

Day 2 13:30 – 14:00

Session 4

水処理分野におけるマルチドメインシステムシミュレーションへの期待

Expectation on the Multi-domain System Simulation Technology in the Water Treatment Field

栗田工業株式会社/Kurita Water Industries, Ltd.
ソリューション推進本部 ソリューション技術部門
IoT/AI プロジェクトグループ 研究主幹

大月 孝之
Dr. Takayuki OTSUKI

水処理エンジニアリングの分野においても安定運転・節水・省エネルギー・省コストに関わる顧客ニーズの高度化に伴い、システムシミュレーションが重要な要素技術となっており、複合領域シミュレーションの必要性が高まっています。微生物排水処理における既存プロセスモデルと周辺設備モデルとの組み合わせによる複合シミュレーションの事例を交えながら、今後同分野で Modelica および FMI 技術の活用が期待される局面を紹介します。

概要 Abstract

In the water treatment system engineering field, ever increasing advanced customer need of higher water quality, system stability, water recycle, energy reduction and total cost reduction makes system simulation as the key tool for various system architecture evaluation and system wide control strategy development. And these system analyses require multi-domain simulation to evaluate the system performance from various perspective such as total water consumption, water quality achievement, heat energy balance, electricity consumption, maintenance requirement and human resource management. As one example, simple biological wastewater treatment system model constructed from the existing detailed biological system model and Modelica based physical model for the surrounding facilities is presented as a tool for the typical aeration control system performance evaluation study. Aeration is the main electric power consumer in the aerobic biological wastewater treatment. Expectation on the Modelica and FMI technologies is discussed in relation to the need and potential application situations in the water treatment field.

Key Words

Water treatment domain model, Biological treatment, Blower, Aeration control, Power requirement estimation
