aluminum salts for the coagulation of low turbidity and high pH source water
Huan-Huan Wu Chinese Taiwan 665193

WATER RESOURCES AND RIVER BASIN MANAGEMENT
Model development and application 2
Chair Qiuwen Chen
China
4.30 Developing a conflict resolution model for conjunctive use of surface and groundwater resources: application of NSGA-ll and the Nash bargaining theory
Reza Kerachian Iran 665959
4.50 Characterization and modelling of turbidity density plume induced into stratified reservoir by flood runoffs
Se Woong Chung Korea 665841
5.10 An objective test of stochastic behaviour in riverine water quality models
Geoffrey Thomas Parker Canada 664406
5.30 Modelling raw water quality: development of a drinking water management tool
Christine Kubbeck Germany 664885
P 5.50 Distributed modelling of river water quantity and quality in a hilly forested watershed using remote sensing and GIS inputs
Binara Rajapaksh Schlub Japan 662458
P 5.55 Reduction of Sakarya river water quality data by principal component analysis
Rabia Koku Turkey 667439

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**WASTEWATER TREATMENT**

**Chair** Heechul Choi Korea

- **9.00** Use of polishing pond effluents to cultivate lettuce (*Lactuca sativa*) in a hydroponic system Regina Keller Brazil 666560
- **9.20** Removal of effluent organic matter, toxic anions and micropollutants using membranes for sustainable wastewater reclamation Saber Sarip Korea 665774
- **9.40** Tertiary polishing of BNR process effluent using autotrophic and heterotrophic hybridization of two-stage filter Kyung Sok Min Korea 666761
- **10.00** Dissolved organic matter in the sewage effluent of SBR: the impact of pH value Jin Guo China 666354
- **P 10.20** Reclaiming potable quality water from wastewater effluents by new low-temperature distillation method Nagamany Nirmalakhandan United States 665449
- **P 10.25** Comparison of organic micropollutant removal by PAC/NF and NF/GAC treatment of reclaimed water Christian Kazner Germany 665973

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**WORKSHOP**

**Chair** Peter Cornel Germany

- **11.15** Fate of NDMA and its precursors during polishing of wastewater for artificial groundwater recharge Martin Krauss Switzerland 664102
- **11.35** Secondary effluent reclamation: combination of pre-treatment and disinfection technologies Laura Alcaro Spain 669008
- **11.55** Slow sand filtration of treated domestic wastewater as a pretreatment to UF: effects on the performance of UF pilot plant Xing Zheng Germany 666635
- **12.15** Tertiary treatment for municipal and industrial wastewaters agricultural reuse Cecilia Caretti Italy 665329
- **P 12.35** Process technical oriented aspects of biological removal of 17a-ethinylestradiol in an aerated fixed bed reactor Ilse Forrez Belgium 666012
- **P 12.40** Strategies for controlling photoreactivation after UV disinfection with chlorine Melting Guo China 665467

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**Lunch** 12.45

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**WASTEWATER TREATMENT**

**Chair** Blanca Jiminez Mexico

- **2.15** Indirect potable reuse: balancing costs and benefits Larry Schimoller United States 665153
- **2.35** Newater: multi safe barrier approach for indirect potable use Harry Seah Singapore 663362
- **2.55** The BedZED wastewater reclamation plant: decentralised urban reuse in London using an MBR Bart Vernich United Kingdom 664741
- **3.15** Reclamation and agricultural reuse of wastewater: the experience of the Cagliari sewage treatment plant, Sardinia, Italy Andrea Virdis Italy 667129
- **P 3.35** Fate of micropollutants in two artificial recharge sites with reclaimed wastewater Christa McArdell Switzerland 665492
- **P 3.40** Optimising RO for indirect potable reuse Lee A Foster Australia 665806

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**WORKSHOP**

**Chair** Kala Vairamoorthy United Kingdom

- **9.15** Case studies of cities under stress (continued) Xin and Urban China Xiaochang Wang China 666635
- **11.15** Panel discussion: John Langford Australia, Rob Skinner Australia, Jim Gill Australia, Pat Molony USA, Xiaochang Wang China

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**WASTEWATER TREATMENT**

**Chair** Simon Gonzalez Mexico

- **4.30** Resources and nutrients oriented greywater treatment for reuse Fangyue Li Germany 666538
- **4.50** Assessing the performance of small-scale greywater treatment systems under controlled laboratory conditions Melissa Toifl Australia 668071
- **5.10** Ecoclass demonstration project at the headquarters of the GTZ, Germany Steffen Blume Germany 665111
- **5.30** Desalination processes contributing to heavy metals discharge Abdullah Rababab Jordan 662780
- **P 5.50** Infiltration percolation to treat a small community's wastewater Miquel Salgot Spain 666538
- **P 5.55** Decentralized wastewater treatment with the use of a submerged aerated bioreactor as an option for the post-treatment of a septic tank effluent Marcelo Nolasco Brazil 666190

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**Cities of the future: integrating water and energy into urban design**

**Chair** Paul Brown United States

- **9.00** Introduction and keynote Introduction Paul Brown United States
- **9.20** Global changes and new imperatives in water and energy Paul Reller IWA
- **11.15** Case studies of new approaches Singapore Khoo Teng Chye Singapore
- **11.35** Panel discussion: John Langford Australia, Rob Skinner Australia, Jim Gill Australia, Pat Molony USA, Xiaochang Wang China

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**Cities of the future: integrating water and energy into urban design**

**Chair** Paul Brown United States

- **9.40** Case studies of cities under stress Melbourne and Australia John Langford Australia
- **9.50** Los Angeles and the US South-west Mark Buehler USA

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**Cities of the future: integrating water and energy into urban design**

**Chair** Paul Brown United States

- **9.55** New and virtual water: trends and challenges
- **11.55** Cities of the future: integrating water and energy into urban design

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**Cities of the future**

- **8.15** Cities of the future
- **9.20** Cities of the future
- **11.15** Cities of the future
- **11.35** Cities of the future
- **11.55** Cities of the future
- **12.15** Cities of the future

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**Afternoon break** 3.45

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## Technical programme Tuesday

### U2 Hall I & K

#### KEYNOTE PLENARY SESSION

**8.15 New and virtual water: trends and challenges**  
*Alexander Zehnder*, Alberta Water Research Institute  
Canada  
*Introduced by Helmut Kroiss*  
TU Vienna Austria

#### WORKSHOP

**Water and energy: jointly optimizing two critical resources**  
*Chair Bo N Jacobsen*  
Denmark  
*9.00 Introduction Bo N Jacobsen*  
Denmark  
*9.05 Global changes, water and energy impacts and mitigation strategies Paul Reiter*  
INR  
*9.25 Global changes and energy management*  
Robyn McCuicin  
United States  
*10.05 Data sources: international water and energy statistics Jürgen Förster*  
Luxembourg

### U2 Hall G & H

#### KEYNOTE PLENARY SESSION

**8.15 Cities of the future**  
*Paul Brown*, Camp Dresser & McKee Inc  
USA  
*Introduced by Suez Environment*

#### SCIENCE AND PRACTICE OF WATER AND SANITATION IN DEVELOPING COUNTRIES

**Policy and institutional environment**  
*Chair Richard Frances*  
United Kingdom  
*9.00 A framework for planning of sustainable water and sanitation systems in peri-urban areas Anna Norström*  
Sweden  
*665746*  
*9.20 Microfinance for water and sanitation infrastructure development Jenna Davis*  
United States  
*666768*  
*9.40 Meeting the water challenge in developing countries: an analysis of indicators on sustainable development Daerte Ziegler*  
Germany  
*665462*  
*9.40 A systems approach to characterize the dissemination process of household water treatment systems in developing countries Tommy Ka Kei Nga*  
United Kingdom  
*663846*  
*10.20 Analysing the water programmes of donors and regional institutions for reaching the Millennium Development Goals in Central America Rosa Castan*  
Spain  
*667229*  
*10.25 Institutional challenges and opportunities: decentralized and integrated water resource infrastructutre Valerie Nel*  
Nelson United States  
*666639*

### U2 D 357

#### SCIENCE AND PRACTICE OF WATER AND SANITATION IN DEVELOPING COUNTRIES

**New sanitation approaches for developing countries 1**  
*Chair Heidi Syman*  
South Africa  
*11.15 A measure for provisional and urgent sanitary improvement in developing countries: septic-tank performance improvement Hidemori Harada*  
Japan  
*666136*  
*11.35 Ecosan: sustainable sanitation solution for India Shreevidya Satish*  
India  
*663421*  
*11.55 People-centered approaches in sustaining water, food and environmental sanitation in the Philippines Carlo Miniano*  
Pascual Philippines  
*667303*  
*12.15 Perception of household onsite grey wastewater treatment and reuse in Palestinian rural areas Nidal Mahmoud*  
Palestinian Territory  
*664918*  
*12.35 Hikkaduwa coastal zone waste management project environmental and sanitation effects P Y D De Silva*  
Sri Lanka  
*667236*  
*12.40 Study of ecosan project experiences with the help of GTZ ecosan project data sheets Christine Werner*  
Germany  
*666117*  

### U2 Hall I & K

#### SCIENCE AND PRACTICE OF WATER AND SANITATION IN DEVELOPING COUNTRIES

**New sanitation approaches for developing countries 2**  
*Chair Jay Bhagwan*  
South Africa  
*2.15 The ROSA project: a new approach to sustainable sanitation in eastern African cities Guenter Langenraber*  
Austria  
*664279*  
*2.35 Anaerobic co-digestion of kitchen garbage and excess sludge under various temperatures Taira Hidaka*  
Japan  
*664490*  
*2.55 Experiences with sanitation concepts for separate discharge and treatment of grey-, brown- and yellow-water based on an EU demonstration project Anton Peter-Frohlich*  
Germany  
*663346*  
*3.15 Sanitation and related sustainability criteria Christine Werner*  
Germany  
*666275*  
*3.35 Advancing sanitation outcomes through health communication approach Rose Mary Nambooze*  
Uganda  
*664835*  
*3.40 Environmental and resource performance of a dry UD toilet system in a network with a well performing WWTP Håkon Jönsson*  
Sweden  
*667278*

### U2 Hall I & K

#### WORKSHOP

**Water and energy: jointly optimizing two critical resources**  
*Chair Charles Anger*  
United Kingdom  
*2.15 Interactions between hydropower generation and water ecology Wolfgang Rauch*  
Austria  
*2.35 Implications of cooling water demand on inland water resources Pat McCafferty*  
Australia  
*2.55 Global changes and energy management*  
Dieter Thöle  
Germany  
*12.15 Discussion: are energy issues sufficiently high on the agenda for water and wastewater utilities? Panel: Herbert Jardin, Diane D’Arms*  
Jointly organized by IWA & MWH

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#### SCIENCE AND PRACTICE OF WATER AND SANITATION IN DEVELOPING COUNTRIES

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**KEYNOTE PLENARY SESSION**

8.15 New and virtual water: trends and challenges  
Alexander Zezendorf Alberta Water Research Institute Canada  
Introduced by Helmut Kroiss TU Vienna Austria

**Workshop**

Good modelling practice: guidelines for use of activated sludge models  
Chair Günter Langergraber Austria  
9.00 Welcome Günter Langergraber Austria  
9.10 Background and purpose of the GMP Task Group Leiv Rieger Canada  
9.30 Results of the questionnaire Andrew Shaw Australia  
9.40 Case study: the unified protocol and application matrix as applied for the Beenyup WWTP Andrew Shaw Australia  
9.50 Walk through the GMP Guidelines: project definition Imre Takacs Canada  
10.00 Walk through the GMP Guidelines: data collection and evaluation Stefan Winkler Austria

**KEYNOTE PLENARY SESSION**

8.15 Cities of the future  
Paul Brown Camp Dresser & McKee Inc USA  
Introduced by Suez Environment

#### U2 Hall G & H

**Workshop**

Managing and planning water services  
Chair Helena Alegre Portugal  
9.00 Asset management: the required utility organization paradigm shift Scott Haskins United States 669171  
9.20 Alternative approaches for setting targets for non-revenue water Stuart Trow United Kingdom 667072  
9.40 Integrated approach for water network rehabilitation Dewi Rogers Italy 663264  
10.00 Developing asset management competencies in water utilities: fitting training approaches to need Jo Parker United Kingdom 666732  
10.20 Water services asset management in South Africa: national strategy and implementation Kevin Wall South Africa 666281  
10.25 Quantifying long-term renewal needs for water distribution systems Hervé Vicente United Kingdom 664296

**Morning Break**

10.30

**Design and Operation of Water Systems**

Good modelling practice: guidelines for use of activated sludge models  
Chair Günter Langergraber Austria  
11.15 Walk through the GMP Guidelines continued: model setup Leiv Rieger Canada  
11.30 Calibration/validation Leiv Rieger Canada  
11.45 Simulation and results interpretation Imre Takacs Canada  
12.00 Discussion of GMP guidelines and wrap-up  
12.30 Composing summary, report and presentation

Rehabilitation and maintenance of assets  
Chair Sveinung Saegrov Sweden  
11.15 Strategic asset management planning of stormwater drainage Jeku JoySayakumaran Australia 664728  
11.35 Rehabilitation and maintenance of water distribution network assets Symeon Christodoulou Cyprus 666211  
11.55 Holistic planning methodology for long-term design and capacity expansion of water networks Paul Kalungi United Kingdom 664052  
12.15 Coast trunk sewer rehabilitation project for the Orange County sanitation district Robert J Warren United States 669322  
12.35 Roof renewal of aging pre-stressed concrete distribution tank Noboru Higuchi Japan 663264  
12.40 Influencing factors on mid-term rehabilitation of water supply systems Gerald Gangl Austria 669378

**Lunch**

12.45

**Afternoon Break**

3.45

**Workshop**

Trends and opportunities for international cooperative research  
Chair Frans Schulting The Netherlands & Mike Farrimond United Kingdom  
2.15 This workshop highlights international water research strategies and trends, showcasing research projects from the European Union, North America, East Asia and Australasia. It focuses on two significant areas of international research: endocrine disrupting chemicals (EDCs) and the water and energy interface.

Strategic asset management: phase two  
Co-chairs Helena Alegre Portugal & Steve Albee United States  
2.15 Managing urban water infrastructure in a strategic and sustainable way is a major challenge and priority for modern societies. Although such infrastructure has been managed since it was commissioned, the adoption of well devised approaches to asset management has seen a tremendous evolution in recent years. This workshop comprises a keynote address to set the scene and put strategic asset management into perspective, presentations by experienced and leading-edge entities from different regions of the world and a discussion panel. The presentation topics include programmatic, informational and operational aspects.

**Workshop**

Trends and opportunities for international cooperative research  
Chair Frans Schulting The Netherlands & Mike Farrimond United Kingdom  
4.30 Continued

Strategic asset management: phase two  
Co-chairs Helena Alegre Portugal & Steve Albee United States  
4.30 The final panel is the opportunity for speakers and workshop participants to discuss and wrap-up some key issues. Presenters and panellists include Jaime Melo Baptista Portugal, Scott Haskins United States, Wolf Merkel Germany and other speakers from Australia, Singapore and United Kingdom.

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7.00 – 9.00 pm Concert at Musikverein with Vienna Symphony Orchestra, Bösendorferstr 12, Musikverein, 1010 Vienna. Bring your ticket to gain entry. Musikverein is five minutes walk from Karlsplatz train station. If you have not purchased a ticket, please go to the Registration Desk and check availability.
U2 Hall I & K

KEYNOTE PLENARY SESSION
8.15 New and virtual water: trends and challenges
Alexander Zehnder Alberta Water Research Institute Canada
Introduced by Helmut Kroiss TU Vienna Austria

INDUSTRY FORUM
Bentley Water’s solutions for sustaining urban water infrastructure
Hosted by Bentley
9.00 This forum addresses the key challenges that water professionals are facing in managing urban water infrastructure, such as: water and sewer networks rehabilitation and investment planning; complexity and variability of urban water assets; uncertainty and lack of information about the conditions of the pipes and their performance; leakage detection and analysis; real-time modelling, decision support and SCADA integration; and the need for a systems approach and multiple stakeholder views and participation. Bentley presenters will demonstrate some of the key software technology for water distribution networks analysis, design and management and present several case studies.

Morning break

INDUSTRY FORUM
New technology to optimise network efficiency
Hosted by Suez Environment
11.15 Regulation and business trends Michel Vermersch IWA Water Loss Task Force
State of the art and definitions David Duccini Suez Environment Non Revenue Water Technical Committee France
Leak reduction through district metering: cases of Barcelona and Cartagena, Spain
Enric Castellví Grupo Ágar Spain
Calculating network real-time efficiency by combining AMR and district metering: Paris, Vigneux-aux-Bois, Hauts de Vaugrenier Thierry Bouzigues Suez Environment, CIRSEE France
Improving network efficiency through pressure modulation: case of Casablanca
Tahar El Agar Lydec Morocco
Permanent leakage detection with acoustic loggers: case of Dijon
Claude Valentin Lyonnaise des Eaux France
Leak detection in low-pressure networks and large mains using tracer gas: cases of Alicante and Jakarta
Ignacio Casals Grupo Ágar Spain

Lunch

INDUSTRY FORUM
Managing an aging infrastructure: the role of industry in battling water loss
Hosted by Miya
2.15 Introduction Roland Liemberger Miya
2.25 Reducing NRW in metropolitan Manila, the Philippines
Rogelio Singson Mayniland Water Services Manila
3.00 Water loss reduction technologies: what lies ahead? How can technology help in cost-effective water loss reduction?
Ariel Moshkovitz Miya
3.15 The Miya solution. Miya’s holistic solution to water loss management Booky Oren Miya
3.30 Questions and answers

Afternoon break

INDUSTRY FORUM
Panel discussion
4.30 Representatives from Bentley, Suez Environment, Miya, BWT. Buderus and ITT will discuss solutions for municipalities and how industry supports the provision of basic services.

U2 Hall G & H

KEYNOTE PLENARY SESSION
8.15 Cities of the future
Paul Brown Camp Dresser & McKee Inc USA
Introduced by Suez Environment

INDUSTRY FORUM
New technologies in water treatment for removal of arsenic, manganese, uranium, radium and urea
Hosted by BWT
9.00 New treatment technologies for the removal of some compounds from water are needed in order to face changes in legislation and production. This workshop presents results of the removal of arsenic from tap water using a new, not granular-based ion exchange material. Manganese has to be removed from many mineral waters. This workshop presents a technology for manganese removal from mineral water with activation of manganese dioxide by ozone, as well as new materials for the removal of uranium and radium based on zeolite. In ultrapure water treatment urea becomes a problem due to the decrease of the TOC limit value. A new technology based on oxidation of urea is also presented.

INDUSTRY FORUM
Buderus/TRM ductile cast iron pipe: serving through high performance
Hosted by Buderus
11.15 Buderus and its Austrian operation, Tiroler Röhrenwerke (TRM), is the second largest supplier of ductile iron pipe in Europe. Buderus and TRM operate two foundries in Germany and Austria and market their products to municipalities, utilities and other professional users in Europe, Africa and the Middle East. A very characteristic profile of technology in jointing and coating of pipes enables Buderus and TRM to position their products as economically superior to other piping concepts in municipal practice. Their technologies are serving all high performance and high demand applications in the water industry. They are also the market leader in a very unique field of piping: artificial snow preparation in alpine ski resorts.

INDUSTRY FORUM
How industry is helping to connect people to sustainable systems: energy reductions and efficiency gains in municipal applications
Hosted by ITT
2.15 This exchange is about new technologies and systems that work more efficiently and have less impact on the environment. These are solutions that benefit the environment by reducing carbon dioxide emissions but also benefit users by reducing their energy costs. A higher degree of efficiency and lower energy consumption are two factors in this search. Developing chemical-free treatment systems is another. Drawing on expertise in these areas, ITT will discuss how these approaches can help provide solutions that can become vital components as new infrastructure is built in developing countries.