



Executive summary

Introduction

The objective of TECHNEAU Work Package 5.4 "Development of a water treatment plant simulator" is to produce a European platform for modelling of drinking water treatment processes. This document - the fourth deliverable of the project (D5.4.4) - describes the first version of the modelling platform, also known as 'SimEau'.

Importance

With growing pressures on water treatment there is now a greater need to optimise water works, whether to increase throughput, reduce operational costs, or minimise capital expenditure. One tool that can assist with this is water-treatment flowsheeting packages. Although programs for individual treatment processes, of various quality and in different programming languages, exist there are only a few packages for the simulation of the entire treatment plant. This research builds on these packages and aims at integration, resulting in a European framework. With the treatment plant simulator the user shall be able to trace the fate of pollutants through the system and visualise waste streams. Models describing individual or joint unit processes will be implemented within the framework linking input and output with respect to pertinent process variables.

Approach

In order to be able to link different treatment processes to each other and to facilitate representation, it is necessary to design a framework for the simulator. The state-of-the-art of existing water treatment simulators was reviewed in the first deliverable (D5.4.1) of this project. The review concluded that OTTER, developed by WRc, Stimela, developed by TU-Delft/DHV and Metrex, developed by the University of Duisburg/IWW were the most appropriate existing platforms to act as a foundation for future development and integration. The second deliverable (D5.4.2) described and discussed the methodology for integration. The third deliverable (D5.4.3) gave a description of the conceptual design of the new modelling platform and an overview of the selected treatment processes and determinands. It was concluded that the key features were that the treatment simulator would be free to use, easy to handle and that the simulator could be readily extended with new processes and determinands.

Result

A first version of the European Water Treatment Simulator ('SimEau') has been developed. The first version includes basic models for influent and flow and two process models: balancing tank and pellet softening. The framework was developed by WRc and tested by TU-Delft. Descriptions of the models are given in the present deliverable.

More information

The overview and results can be found in deliverable 5.4.4.

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