28 June 2021 (Monday)

4.00pm-5.30pm (SGT) (GMT +8)
Session 3.9 – Advanced Modelling, Sensing & Control I - Outside the Fence

Session Chair(s): Tan Cheng Ann, DHI Singapore (Singapore)

Increasing Resilience of Collection Infrastructure with Real-Time Decision Support Systems

L. Montestruque. Xylem Inc. (United States)
Presenter is an invited speaker. No executive summary is available

Efficient Integrated Real-time Control in Urban Drainage Systems for Environmental Protection

J. Meseguer, B. Joseph-Duran, X. Bernat, G. Cembrano, T. Maruéjouls, M. Martínez, R. Guasch, P. Rouge. Cetaqua – SUEZ Group (Spain)

The main goal of the LIFE EFFIDRAIN project is to demonstrate integrated real-time control (RTC) strategies for Urban Drainage Networks (UDNs) and Wastewater Treatment Plants (WWTPs) to better protect the environment from UDN and WWTP impacts, through the use of real-time water quantity and quality data. This paper presents results of LIFE EFFIDRAIN developed RTC methods tested in two complementary pilot sites (Bordeaux (France) and Badalona (Spain)). Performance of these methods has been obtained using a simulation setup able to reproduce the hydraulic and quality dynamics taking place in the real pilots. Final results shows, developed RTC methods are able to reduce the polluting load of any unavoidable Combined Sewer Overflow (CSO) in a wide range of scenarios

An Overall View Of Management Decision Impacts On Wastewater System Emissions Using Integrated Urban Wastewater Modelling

T. Maruejouls, J. Ledergerber, P. Vanrolleghem. LyRE – SUEZ Group (France)

An integrated wastewater system model was developed to assess the overall impact of urban wastewater management decisions on the environment. The model reproduces flowrate and particulate pollutant fluxes through the catchment, the sewer and the treatment facility. The model was developed for the Clos de Hilde catchment in Bordeaux (France). It was calibrated and validated based on continuous monitoring data. A global sensitivity analysis allowed targeting the most influential control handles that can affect the pollutant emissions. The reference scenario results show the distribution of pollutant fluxes emitted to the receiving body. This scenario will be further compared to alternative management scenario in order to understand impacts on the environment of various strategies.

A Systems Thinking Approach to Asset Optimization

T. Debruyne, G. Simpson, T. Önnerth. Veolia Water Malaysia (Malaysia)

AQUAVISTA™ is a comprehensive digital solutions package offered by Veolia. The AQUAVISTA™ Plant module is a holistic solution Software As A Service (SaaS) offering real-time optimization through state-of-the-art online control, monitoring and forecasting principles. This system utilizes real time and forecasted information to meet operational targets. Benefits include reduced overall capital and operations costs, increased hydraulic capacity, and improved operation in terms of efficiency, stability, and safety. The savings are achieved through prioritization of the optimal performance during all load situations without compromising a compliant effluent quality. This paper demonstrates how AQUAVISTA™ Plant, using an integrated Plant/Network systems approach, can improve the overall performance of the entire sewage system by combining forecasts of the upstream urban drainage system with information from the wastewater treatment plant and provide insights on this approach implemented with the municipality of Kolding's (Denmark), which manages the treatment of 15 million m3 of wastewater per year.