

Resource Efficiency 4.0

In the age of Industry 4.0, resource efficiency is becoming a critical competitive factor. Rising energy and material costs, geopolitical uncertainties, stricter regulatory requirements, and the transition to a circular economy call for new approaches to use resources more intelligently and make industrial value creation more sustainable. Digital technologies lay the foundation for this by enabling transparency regarding energy, material, and data flows and by unlocking optimization potential throughout the entire product life cycle.

Key enablers include artificial intelligence, digital twins, Industrial IoT, data spaces, and simulation-based optimization. They help companies reduce consumption, make production processes more efficient, lower emissions, and keep resources in the value chain longer in line with the principles of a circular economy. At the same time, new data-driven business models are emerging that combine environmental and economic goals and strengthen the resilience of industrial systems.

This issue of Industry 4.0 Science (www.industry-science.com) is dedicated to the technological, organizational, and economic foundations of Resource Efficiency 4.0. The focus is on scientific and practice-oriented articles that demonstrate how digitalization and intelligent production systems pave the way for a resource-efficient, competitive, and sustainable industry.

Industry 4.0 Science, Issue 1/2027
Publication **February 11, 2027**

Editor of the Issue

Prof. Norbert Gronau
Chairman of the I4S Editorial Board
University of Potsdam



Want to help us drive Industry 4.0 forward and publish your own issue?

Applications for guest editorship can be submitted to editorial-office@industry-science.com