Abstract:

“Modeling water reuse in the food industry – Opportunities and Challenges”

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The food industry is a large user of water, which is both costly and a significant environmental burden. Unless sustainable water practices are implemented, water will become an increasingly scarce resource in large parts of the world. Reducing the water consumption is therefore an important challenge in the food industry. Next to technological developments that might support this, this also requires managerial approaches that support the coordination of production activities in a way that water use is minimized or water reuse is maximized. Modeling approaches can support this, and some work has been done in academic fields such as Operations Research, Chemical Engineering, as well as Environmental Management. In this paper, the aim is to provide a comprehensive overview of the different approaches found in the literature, integrating the work done in the different disciplines, leading to a discussion of the possible benefits of various modeling approaches, as well as the identification of future research challenges. This will be based on a structured literature review, after which the available approaches will be classified and discussed. Overall, the paper aims to create an understanding of the opportunities and challenges with regards to optimizing water use in the food industry, providing directions for future research as well as insights that can be used to improve the competitiveness and sustainability of the food industry.