

Master Thesis

Development of a Dynamic Water Balance for the Determination of Residence Times in Water Network

At the Dow site in Böhlen, different initiatives are in place for the development and implementation of sustainable solutions for the responsible use of water resources. Our team is part of a broad European consortium that is addressing water scarcity in all its aspects. The aim of the project is to develop a roadmap with the potential to reduce the fresh water intake significantly. It is planned to establish optimized sustainable technologies for the production of cooling tower make-up water and boiler feed water.

In order to create a baseline for the digitalization and data analysis, the water network's dynamics and behavior shall be investigated further.

The following aspects should be included in the thesis:

- description of different models for the evaluation of retention times in various water network components
- identification of appropriate program for modeling (e.g. MATLAB/SIMULINK)
- description of the dynamics and boundaries of the specific water network
- identification of possible measurement gaps
- dynamical modelling of the specific water network incl. documentation
- identification of dynamic residence times as basis for enhanced predictive process control
- development of indications for the optimal further use of the model for predictive process control

Duration: 5 or 6 months

(exact timing to be discussed, depends on course of study)

Start: immediately

Supervision:

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