SATURDAY, JULY 22, 2017

**Technical Tour - San Diego Area Tours**
(Lunch is included. Tour is not included with registration, additional fees apply)

SUNDAY, JULY 23, 2017

7:30 - 17:30 **Registration Open**
Room: Promenade Ballroom Foyer

Pre-Conference Workshops (additional fees apply)

8:30 - 10:00 **Workshop #1: Moving Towards Safe Water Reuse for Food Crop Irrigation: a Sustainable Solution in an Era of Climate Variability**
Room: Promenade Room 101 A

10:30 - 12:00 **Workshop #2: Antibiotic Resistance: What Every Water Professional Needs to Know**
Room: Promenade Room 101 A

9:00 - 12:00 **Workshop #3: Successful Strategies for Sustainable Industrial Water Reuse**
Room: Promenade Room 102 A

8:00 - 12:00 **Workshop #4: DPR Risk Reduction and Critical Control Point Monitoring for Public Health**
Room: Promenade Room 101 B

9:00 - 12:00 **Workshop #5: Acceptance of Potable Reuse Projects - What We’ve Learned So Far**
Room: Promenade Room 103 A

12:00 - 13:30 Lunch on Your Own

12:30 - 17:30 **Technical Tour - The Water Replenishment District of Southern California – The Use of Recycled Water for Recharge in Urban Los Angeles County**
(Lunch not included. Tour is not included with registration, additional fees apply)

Technical Sessions

<table>
<thead>
<tr>
<th>13:30 - 13:50</th>
<th>A1: Potable Reuse Treatment Studies by Utilities</th>
<th>B1: Distributed Treatment and Energy Topics</th>
<th>C1: Groundwater Recharge Operations and Planning</th>
<th>D1: Sources, Formation, and Control of Nitrosamines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>Promenade Room 103 A &amp; B</td>
<td>Promenade Room 102 A &amp; B</td>
<td>Promenade Room 101 B</td>
<td>Promenade Room 101 A</td>
</tr>
<tr>
<td>Moderator</td>
<td>Wendy Broley, Brown and Caldwell (USA)</td>
<td>Guy Carpenter, Carollo Engineers (USA)</td>
<td>John Morris, Morris Water Resources Consultants (USA)</td>
<td>Grace Jang, Water Research Foundation (USA)</td>
</tr>
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<td></td>
<td>Jana Saliek, Orange County Water District (USA)</td>
<td>Thomas Watson Buggs, Grundfos (Singapore)</td>
<td>Jonathan Bradshaw, Stanford University (USA)</td>
<td>Eric Dickerson, Southern Nevada Water Authority (USA)</td>
</tr>
</tbody>
</table>

|               | David Ammerman, Carollo Engineers (USA)         | Martin Page, U.S. Army Engineer Research and Development Center (USA) | Philippe Givette, Suez (France) | Shannon Roback, Orange County Water District (USA) |
**SUNDAY, JULY 23, 2017 (CONTINUED)**

### Technical Sessions

**14:10 - 14:30**
- Phased Retrofit of Singapore's Changi WRP to Meet NEWater Feedstock Demand
  - James O’Carroll, Black & Veatch (USA)

- Permutations and Combinations for Designing the Largest Water Reuse Ultraviolet Disinfection System in North America
  - Bill Srinivasan, Carollo Engineers (USA)

- Water Quality Benefits of the Groundwater Replenishment System
  - Tim Szeck, Orange County Water District (USA)

- RO-Induced Shifts in Chloramine Chemistry: Cause Nitroaniline Regrowth at Potable Reuse Plants
  - Daniel McCurry, University of Southern California (USA)

**14:30 - 14:50**
- Pesticide Removal through Wastewater and Advanced Treatment: Full-Scale and Bench-Scale Testing for the Pure Water Monterey Project
  - Robert Hilden, Monterey Regional Water Pollution Control Agency (USA)

  - Jay Garland, U.S. Environmental Protection Agency (USA)

- Trade-offs in Disinfection byproduct Formation in Potable Water Reuse Using Various Oxidant Combinations
  - Erica Meri, Southern Nevada Water Authority (USA)

**14:50 - 15:00**
- Panel Discussion

**15:00 - 15:30**
- Poster Presentations
  - Troy Walker, Hazen and Sawyer (USA)
  - Jingying Hu, National University of Singapore (Singapore)
  - Shray Dashmulik, West Basin Municipal Water District
  - Channan Rock, University of Arizona (USA)

- **Stage 2: Potable Reuse - Design and Operations**
  - Room: Promenade Room 103 A & B

- **Stage 2: Wastewater Treatment for Water Reuse**
  - Room: Promenade Room 102 A & B

- **Stage 2: Environmental and Groundwater Topics**
  - Room: Promenade Room 101 B

- **Stage 2: Topics on Antibiotic Resistant Bacteria and Antibiotic Resistance Genes**
  - Room: Promenade Room 101 A

**15:00 - 15:10**
- Panel Discussion

**15:10 - 15:30**
- Technical Sessions (continued)

**15:30 - 15:50**
- Orange County’s Groundwater Replenishment System Expansion - Operating Results
  - Srinivas Venkapaneni, Black & Veatch (USA)

- Integration of Aerobic Granular Sludge and Membrane Filtration for Sustainable Wastewater Reclamation
  - Oliver Iorhemen, University of Calgary (Canada)

- Identifying Markers of Reuse: Effluent Loading to Impaired Water Bodies
  - Joan Oppenheimer, Stantec (USA)

- Disinfection Strategies for Controlling Occurrence of Antibiotic Resistance Genes in Reclaimed Water Distribution Systems
  - N.J. Zhu, Virginia Tech (USA)

**15:50 - 16:10**
- Configuring a Robust, State-of-The-Art Advanced Treatment Facility on a Limited Site: Engineering Case Study from Pure Water San Diego
  - Steven Winfrey, Stantec (USA)

- Evaluating Organic Carbon Removal in a Decentralized, Anaerobic Treatment System for Water Reuses in South Africa
  - Natalie Madenon, San Diego State University (USA)

- Maximizing Reuse and Maintaining Environmental Stewardship of Receiving Waters
  - Euan Geer, Brown and Caldwell (USA)

**16:10 - 16:30**
- Evaluation and Bench Testing to Retrofit a Conventional WTP for Potable Reuse
  - Jason Asselin, CH2M (USA)

- Field Testing of a Solar-Powered Anaerobic Membrane Bioreactor (Anlrmb) for Decentralized Water Recycling
  - Robert Bux, University of South Florida (USA)

- Potable Reuse Groundwater Recharge in Southern California: Soil Column and Infiltration Performance Tests
  - Paul Chau, Kennedy/Jenks Consultants (USA)

- Environmental Antibiotic Resistance is Due to Natural Phenomena, Not Anthropogenic Activities
  - Ian Pepper, University of Arizona (USA)

**Welcome Reception and Beer Tasting with Padre Dam Pilsner featuring Ballast Point**
- Room: Promenade Ballroom 104 C and Foyer

**17:30 - 19:00**
- Welcome Reception and Beer Tasting with Padre Dam Pilsner featuring Ballast Point

**Panel Discussion**
Celebrate Water Reuse!

PADRE DAM Invites You

BREW { RECEPTION }

SUNDAY, 7/23
Between 5:30 p.m. and 7:00 p.m.
Long Beach Convention & Entertainment Center
in the Promenade Ballroom Foyer

The main ingredient of the beer, WATER, is from
the East County Advanced Water Purification Program
in East San Diego County.

ABOUT THE MAIN INGREDIENT
Water is the elixir of life and the starting point for all living things, and food and drink!
The water used to create the reception’s featured beer is from the Advanced Water Purification Program’s
demonstration facility in Santee, California which uses a four-step purification process of free chlorine disinfection,
membrane filtration, reverse osmosis and advanced oxidation.

LEARN MORE
www.EastCountyAWP.com

MONDAY, JULY 24, 2017

7:30 - 17:30  Registration Open
Room: Promenade Ballroom Foyer

7:30 - 15:30  Exhibit Hall Open
Room: Promenade Ballroom 104 C and Foyer

7:30 - 8:15  Continental Breakfast
SPONSORED BY: Arcadis
Room: Promenade Ballroom 104 C and Foyer

8:15 - 10:00  Opening Keynote Session
Room: Promenade Ballroom 104 A & B
Diane Y. Parnas, Suez; IWA President (France)
Jörg Drewes, Technical University of Munich; Chair, IWA Water Reuse Specialist Group (Germany)
Jeff Kightlinger, Metropolitan Water District of Southern California (USA)
Peter Joo Hee Ng, PUB, Singapore’s National Water Agency (Singapore)
Takashi Asano, University of California, Davis (USA)

10:00 - 10:30  Networking Break
SPONSORED BY: Trussell Technologies
Room: Promenade Ballroom 104 C and Foyer

10:00 - 10:30 Poster Presentations
Room: Promenade Ballroom Foyer

Technical Sessions

A3: Potable Reuse Utility Demonstration Studies
B3: Advanced Treatment Technologies for Control of Chemicals
C3: Water Reuse as Sustainable Supply
D3: Pathogen Removal and Control

Room
Promenade Room 103 A & B
Promenade Room 102 A & B
Promenade Room 101 B
Promenade Room 101 A

Moderator
Gary Hunter, Black & Veatch (USA)
Joe Jacangelo, Stantec (USA)
Chris Hill, Arcadis (USA)
Mehul Patel, Orange County Water District (USA)

10:30 - 10:50  Comparing the Performance of Pilot-Scale Carbon-Based and Membrane-Based Potable Reuse Treatment Systems
Ramola Vaidya, Virginia Tech (USA)

10:30 - 10:50  Micropollutant Removal by Membrane Separation: Prediction, Optimization, and Emerging Processes
Long Nghiem, University of Wollongong (Australia)

10:30 - 10:50  Water Meta-Cycle as a Sustainable Water Reuse System at Regional Level: A Case Study at Qiantang County, Shandong, China
Zhuo Chen, Shenzhen Tsinghua University (China)

10:30 - 10:50  Converting Operational Monitoring Data to Probabilistic Log Reduction Values
Shuan Khan, University of New South Wales (Australia)

10:50 - 11:10  L.A.’s Transition from Non-Potable Reuse to Potable Reuse through Ozone, Biological Activated Carbon, and Soil Aquifer Treatment
Roshanak Aflaki, City of Los Angeles, LA Sanitation (USA)
Kael Robinson, Xylem (USA)
Shane Trussell, Trussell Technologies, Inc. (USA)

10:50 - 11:10  NF Rejection of CECs from Municipal WRRF Secondary Effluents for DPR Application
Michael Watts, Garver (USA)

10:50 - 11:10  Assessment of Water-Energy (WE) Nexus in Urban Water Reuse System Using a Metabolic Approach: a Mexican Case Study
Ortiz Landa-Casigno, University College London (United Kingdom)

10:50 - 11:10  Achieving Maximum Pathogen Removal Credit for UF and RO in Potable Reuse Schemes – Full Scale Experience at the Beenyup Advanced Water Recycling Facility
Jim Lozier, CH2M (USA)
MONDAY, JULY 24, 2017 (CONTINUED)

16:10 - 16:30  Technical Sessions
RO Brine Minimization for Potable Reuse at Padre Dam
Seval Sar, Padre Dam Municipal Water District (USA)
Eleni Afrika, Russell Technologies, Inc. (USA)
Hossein Ashktorab, Santa Clara Valley Water District (USA)
Occurrence and Fate of Low Molecular Weight Compounds in Potable Water Reuse Systems
Emily Mann, University of California, Berkeley (USA)

16:30 - 16:50  Panel Discussion
From Yuck to Yea – Enabling Change
Melissa Meeke, Water Environment & Reuse Foundation (USA)
Inland Reuse Planning and Brine Management Options
Gary Hunter, Black & Veatch (USA)
An Innovative Approach to Large-Scale Potable Reuse in Virginia
Tyler Nadig, CH2M (USA)
Nitrogen Management Strategies for Potable Reuse
Zaki Hearn, Stantec (USA)

18:00 - 18:30  Water Reuse Specialist Group - Proposal presentations for 2019 IWA Reuse Conference
Room: Promenade Ballroom 101 C

18:30 - 19:30  WRSG Management Committee Meeting (by invitation only)
Room: Promenade Ballroom 101 C

TUESDAY, JULY 25, 2017

7:30 - 15:30  Exhibit Hall Open

7:30 - 8:15  Reuse Foundation (USA)
Enabling Change
Potable Reuse Terminology
Room: (by invitation only)

Panel Discussion
Panel Discussion
Panel Discussion

9:30 - 10:00  IWA Young Water Professionals Meeting
Room: Promenade Ballroom 102 C

9:30 - 10:00  DPR Performance and Operation
Allan Carman, University of Arizona (USA)
Brian Dietrick, Black & Veatch (USA)
Gary Hunter, Black & Veatch (Canada)
Hossein Ashktorab, Santa Clara Valley Water District (USA)

9:30 - 10:00  BB Integrating Planning - Utility Experience
Allan Carman, University of Arizona (USA)
Brian Dietrick, Black & Veatch (USA)
Gary Hunter, Black & Veatch (Canada)
Hossein Ashktorab, Santa Clara Valley Water District (USA)

9:30 - 10:00  DII Integrating Planning - Utility Experience
Allan Carman, University of Arizona (USA)
Brian Dietrick, Black & Veatch (USA)
Gary Hunter, Black & Veatch (Canada)
Hossein Ashktorab, Santa Clara Valley Water District (USA)

10:00 - 10:20  DPR Performance and Operation
Allan Carman, University of Arizona (USA)
Brian Dietrick, Black & Veatch (USA)
Gary Hunter, Black & Veatch (Canada)
Hossein Ashktorab, Santa Clara Valley Water District (USA)

10:20 - 10:40  DPR Performance and Operation
Allan Carman, University of Arizona (USA)
Brian Dietrick, Black & Veatch (USA)
Gary Hunter, Black & Veatch (Canada)
Hossein Ashktorab, Santa Clara Valley Water District (USA)

10:40 - 11:00  DPR Performance and Operation
Allan Carman, University of Arizona (USA)
Brian Dietrick, Black & Veatch (USA)
Gary Hunter, Black & Veatch (Canada)
Hossein Ashktorab, Santa Clara Valley Water District (USA)

11:00 - 11:20  DPR Performance and Operation
Allan Carman, University of Arizona (USA)
Brian Dietrick, Black & Veatch (USA)
Gary Hunter, Black & Veatch (Canada)
Hossein Ashktorab, Santa Clara Valley Water District (USA)

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Allan Carman, University of Arizona (USA)
Brian Dietrick, Black & Veatch (USA)
Gary Hunter, Black & Veatch (Canada)
Hossein Ashktorab, Santa Clara Valley Water District (USA)
Tuesday, July 25, 2017 (continued)

### Technical Sessions

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30 - 13:50</td>
<td>A Proven Model for Urban Water Reuse</td>
<td>Promenade Room 101 A</td>
</tr>
<tr>
<td>13:30 - 13:50</td>
<td>Demonstrating Simultaneous Removal of Multiple Contaminants for Potable Reuse using Ozone, Bioremediation, and Activated Carbon Edgard Verdugo, Southern Nevada Water Authority (USA)</td>
<td>Promenade Room 102 A &amp; B</td>
</tr>
<tr>
<td>14:30 - 14:50</td>
<td>Design Considerations for Direct Potable Reuse Projects Larry Schmollner, CH2M (USA)</td>
<td>Promenade Room 101 A</td>
</tr>
<tr>
<td>14:50 - 15:00</td>
<td>Panel Discussion</td>
<td>Panel Discussion</td>
</tr>
<tr>
<td>15:00 - 15:30</td>
<td>Networking Break</td>
<td>Promenade Ballroom 104 C and Foyer</td>
</tr>
</tbody>
</table>

### Room Assignments

- Room Promenade Room 103 A & B
- Room Promenade Room 102 A & B
- Room Promenade Room 101 B
- Room Promenade Room 101 A

### Moderator

Jim Crock, Environmental Engineering Consultant (USA)

### Panelists

- Kees Robinson, Xylem (USA)
- Jonathan Loveland, Black & Veatch (USA)
- Rafael Martinez, Universitat Politècnica de Catalunya (Spain)

### Panel Discussion

- State of use of Recycled Water in Agricultural Irrigation – Impediments and Incentives
- Bahman Shokhi, Water Reuse Consulting (USA)

### Networking Dinner, Dancing and Discovery at The Aquarium of the Pacific

- SPONSORED BY: The Water Replenishment District of Southern California
- Address: 100 Aquarium Way, Long Beach, CA
- We hope you will join us on Tuesday evening for the final networking event of the conference and a chance explore the Aquarium of the Pacific, home to more than 11,000 ocean animals, representing nearly 500 species, the Aquarium celebrates the planet’s largest and most diverse body of water: the Pacific Ocean. Conference attendees will experience a great dinner, a live band and networking with colleagues in this unique setting.
**WEDNESDAY, JULY 26, 2017**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 - 15:30</td>
<td>Registration Open</td>
<td>Promenade Ballroom</td>
</tr>
<tr>
<td>7:30 - 15:30</td>
<td>Exhibit Hall Open</td>
<td>Promenade Ballroom 104 C and Foyer</td>
</tr>
<tr>
<td>7:30 - 8:30</td>
<td>Continental Breakfast</td>
<td>Promenade Ballroom 104 C and Foyer</td>
</tr>
<tr>
<td>8:30 - 9:30</td>
<td><strong>Plenary Session - Challenges and Opportunities for Non-potable Reuse</strong></td>
<td>Promenade Ballroom 104 A &amp; B</td>
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<td>Sponsored by: Water Replenishment District</td>
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<td></td>
<td>Laura Alcalde-Sanz, Ph.D., Joint Research Centre, European Commission</td>
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<td>Josef Lahnsteiner, Ph.D., VA TECH WABAG (Austria)</td>
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<td>Presenters Dr. Laura Alcalde-Sanz and Dr. Josef Lahnsteiner will share information on the reuse of water for non-potable purposes in Europe and India, focusing on opportunities and challenges to ensure sustainable supplies. Kevin M. Hardy of the National Water Research Institute will serve as moderator, facilitating discussion and audience participation during the session.</td>
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<tr>
<td>9:30 - 10:00</td>
<td>Networking Break</td>
<td>Promenade Ballroom 104 C and Foyer</td>
</tr>
<tr>
<td>9:30 - 10:00</td>
<td>Poster Presentations</td>
<td>Promenade Ballroom Foyer</td>
</tr>
</tbody>
</table>

### Technical Sessions

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 - 12:00</td>
<td><strong>Technical Sessions</strong></td>
<td>Promenade Room Room</td>
</tr>
<tr>
<td>10:00 - 10:20</td>
<td>Making the Case for Indirect Potable Reuse in France: Risk Management and Environmental Benefits of a Prospective IPR System at Vendee</td>
<td>Room 103 A &amp; B</td>
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<td>Ulf Miehe, Kompetenzzentrum Wasser Berlin gGmbH (Germany)</td>
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<tr>
<td>10:20 - 10:40</td>
<td>Risk Management and Life-Cycle Assessment of Indirect Potable Reuse in El Port de la Selva/Spain – An Operational IPR Site Using Managed Aquifer Recharge</td>
<td>Room 102 A &amp; B</td>
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<tr>
<td>10:40 - 11:00</td>
<td>Quantitative Microbial Risk Assessment of Potable Reuse Treatment with Ozone and Biological Filtration</td>
<td>Room 101 B</td>
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<td>Erfaneh Amoueyan, University of Nevada Las Vegas (USA)</td>
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</tr>
</tbody>
</table>

### Room Assignments

<table>
<thead>
<tr>
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</tr>
</thead>
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<td>Promenade Room 101 B</td>
<td>Quantitative Microbial Risk Assessment of Potable Reuse Treatment with Ozone and Biological Filtration</td>
</tr>
</tbody>
</table>

### Poster Presentations

<table>
<thead>
<tr>
<th>Room</th>
<th>Technical Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promenade Ballroom Foyer</td>
<td>Poster Presentations</td>
</tr>
</tbody>
</table>

### More than 100 presentations, panels, and workshops

- Facility Tours
- Networking Events
- Exhibit Hall

**LEARN WHAT’S NEW AND WHAT’S NEXT IN WATER REUSE!**

**REGISTER TODAY AT WATERREUSE.ORG/SYMPOSIUM**
**WEDNESDAY, JULY 26, 2017 (CONTINUED)**

**11:00 - 11:20**
Comparative Microbial Assessment of Recycled Water from Urban Runoff and Recycled Water from Treated Wastewater Sources in Southern California
Ryan Sinclair, Loma Linda University School of Public Health (USA)

A Novel Forward Osmosis Membrane Bioreactor – Membrane Distillation System for High-Strength Wastewater Treatment Applications
Nick Furtaw, University of Nevada, Reno (USA)

Updating California’s Recycled Water Policy
Laura McLellan, California State Water Resources Control Board (USA)

Evaluation of Innovative Technologies for Multipurpose Use of Municipal Reclaimed Water at Nuclear Power Plants
Mohammad Bdour, Stanford (USA)

**11:20 - 11:40**
Evaluating the Health Risks from Exposure to Legionella in Reclaimed Water Aerosols
Robert Holden, Monterey Regional Water Pollution Control Agency (USA)

Kerry Hamilton, Drexel University (USA)

**11:40 - 12:00**
Caroline Russell, Health(USA)
School of Public Health (USA)

Potable Reuse in Texas: Beyond Big Spring and Wichita Falls
Hong-Ying Hu, Promenade Room 102 A & B

California Recycled Water Use in 2015
Tonniare Pozzioli, California Department of Water Resources (USA)

Integrated UF and RO Application in Challenging Coal to Chemical Wastewater Reuse
Andrea Lima, Dow Water and Process Solutions (USA)

This panel will provide participants with a background on the potable reuse regulatory framework in Texas and an overview of the range of potable reuse projects currently operating or under consideration for implementation in the state. Case studies will be used to illustrate the value of the Texas Commission on Environmental Quality’s new Indirect Potable Reuse policy. This session will provide an international view on future issues and opportunities for water reuse.

Panelist moderated by George Tchobanoglous.

**14:10 - 14:30**
Caroline Russell, Carollo Engineers (USA)

Granting Pathogen Credits to MBR for Full Advanced Treatment Train for Potable Reuse
Zakir Hirani, Stantec (USA)

Improving the Reliability of the Indirect Potable Reuse System using a Real-Time Decision Support System Based on an Integrated Modeling Approach
Adnan Lodhi, Virginia Tech (USA)

Is Produced Water the New “Toilet-to-Tap” for California?
Lee Pentlö, Black & Veatch (USA)

**14:30 - 14:50**
Tom Taggart, City of San Marcos, TX (USA)

Demonstration Study to Evaluate Pathogen Removal Performance Of Membrane Bioreactor (MBR) for Water Reuse in California
Louis Sangines, Santa Clara Valley Water District (USA)

Waste-heat-driven Membrane Distillation: Experimental analysis of System Configurations and Impact Of Waste-heat Source Variability on Water Production and Heat Transfer
Ryan Gustafson, University of Southern California (USA)

**14:50 - 15:00**
Panel Discussion
Panel Discussion

**15:00 - 15:30**
**Poster Presentations**
Room: Promenade Ballroom Foyer

**15:30 - 17:00**
**Networking Break**
Room: Promenade Ballroom Foyer

**CLOSING PLENARY SESSION - THE FUTURE OF WATER REUSE**
Room: Promenade Ballroom 104 A & B

**15:00 - 15:30**
**Closing Plenary Session - The Future of Water Reuse**
Jörg Drewes, Ph.D., Technical University Munich, IWA Water Reuse Specialist Group (Germany)
Stuart Khan, Ph.D., University of New South Wales (Australia)
Ben Stanford, American Water (USA)
Akassa Bahl, National Agricultural Institute of Tunisia (Tunisia)
Oliver Lotechev, Ph.D., National University of Singapore (Singapore)

This session will provide an international view on future issues and opportunities for water reuse. George Tchobanoglous will facilitate the panel discussion of several key established reuse experts and up-and-comers. The audience is sure to hear diverse outlooks for the future from various countries, generations, and professional perspectives.

**Closing Remarks**
Jörg Drewes, Ph.D., Technical University Munich, IWA Water Reuse Specialist Group (Germany)
Melissa Meeker, Water Environment & Reuse Foundation (USA)

**THURSDAY, JULY 27, 2017**

**8:30 - 15:30**
**Technical Tour - Los Angeles Area Tours**
Lunch is included. Tour is not included with registration, additional fees apply

**8:30 - 16:00**
**Technical Tour - Orange County Area Tours**
Lunch is included. Tour is not included with registration, additional fees apply

**15:00 - 17:00**
**Networking Break**
Room: Promenade Ballroom Foyer