

## Process 4.0

### Ultra-efficiency and digitization Part 4: Resource efficiency through digitization in the process industry

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#### Project partners:

- Karlsruhe Institute of Technology (KIT), Institute for Technical Chemistry (project coordination)
- KIT, Institute of Catalysis Research and Technology
- KIT, Institute for Micro Process Engineering

The process industry with its special resource relevance is characterized by complex, capital-intensive production plants, which already today have an exemplary high degree of automation for the purpose of controlling feedstock consumption, product yield and quality. This results in a high potential for digitization approaches in production optimization, in (cross-company) value chains, but also in research and development as well as training. The impact on the transition from today's production to process industry 4.0 on resource consumption and associated opportunities has not yet been systematically considered. This project therefore has the task of identifying the relationships between resource efficiency and digitization for the process industry in Baden-Württemberg in the short term. It will structure and quantify the expected effects of a variety of digitization measures on the resource consumption of production. Thereby, it will increase transparency for decision-makers and the public on particularly attractive research projects as well as appropriate implementation strategies to ensure a lower consumption of resources and more sustainable production through digitization. Together with the other subprojects of the joint project, this will provide a comprehensive view of the industrial sector. Synergetically, additional tasks for the ULTRAEFFIZIENZFABRIK are expected. In detail, a study on the significance of individual digitization topics for resource efficiency in the process industry will be elaborated, the effects of digital technologies of production on resource efficiency will be exemplarily quantified using case studies with a uniform set of indicators, and a stakeholder and closing event will be carried out.

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