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Battery LabFactory Braunschweig

Sustainable Circular Production of Batteries



Circular production

- Establishment of Circular Battery Economy
- Knowledge-based, sustainable and green battery cell production and recycling
- Life-cycle engineering, considering environmental and cost impacts, along the entire battery life cycle
- Inline quality tracking for optimized production, recycling and material recovery
- Cell design for efficient recycling



“We strive for a circular economy and a sustainable, digitalized production of lithium-ion and next-generation batteries and their recycling“, Prof. Kwade, Spokesperson of the BLB.

Digital production

- Physical and electrochemical modeling as well as simulation from molecular to factory scale (CFD, FEM, DEM, P2D/Newman)
- Cyber-Physical Battery Production 4.0
- Automated production data acquisition through SCADA/ MES for faster data-driven engineering
- Intelligent battery production management with automated inline sensors and digital monitoring

Technological highlights

- Development of advanced production processes for electrode and cell manufacturing (LiB – C/Si, LiS, SSB*)
- Freedom of design – large variety of production equipment (coin, pouch, cylindrical)
- Quality inspection of products and processes
- Recycling and recuperation of electrode production rejects (with > 90% material recovery)
- Diagnostic glovebox line for battery aging mechanisms

* Solid State Batteries



The research spectrum of the BLB covers the entire circular production and material cycle, from material synthesis to electrode and cell production to recycling.

Key Facts

- Battery production research since 2008
- Joint LabFactory with 14 institutes from TU Braunschweig, TU Clauthal, Leibniz Universität Hannover, Fraunhofer IST and PTB
- More than 200 professors, research associates, technicians and students working at the BLB (increasing)
- 1,500 m² pilot production, 300 m² battery recycling, 100 m² battery safety, 750 m² laboratories for diagnostics (including > 800 channels)
- Collaboration with national and international partners, both in academia and industry