22 June 2021 (Tuesday)

7.00pm-8.30pm (SGT) (GMT +8)
Session 3.2 – Resource Efficient Treatment II

Session Chair(s): Mads Leth, VCS Denmark (Denmark)

Resource Efficiency in NYC's Advanced Nitrogen Removal Program

M. van Loosdrecht. New York City Department of Environmental Protection (DEP) (United States)
Presenter is an invited speaker. No executive summary is available

In-sewer Purification Pipe Technology In Wastewater Management

TJ. Sotelo, R. Lyu, H. Satoh. The University of Tokyo (Japan)

The contribution of in-sewer purification pipes to wastewater treatment in a small model community was evaluated. Treatment capacity of double-layer and single-layer in-sewer purification pipes were assessed from literature data and were found to treat approximately 15 g COD m-1 day-1 and 6 g COD m-1 day-1, respectively. The data was then used to evaluate organic pollutant removal in a model community where double-layer in-sewer purification pipes were applied to downstream sewer trunk lines and the single-layer design was applied to upstream sewer pipes. Community-level application of in-sewer purification pipes gave approximately 56% organic pollutant reduction. Further household-level application of single-layer pipes yielded 85% organic pollutant reduction. The results highlight potential contribution of in-sewer purification technology to wastewater management which promote water reuse.

Carbon Management In Water Infrastructure

M. Manidaki. Mott Macdonald (United Kingdom)

Carbon emissions (or GHG emissions) can be a good proxy for resource efficiency. Evidence suggests that reducing carbon emissions in infrastructure delivery also reduces costs, promotes collaboration across the supply chain and unlocks innovation. Leading water and wastewater infrastructure owners in different parts of the world are realising that reducing carbon is not just about building new assets in a more intelligent way, it is also about demanding better performance from their existing asset base. The paper gives an overview of how different asset owners and their supply chain partners in different parts of the world (UK, Middle East and Australasia) have been adopting carbon management methods and processes, as outlined in the Infrastructure Carbon Review and PAS 2080 (both authored by Mott MacDonald), to successfully reduce whole life carbon and cost across their capital programmes and promote innovation.

LESSWATT Model-Based Protocol For Mitigation Of N2O Emissions

S. Daneshgar I. Nopens, Y. Amerlinck, A. Amaral, C. De Mulder, A. Di Nisio, G. Bellandi, R. Gori, C. Caretti, F. Spennati, U. Rehman, J. Porro. Ghent University (Belgium)

In view of reducing WWTP's carbon footprint, the EU-Life project Lesswatt is developing a protocol for dedicated model formulation and data collection in view of optimising for both energy expenditure and N2O emissions. The protocol builds on existing protocols and expertise derived from modelling the Eindhoven WWTP. However, for the objective at hand, more emphasis is needed for a good hydrodynamic model of the bioreactors, preferably using a compartmental model based on either computational fluid dynamics (CFD) or expert knowledge. Moreover, the protocol includes a risk-based approach for N2O prediction. From an experimental viewpoint, it extends earlier protocols by measuring local oxygen transfer efficiencies (OTE) and dissolved oxygen (DO) using the Lessdrone, a dedicated device that facilitates this. Finally, the protocol comes with an optimisation step. A first version of the protocol is presented based on a past case and is applied to another combined municipal-industrial WWTP.