

## Modelling for water reuse: How to join forces and where to put the focus?

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Keywords: digitalisation, experimental design, interdisciplinary, packaged systems, scalability

### Abstract

As water scarcity intensifies, the importance of reclaimed water as an alternative source is growing rapidly. Sustainable solutions for water reclamation and reuse are urgently needed. The range of possible technological solutions, configurations, and processes is vast, with varying technological readiness levels. Thus relevant questions are: how to decide which approach to focus on, how to advance promising approaches, and how to bring the most promising approaches to a safe application? To answer these and other questions, we see a large potential in modelling. In this workshop, we will discuss three types of contributions of modelling to water and wastewater treatment and reuse: i) supporting informed decision-making, ii) ensuring and increasing reliability and robustness, and iii) improving efficiency of a process.

The idea of this workshop was born after a joint webinar of the IWA specialist groups on Water Reuse and on Modelling and Integrated Assessment ([recording of the webinar](#)). Our goal is to introduce modelling tools that might be interesting for the reuse community, discuss what should be the focus and how we can join forces to tackle the huge challenges at hand (e.g., on-site water reuse, circular industries, or sufficient water for agriculture), and where models could make a difference.

**Target audience:** This is a methodological workshop designed for individuals working and researching in the field of water reclamation and reuse, including those who are already modelling, those who are considering adopting modelling techniques in the future, and those who are primarily focused on experimental approaches and those who want to discuss after an inspiring talk by Prof. Korneel Rabaey if packaged plants could be the solution and what it would take to bring such a novel approach to adaptation.

**The organisers:** MYS is the chair of the IWA working group on hybrid modelling. ET and SD are the chair and vice chair of the IWA specialist group on modelling and integrated assessment. ER is specialised in water reuse at the German Environment Agency.

Workshop Time	Activity	Speakers
14:00 – 14:20	Introduction: Welcome and introduction to modelling tools: data-driven, mechanistic, hybrid	Mariane Y. Schneider
14:20 – 15:30	Presentation on three aspects where modelling can make a difference: <ol style="list-style-type: none"><li>1. Modelling to provide the basis for informed decision-making</li><li>2. Modeling to ensure and increas the reliability and robustness of a process or facility</li><li>3. Modelling to increase resource efficiency</li></ol>	Dorothee Spuhler Mariane Y. Schneider
15:30 – 15:45	Discussion on key messages, including: required input data for modelling, main added value and acceptance/communication of modelling results	
15:45 – 16:00	Spark for the discussion on: Is there need to change the entire system and how can modelling support that? Modular/Packaged systems, are they the future?	Korneel Rabaey
16:00 – 17:00	Group discussion	