

ADVANCE PROGRAMME 24-28 JUNE 2024

WORKSHOPS

24 June 2024

Timing: 13:30-15:00

Workshop 1:

Cybersecurity in water and wastewater technologies

Workshop 3:

Water reuse: from technical innovation to validation and implementation

Timing: 15:30-17:00

Workshop 2:

Digital operation and digital twins in water and wastewater technologies: case studies and future developments

Workshop 4:

Water-smart economy: How to enable circularity capturing the full value of water?



PLENARY SESSION

25 June 2024

Welcome

The Tuesday programme will commence at 9:00 am with a welcome address.

Plenary Keynotes

The plenary session will feature multiple inspiring keynotes from leading voices and thought leaders sharing their insights into developments at the leading-edge of water and wastewater technologies.

Round Table Discussion

New European Regulations as drivers for innovation and technology development

Moderator: Gari Villa-Landa Sokolova, Eureau

Panellists: Veronica Manfredi, European Commission; Claus Homann, Aarhus Vand; Oliver Puckering, Xylem; Wendy Francken, President EWA; Tom Mollenkopf, President IWA; Jörg Drewes, TU Munich



Norbert Jardin,
Ruhverband,
Germany



Jörg Drewes
Technical University of Munich,
Germany



Liu Ye,
University of Queensland,
Australia



Jeffrey Lewis,
ECT2,
Sweden



Ratul Das,
ACWA Power,
Saudi Arabia

IWA LET 2024 WATER TRACK

26 June 2024

Morning

Technical Session 1: Developments in Digitalization

Session Chairs: **Enrique Cabrera**, Polytechnic University of Valencia, Spain & **Burkard Teichgräber**, Germany

Invited Speaker: **Jaume Alba**, Spain: Digital Software platforms

Nawik Manatsawee, Thailand: The Application Of Machine Learning In The Systemic Decision Process Development For Water Supply Pipe Replacement Performance In Thailand

Discussion

Morning Break (30 mins)

Invited Speaker: **Althoff Heiko**, Germany: Successful digitalization approaches for system operators

Patricia Gómez-Martínez, Spain: Innovative Tools To Control Organic Matter And Disinfection Byproducts "HE IntoDBP". The Case Study Of Madrid

Abel Heinsbroek, Netherlands: A Parametric Framework For Designing And Modelling Drinking Water Treatment Plants

Discussion

Poster Pitches:

Ervin Nurhayati, Indonesia: Coagulation Process Improvement Of Surabaya City Water Treatment Plants: Dose Optimization And Dosing Pump Automation

Wolfgang Uhl, Norway: Resource-efficient Digital Optimization Of Dual Media Filtration In Drinking Water Treatment

Isma Lebbe & Mohamed Sabri, Sri Lanka: Water Horizons: An Comprehensive Review Of Smart Water Systems For Global Sustainability

Lunch (60 mins)

Afternoon

Technical Session 3: Membranes, hybrid systems and new materials

Session Chairs: **Eric Hoek**, UCLA Samueli School of Engineering, USA & **Jonathan Clement**, Ramboll, Netherlands

Invited Speaker: **Eric Hoek**, USA: Development of membrane based brine concentration, crystallization, and valorization

Duc Viet Nguyen, South Korea: Super-hydrophilic And Positive Charged Forward Osmosis Membrane For Efficient Ammonia Recovery And Robust Energy Production

Teik Thye Lim, Singapore: Synergistic Oxidation-Filtration In Catalytic Membrane For Intensified Micropollutant Degradation With Persulfate

Discussion

Afternoon Break (30 mins)

Invited Speaker: **Gilbert Galjaard**, Netherlands:

Understanding the emerging role of flat sheet membranes
Olga Ferrer, Spain: Assessment Of Submerged Ultrafiltration Ceramic Membranes As SWRO Pre-treatment Under Challenging Conditions

Alexander Mitranescu, Germany: Harnessing Hydrodynamic Effects Of Assemblies Of Surface-patterned Membranes And Feed Spacers To Reduce RO And NF Membrane Fouling: A Numerical Investigation

Discussion

Poster Pitches:

Gabriela Scheibel Cassol, Hong Kong: Membrane Optimization And Waste Heat Recovery For Highly Efficient Green Hydrogen Generation From Seawater Via Integrated Alkaline Electrolysis

Thomas Pluym, Belgium: Flow Cytometry For Online Microbial Regrowth Monitoring In A Membrane Filtration Plant: Pilot-scale Case Study For Wastewater Reuse

Yue Wang, Belgium: CNTs-based Membrane For Enhancing Flux In Membrane Distillation

IWA LET 2024 WASTEWATER TRACK

26 June 2024

Morning

Technical Session 2: Carbon and energy neutrality and greenhouse gas emissions

Session chairs: **Amanda Lake Jacobs**, USA & **Zhiguo**

Yuan, City University of Hong Kong, Hong Kong

Invited Speaker: **Prof Eberhard Morgenroth**,

Switzerland: Off-gas monitoring – key towards net-zero in wastewater treatment plants

Oriol Carbó Monmany, Spain: Stable and controlled mainstream HRAS, partial nitrification AGS and anammox for a suitable effluent quality

Kati Blomberg, Finland: Demonstrating N₂O Mitigation In Two Advanced Full-scale WWTPs

Discussion

Morning Break (30 mins)

Invited Speaker: **Prof Apri Gu**, USA: Pathways Towards Decarbonation and A Net-zero-carbon Water Sector

Konrad Koch, Germany: Ex-situ Biomethanation As An Energy Buffer At WWTPs: Experiences From 450 Days Of Operation At Pilot-scale

Kristoffer Ooms, Germany: Enhanced Sector Coupling Of Wastewater, Energy And Transportation Through Power-to-Methanol – A Case Study For The WWTP Bottrop

Discussion

Poster Pitches:

Michelle Young, USA: Making The Change To Low DO: Practical Guidance For Suboxic (Low DO) Biological Nutrient Removal Based On Full-Scale Operations

Paul Kelterer, Austria: A One-stage Biological Scrubber As Key Technology In A Novel comprehensive Concept To Reduce Nitrous Oxide Emissions In wastewater Treatment Plants

Maria Piculell, Sweden: High Biomethane Potential In Moving Bed Biofilm Reactor Sludge – The Route To Energy Neutrality

Lunch (60 mins)

Afternoon

Technical Session 4: Resource Recovery and Sludge Treatment

Session Chairs: **Ana Soares**, Cranfield

University, UK & **Konrad Koch**, Germany

Invited Speaker: **Frank Rogalla**, Spain: The Rainbow of Resource Recovery: The Black, The White, The Red, The Brown- The Purple and Yellow

Francis Meerburg, Belgium: Creating A Positive Business Case Around Nitrogen Recovery From Digested Sludge Centrate

Zhen He, USA: Electrochemical Phosphorus Recovery From Sewage Sludge With Dewaterability Improvement

Discussion

Afternoon Break (30 mins)

Invited Speaker: **Regina Gnirss**, Germany: Wastewater Heat Recovery In Berlin- Large Scale Implementations And Strategic Approach To Exploit Potential

Phillip Wilfert, Netherlands: Recovery Of Valuable Biopolymers From Sewage Sludge- An European Case Study Ester Rus Perez, Norway: WAS Only THP- Hengelo WWTP Case Study

Discussion

Poster Pitches:

Vincenzo Pelagalli, Italy: Mordenite And HZSM-5 Zeolites Employment In The Catalytic Pyrolysis Of Municipal Sewage Sludge Towards The In-situ H₂S Removal From Syngas

Alicia González-Míguez, Spain: Smart Bio-based Biofertilisers Production From Wastewater-recovered Nitrogen

Amr Abdelrahman, Canada: Experimental Study And Model-Based Analysis Of IntensiCarb™ Intensification Technology: Achieving High Organic Loading With Simultaneous Ammonia Recovery

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IWA LET 2024 WATER TRACK continued

27 June 2024

Morning

Technical Session 5: Advancements in Desalination

Session Chairs: Tzahi Cath, USA & Paul Buijs,

1st:water, UAE

Invited Speaker: Olga Ferrer, Spain: LIFE INDESAL: Improving Sustainability Of Seawater Desalination With An Integrated Process For Water, Energy, And Resource Production

Mike Boyd, USA: Advanced and Minimum Liquid Discharge (MLD) Reverse Osmosis Technologies

Asif Sha, India: Thermodynamic Modelling And Performance Investigations Of A Single Bed Solar Adsorption Desalination System

Discussion

Morning Break (30 mins)

Invited Speaker: Paul Buijs, Netherlands: The Roadmap to Desalination Cost Reduction

Maharshi Patel, Germany: Does Combination Of Surface-Patterned Thin-Film Composite Membrane And Feed Spacer Improve Anti-Scaling Propensity?

Alla Alpatova, Saudi Arabia/Ukraine: Effective Utilization of CO₂ Gas in Membrane Filtration

Discussion

Poster Pitches:

Bokjin Lee, South Korea: Evaluation Of TDS Removal Performance Of Pilot-Scale Membrane Capacitive Deionization System

Changseog Oh, South Korea: Study On TDS Removal Using Pilot-scale Membrane Capacitive Deionization(MCDI) With Circulation Process

Schwiebert Alexander: Early Detection of Membrane Scaling Using Concentrate Turbidity Measurement

Lunch (60 mins)

Afternoon

Technical Session 7: Micro-Contaminant Monitoring and Removal

Session Chairs: Marta Carballa, University of Santiago de Compostela, Spain & Jörg Drewes, Technical University of Munich, Germany

Invited Speaker: Vera Kohlgrueber, Germany: Implementation Of Targeted Micropollutant Removal On Municipal WWTPs In Baden-Wuerttemberg – A Look Back At Years Of Success And A Promising Outlook For The Future

Christa Morgenschweis, Netherlands: Combined Removal Of Micropollutants And Nutrients From Municipal Wastewater In The Netherlands

Johan Lundqvist, Sweden: Effect-based Analyses – A Novel Strategy To Assess Removal Of Micro-contaminants By Water Treatment

Discussions

Afternoon Break (30 mins)

Invited Speaker: Sema Karakurt-Fischer, Switzerland: Elucidating and Fostering the role of Biotransformation in the Abatement of Micropollutants

Alexander Sperlich, Germany: Removing Per- And Polyfluoroalkyl Substances (PFAS) From Groundwater With High Concentrations Of Natural Organic Matter

Nicolaj Schmidt Damgaard, Denmark: Utilizing Treatment Trains To Treat Complex Pollution In Groundwater Caused By Generational Pollution

Discussion

Poster Pitches:

Philipp Sperle, Germany: Photolytic Ozonation As Promising Alternative AOP Using UV-LEDs

Anna Segues Codina, Spain: Manganese Oxide Functionalised Graphene Sponges For The Electrochemical Water Treatment And Disinfection

Jiwon Kong, South Korea: Assessing The Efficacy Of Permeable Pavement Systems In Mitigating Leakage Of Microplastic By Rainwater

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IWA LET 2024 WASTEWATER TRACK continued

27 June 2024

Morning

Technical Session 6: Innovative Processes

Session Chairs: **Session chairs: Mark van**

Loosdrecht, Delft University of Technology, Netherlands & **Michelle Young**, USA

Invited Speaker: Christoph Donner, Germany: Novel Approaches for Wastewater Treatment and Reuse in Berlin

Elin Ossiansson, Sweden: Enhanced Biological Removal Of Nitrogen And Phosphorus In A Continuous Biofilm Process With Bio-based Carriers

Patricia Zamora, Spain: Demonstrative 100% Solar-powered Anaerobic Photobiorefinery Based On Purple Phototrophic Bacteria

Discussion

Morning Break (30 mins)

Invited Speaker: Arne Wieland, Germany: 15 Years Of Ozonation For Micropollutants Removal In Europe- A Review

Elisabeth Vaudevire, Netherlands: Nitrogen Removal from Wastewater Effluents With Cation Exchange Resin In Suspension

Grit Hoffmann, Germany: Optimisation And Monitoring Of Hybrid Coagulation-PAC-UF Processes For The Elimination Of Micropollutants In Advanced Wastewater Treatment

Discussion

Poster Pitches:

Henkel Jochen, Germany: Alpha-Factors In Activated Sludge And Aerobic Granular Sludge Systems – Dispelling The Myth

Martin Linares, USA: Effect Of Hydrocyclones On The Morphology And Microbial Community Structure Of Activated Sludge Flocs: Results From Full-scale

Laurent De Franceschi, Switzerland: A Winner For The Treatment Of Micropollutants At Quaternary Stage In Wastewater: The Combination Of Ozone And Granular Activated Carbon

Lunch (60 mins)

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Afternoon

Technical Session 8: Closing the Water Cycle

Session Chairs: Lisa Bross, Germany & **Despo Fatta-Kassinou**, University of Cyprus, Cyprus

Invited Speaker: Krishna R Pagilla, USA:

Advancing Reclaimed Water for Potable Reuse – Technical and Non-technical Strategies for Successful Implementation

Jonas Aniol, Germany: Employing Rapid Infiltration Trench Technology To Establish Stable Redox Conditions In A Heterogenous Aquifer For Drinking Water Production

Javad Ahmadi, Germany: Ensuring Proper Removal Of Viruses And Mobile Genetic Elements During Water Reclamation Employing Ceramic Ultrafiltration Combined With Pre-ozonation And Coagulation

Discussion

Afternoon Break (30 mins)

Invited Speaker: Thomas Wintgens, Germany: Closing Loops in the Water Cycle – Advances in Treatment and Recovery Technologies

Stefan Stauder, Germany: Assessment Of Managed Aquifer Recharge (MAR) To Increase Groundwater Availability In Lima – Peru

Regina Gnirss, Germany: Semi-closed Urban Water Cycle In Berlin – Treatment Options To Remove Organic Micropollutants

Discussion

Poster Pitches:

Michael Stapf, Germany: Ozonation And UV Disinfection: Utilizing Synergies Between Micropollutant Removal And Water Reuse

Jonas Hunsicker, Germany: Practical Experience With Online E. Coli Measurement To Derive Training Data Set For Microbial Water Quality Model

Eva Reynaert, Switzerland: Combining Online Sensors With Process Understanding For Safe On-site Water Reuse

TECHNICAL TOURS

28 June 2024

Tour 1:

Tour of the large-scale demonstration plant for phosphorus recycling at the Emschergenossenschaft's central sludge treatment plant in Bottrop

A large-scale demonstration plant for phosphorus recycling from sewage sludge incineration ash has been set up at the Bottrop wastewater treatment plant. The excursion offers you an impression of the implementation of phosphorus recovery through a wet-chemical process using the PARFORCE technology. After a brief introduction, you can look forward to a tour of the demonstration plant and an explanation of the process and plant operation.

Tour 2:

Tour of the Nereda process for the biological treatment of wastewater at the Altena wastewater treatment plant of the Ruhrverband

The Nereda® process for the biological treatment of wastewater is being used for the first time in Germany at the Altena wastewater treatment plant of the Ruhrverband. In the Nereda® process, the microorganisms do not form the usual floc structure, instead they form compact, globular, lentil-sized granules in which the wastewater purification processes take place almost simultaneously.

The Nereda® process is characterized by lower area requirements, low energy consumption, reduced use of flocculants due to increased biological phosphorus elimination, cost efficiency in terms of both capital expenditure and operating costs, reduced maintenance requirements due to low mechanical and electrical equipment and the ability to meet high effluent requirements.

Tour 3:

Tour of one of Europe's most modern treatment plants at the composite waterworks in Essen

In the waterworks, water is treated at the highest level before it reaches the customers. Learn about the natural based basic steps and the elaborate process steps from extracting raw water from the Ruhr River to distribution. Witness advanced techniques like granular activated carbon adsorption and UV disinfection in action and experience how water is purified to the highest standards before reaching consumers. The waterworks is a collaboration between Stadtwerke Essen AG and Gelsenwasser AG and supplies large parts of the Ruhr area with drinking water.