

EFFICIENT INTEGRATED REAL-TIME CONTROL IN URBAN DRAINAGE AND WASTEWATER TREATMENT PLANTS FOR ENVIRONMENTAL PROTECTION

COORDINATING BENEFICIARY

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ASSOCIATED BENEFICIARY

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DURATION

From 1ST October 2015 to 29th March 2019

BACKGROUND

Combined Urban Drainage Networks (UDNs) collect and convey wastewater and storm water together. This mixed water is sent to wastewater treatment plants (WWTPs) where it is treated before being released to the receiving environment. During heavy-rain events, the UDN and WWTP capacities can be easily overloaded, causing untreated water discharges to the receiving bodies, known as combined sewer overflows (CSOs). In order to prevent CSOs, modern UDNs are equipped with detention elements capable of storing the incoming volume during peak rain instants to later release it at lower flow rates suitable for WWTP treatment.

The use of Real-time control (RTC) within UDNs has been proved to be efficient for the management of UDNs, minimizing flooding and CSOs volumes, thus protecting the environment. However, currently RTC strategies are only based on hydraulics without considering the polluting quality load of the carried water. Additionally, UDNs and WWTPs are operated and managed separately. Integrated RTC of UDN and WWTP considering both quantity and quality variables appears as a suitable solution to optimise the overall efficiency of the system minimizing the impact on the environment.

OBJECTIVE

The main goal of LIFE EFFIDRAIN project is to demonstrate an integrated RTC strategy of UDNs and WWTPs to minimize the pollution of receiving waters, through the use of real-time quantity and quality data. The project aims to demonstrate RTC for environmental protection in two pilot sites, Bordeaux (France) and Badalona (Spain), in order to assess and quantify the benefits of the proposed solution compared to the control strategies currently in use, as well as discuss the potential feasibility and transferability to real applications.

In this sense, LIFE EFFIDRAIN aims to provide some innovative aspects related to the technologies used within the project:

- Real-time quality monitoring: incorporation of quality variables in dynamic models.
- Modelling: implementation of a complete quantity and quality model for the integrated system.
- Fault-tolerance: deployment of an on-line Fault Detection and Isolation (FDI) scheme integrated in the RTC strategy in order to activate a reconfiguration action when a fault is detected and isolated.
- Real-time Control: development of integrated RTC of the UDNs and WWTPs using hydraulics and water quality information for environment protection.

MORE INFORMATION

<http://www.life-effidrain.eu>