

Extract from the Annual Report 2023
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Process and production engineering for sustainable energy storage

Sustainable energy storage for a successful transformation

What are the focal points of the department?

The main focus areas of the "Process and production engineering for sustainable energy storage" department are material and process development for recyclable energy storage systems as well as the design of factory systems for the production of energy storage systems, including hydrogen technologies. Our core competencies here lie in the area of economic and ecological evaluation for production systems as well as process optimization through multi-scale simulation and process monitoring for energy storage technologies. Furthermore, we aim to achieve a holistic and sustainable design for the entire life cycle of energy storage systems in terms of Life Cycle Management – from material production, through the various production stages and utilization, and on to recycling."

What are the plans for the future?

In the area of battery and hydrogen technologies, we want to further expand our infrastructures, amongst other things. This includes the Fraunhofer Center for Energy Storage and Systems ZESS – which is currently under construction at Braunschweig Research Airport – where we want to continue to drive forward the further development of solid-state batteries and stationary systems in collaboration with our colleagues from the Fraunhofer institutes IFAM and IKTS. Furthermore, a milestone for 2024 is the further elaboration of the dismantling and recycling of fuel-cell systems as well as the continued elaboration of the Wasserstoff Campus Salzgitter."

What were the highlights in the reporting year?

This year once again featured a number of highlights in our three departments, driven in particular by our excellent team of scientific and technical staff. In the field of hydrogen technologies, these included the founding of the Wasserstoff Campus Salzgitter e. V., and the ScaleH2 project in collaboration with Australian partners which is aimed at developing solutions to the question of "How can green hydrogen be cost-effectively transported from Australia to Germany?". In the area of battery cell production and Life Cycle Management, our new training course "think GREEN, act SMART – Introduction to sustainability for companies" as well as projects in the field of battery modeling, such as NaNiBatt or HELENA, should be mentioned."

Electrodes for the production of battery cells.

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- Customized and practical further training and consulting
- Studies and concepts for sustainable energy systems in industrial clusters, factories and districts
- Development of energy system simulations
- Holistic, sustainable consideration and development of battery and hydrogen technologies
- Unique and interdisciplinary research infrastructures with partners from research and industry throughout the region
- Production and analysis of materials, components and cells or stacks for batteries and fuel cells

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