

# 23 European Symposium on Computer Aided Process Engineering: An Integrated Platform for Optimization of Heat and Water Use in Multipurpose Batch Plants (Computer Aided Chemical Engineering)

Esmael R. Seid, Thokozani Majozi

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Energy optimization and the optimization of water use have mainly been treated as separate problems in literature. The batch production schedules resulting from each of these formulations do not guarantee that the plant is operated optimally. Presented in this contribution is a formulation that addresses the optimization of both water and energy, while simultaneously optimizing the batch process schedule. The scheduling framework used in this study is based on the formulation by . This formulation has been shown to result in a significant reduction of computational time, an improvement of the objective function and leads to fewer time points. The objective is to improve the profitability of the plant by minimizing wastewater generation and utility usage. From a case study it was found that through only applying water integration the cost is reduced by 11.6%, by applying only energy integration the cost is reduced by 29.1% and by applying both energy and water integration the cost is reduced by 34.6%. This indicates that optimising water and energy integration in the same scheduling framework can reduce the operating cost and environmental impact significantly.



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