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TreatmentTechConf@wef.org



Pre-Conference events (additional registration required):

Tour: HRSD's Nansemond Treatment Plant and SWIFT Research Center

Workshop A: On Suspension Separation

Workshop B: Applying Old and New Tools to Intensify the Future of WW Biofarms

Workshop C: Exploring the application and interpretation of 'omics data in Biological Nutrient Removal (BNR)

Workshop D: Evolution of Treatment Process Optimization Utilizing Advanced Data Analytics and Machine Learning

Conference Technical Sessions (included with full conference registration):

Mainstream PNA

- A New Strategy to control Nitrite Oxidizing Bacteria (NOB) in the Main Stream Anammox Process using Supernatant from Anaerobic Digester.
- Nitrification At Elevated Temperatures- Feasibility of Achieving Mainstream Partial Nitrification (PN) By Heat Shocks
- Integrating Ion Exchange And Direct/Indirect Bioregeneration via Partial Nitritation/Anammox for Deammonification of Mainstream Wastewater
- Comprehensive Microbial Community Analysis and Mechanistic Insights in Hybri
- Ion Exchange and Partial Nitritation/Anammox (IX-PNA) Process for Mainstream Wastewater Treatment

Contaminants of Emerging Concern and PFAS

- Deep Diving into PFAS Foam Fractionation: A Comparison of Four Technologies to Remove PFAS from Leachate
- Innovation and Resurgence of Sub and Supercritical Water Oxidation Processes for the Destruction of Contaminants of Emerging Concern
- Optimizing PFAS Removal in Carbon-Based Advanced Water Treatment for Indirect Potable Reuse
- Effective PFAS Removal and Waste Reduction using a Novel Micro-adsorbent Slurry and Separations Technology

Low Dissolved Oxygen Processes

- Advancing Low-Energy Biological Nutrient Removal Using Low Dissolved Oxygen Operation
- Testing a Systematic Process and Aeration Control Approach for Transitioning from High to Suboxic DO Operation at the Pomona WRF
- Microbial Adaptation to Low DO Biological Nutrient Removal
- Novel Methods for Determination of Nitrifier Kinetics During Adaptation to Low DO

PdNA Fundamentals

- An Evaluation of Dual Carbon Source Strategies For Denitrification
- Primary Sludge Fermentate Use for N Removal in Chemical P Removal Plants: Investigation of Side Impacts
- Cracking The Code of Nitrite Accumulation: Insights into Partial Denitrification Fundamentals
- Mechanistic Understanding of the Kinetic Difference Between the Methanol and Glycerol-Driven Partial Denitrification Anammox in Low Nitrogen Polishing Moving Bed Biofilm Reactors

Understanding & Optimizing Water Reuse

- SWIFT's experiences with ozone-biofiltration for municipal indirect reuse
- Does the Addition of Propan Gas Degrade Contaminants of Emerging Concern in Biofiltration?
- Triple Bullseye Triumph: One innovative barrier "Ozone/Two-Stage Biofiltration" for Organics, Nutrients and CEC removal in Advanced Water Treatment
- Design and optimization of Advanced Oxidation Processes for drinking water production with the AMOZONE model
- City of Fargo's design and operational experiences for industrial reuse of secondary treated wastewater using advanced filtration
- Mass balancing tools for reused applications and brine management
- Role of process modeling in simulatin reuse applications

PdNA Implementation

- HRSD's Journey to the Full-Scale Implementation of Mainstream Partial Denitrification/Anammox (PdNA) IFAS
- Insights into the Success of PdN Selection in a Methanol Driven PdNA System
- Insights from 1+ Year of Full-scale Mainstream Deammonification via Partial Nitrification-Denitrification-Anammox
- Leveraging Glycerol-Driven and Primary Effluent-Driven Partial Nitrification/Denitrification/Anammox within an Integrated Advanced Water Treatment Facility for Large-Scale Potable Reuse

Membrane Aerated Biofilm Reactor — From Theory to Modeling to Practice & Emerging Applications

Full Scale Optimization Strategies

- A Journey of Upgrades and Innovations to Achieve Capacity Improvements at Metro Water Services' Central WRF
- Key Control Concepts to Enable Low Energy, Densified Biological Nutrient Removal
- Full-scale Application of a Reduced-Order Model to Tune Ammonia-Based Aeration Control
- The Next Generation of BNR: A Radical Shift in Operational and Design Strategies
- Technical Brief: Advanced Sand and Grit Mapping and Quantification

Source-Separation of Toilet Waste as a Viable Option for Resource Recovery in the Water Industry

- Source Separation to Achieve Resource Efficiency and Demonstration Projects
- Practical Implementation of Urine Separation at the Community Scale in Brattleboro, Vermont
- Technologies that can Facilitate Distributed Wastewater Treatment, Nutrient Recovery, and Onsite Water Reuse

Greenhouse Gases

- Development of a Tiered Approach for Cost-Effectively Measuring Real-time Direct Greenhouse Gas Emissions from Wastewater Treatment
- Fugitive Methane the Next Frontier in the Fight Against Climate change
- Hot Spots, Hot Moments: Identifying Key Factors for N₂O Production from Pilot-Scale Testing
- Modeling-Based Development of N₂O Mitigation Strategies in Two Full-Scale Wastewater Treatment Plants

Carbon Management for P Removal

- Optimization of EBPR at Full-Scale: Lowering Costs and Improving Effluent Quality
- Sensitivity Analysis of Anaerobic Zone Mass Fraction and Hydrolysis/Fermentation Rate
- From Small to Full-Scale: Lessons Learned from S2EBPR Operation in a C-Limited Facility
- Pilot Testing Algae Treatment for Nutrient Removal and Carbon Capture

Biosolids and Resource Recovery

- Assessment of Diverse End-Products of Innovate Biosolids Management Technologies: Is the Market Ready for New Products?
- Phosphorus Sequestration in Biosolids, Nuisance Struvite Control via Aerobic Digestion and Chemical Addition to TH-AD Digestate, and Downstream Effects
- Evaluating the Potential for Improving Class A Biosolids Nutrients Ratio and Applications through Vivianite Recovery
- Biomineralisation - Harnessing Novel Microorganisms to Remove Phosphorus from Wastewater whilst Simultaneously Producing Biostruvite
- Technical Brief: Design and Performance Evaluation of Active Solar-Assisted Biosolids Drying with Decentralized Thermal Recovery System

GHG: Emerging Processes and Mitigation Strategies

- Quantifying Nitrogenous Greenhouse Gas from Emerging Biological Nutrient Removal (BNR) Processes
- Understanding and Mtigating N₂O Emissions in a Sidestream Anammox Reactor, Including Novel Catalyst-Mediated Abatement
- Monitoring N₂O Emissions in the Partial Denitrification Processes in Rope-Type Media Biofilm Reactors
- Connecting Greenhouse Gas Emissions to Microbial Community Selection in Low Energy BNR

Carbon Management for N Removal

- Shedding Light on the Complexities of Internal Carbon Driven Denitrifiers in Biofilm & Flocc
- Comparative Strategies in Managing Internal Carbon for Stringent Nutrient Limits: A Study of Two WRRFs
- Post-Anoxic Denitrification via Respiration of Stored Material to Achieve Low TN Discharge Limits
- The Recognition of Enhanced Organic Matter Detection and Pollutants through the Combination of Fluorescence Real Time Sensing and AI

Digestion

- Advancing IntensiCarb™ Technology for Anaerobic Digestion Enhancement and Intensification via Scale-Up Piloting
- Anaerobic Digestion Sizing: Venturing Beyond Conventional Organic Loading Rates
- In-house Evaluation of High Strength Wastes for Co-digestion which Strengthen Relationships with Local Contributors
- Innovation and the Practical Application of Innovative Technology in Biosolids

Data-Driven Models

- State of Advanced Process Control and Machine Learning in wastewater treatment for situational awareness and optimization
- Challenges of Developing Data-Driven Tools on Controlled Full-Scale Processes: A Case Study on Acoustic Sensor Development for TS Measurement
- Confronting Process Complexity and Data Sparsity: Machine Learning for Modelling a Full-Scale A-Stage process
- Data Pipeline

Primary Treatment & Process Intensification

- Evaluation of Advanced Primary Treatment Technologies at Water Resource Recovery Facilities for Carbon Diversion and Management
- Thickening the Plot - Enhanced Primary Treatment Residuals Handling
- Intensification of Water Resource Recovery Facilities via Advanced Primary Treatment and Advanced Secondary Treatment Processes
- Early Adopters Prove Effectiveness and Resiliency of Latest-Generation Multi-Purpose Filtration

Thermal Hydrolysis Process

- Biological Treatment of Hydrothermal Liquefaction Wastewater from Sewage Sludge with Municipal Wastewater Activated Sludge
- Effect of Thermal Hydrolysis Pretreatment on the Friability of Thermally-Dried Digested Biosolid Pellets
- Filtrate rDON and Ortho-P Control through Coagulant Addition During Dewatering of Thermal Hydrolysis Pretreatment-Enhanced Anaerobic Digester Sludge
- Aerobic Curing of Thermally Hydrolyzed Sludge at HRSD's Atlantic Treatment Plant to Create a Low-Odor, High-Value Product and Reduce Truck Traffic

Transforming Wastewater Utilities: A Journey into Innovative Practices

Environmental and financial challenges, including stricter effluent permits, aging infrastructure, or an aging workforce, are pushing utilities to adopt innovative practices and technologies. Moreover, technological advances, including those made possible by new digital tools, are making their way into the wastewater industry faster than ever before. In this session, we will explore the challenges and opportunities brought by innovation and how can water utilities make the most out of it. Participants will hear from an array of experts ranging from academia, industry or utility companies, and from a wide range of

Modeling for Process Optimization

- Innovative Design and Optimization Tool — Applying CFD to Achieve Optimal Design
- Biofilm Carrier Migration Model using Diffusional Resistance Impact on Half Saturation Constants - Conceptual Improvement Needs
- Predicting Primary Clarifier Performance with Empirical and Machine Learning Models
- Utilizing Model Predictive Control to Maximize Aeration System Efficiency

Anammox Technologies

- Full-Scale Side by Side Evaluation of DEMON 1.0 vs DEMON 2.0 Design and Operation
- Nitritation over Nitrification in Sidestream Treatment with MABR — A Starting Point to Complete TN Removal Process
- New Strategy for Integration of Anaerobic Side-stream Reactor with Mainstream B-stage Nitritation for Short-cut Nitrogen Removal with Granulation
- Removal of Total Nitrogen by Innovative Anammox Biocatalyst
- Technical Brief: Successful Implementation of Biofilm Anammox in IFAS A2O Process for Simultaneous N and P Removal in Mainstream Treatment Train

Hydrocyclone Applications at Full-Scale Facilities

- Elucidating the Influence of Activated Sludge Particle Size Distribution on Settling and Nutrient Removal Properties of Full-scale DAS
- Fishing for Nitrification and Excess Biological Phosphorus Removal in Cold Weather with Denitrification Process-Controlling Densified Sludge Functionality
- Sludge Settleability Improvements and SRT Decoupling Associated with Full-Scale Densification of BNR Activated Sludge
- Effect of Hydrocyclones on the Morphology and Microbial Community of Activated Sludge Flocs

Digital Twins

- Reliable Insights based on Scarce Data — Innovative WRRF Hybrid Digital-Twins
- Leveraging a Hybrid Machine Learning/Mechanistic Process Model to Forecast Effluent Quality and Optimize Treatment Performance
- Realizing the Beneficial Integration of Upstream Non-Sewer Sanitation Implementation on Downstream Wastewater Treatment through a Digital-Twin Platform Approach
- Development and Validation of a Wastewater Treatment Process (WWTP) Hybrid Modeling Framework Integrated with Artificial Intelligence Algorithms

Optimizing High Purity Oxygen Processes for Nutrient Removal

This session will cover topics such as fundamentals for hpoas and nutrient reduction, modeling and implementing n removal in HPO AS, EBUD nitrogen reduction to reduce n discharge by 30%, nitrogen reduction using alternative technologies at PWD, asset replacement / aging infrastructure, asset renewal at Cedar Rapids, and Hopewell Water Renewal (HWR).

Densification

- Intense from Day 1: Startup and Optimization of the Largest Municipal BioMag Facility in the Country
- Selection and Evaluation of Emerging MOB Technology for Ammonia Removal
- MBR-DAS — Densification Improves MBR Performance at the City of Detroit
- Getting a Grip on AGS Waste Solids: Settleability and Phosphorus Release Potential
- Technical Brief: Predicting Densification Index/SVI with Design Curve from

For the most detailed, up-to-date version of the conference program, please view the full program online at www.wef.org/treatmenttech