

Advanced battery production and digitalization

OEM: Siemens • Code: BAT-PROD-2

COURSE DESCRIPTION

Batteries are more than just technology – they are the key to sustainable energy supply. This course is aimed at specialists who want to focus on the next steps in battery production development. Core topics include quality assurance, intelligent data utilization, and sustainable process design.

In cooperation with RWTH Aachen University, the course provides practical and advanced knowledge on the production of the next generation of cells, the digitalization of production processes, and sustainability and recycling in the battery industry.

The course is offered in a hybrid format and combines the benefits of in-person and online training to ensure maximum flexibility and learning success.

AUDIENCE PROFILE

- Responsible for production and processes in battery or electronics manufacturing
- Engineers and specialists in the fields of digitalization, automation and data analytics
- Project managers for the construction or conversion of production lines
- Responsible for sustainability and quality in technology-oriented companies
- Decision-makers with a strategic focus on energy storage and battery production
- Employees from research institutions or public organizations related to energy and climate goals

PREREQUISITES

- Successfully completed "Introduction to Battery Production and Battery Technology (BAT-PROD 1)" course or similar qualification.
- Note
- Included in the course price: Free access to the digital learning platform [SITRAIN access](#) – starting one week before the start of the course until two weeks after the end of the course.
- With the Learning Membership, you can deepen or repeat the content of this Learning Event as well as continue your education on other interesting topics.

COURSE OBJECTIVES

By the end of this course, participants will be able to:

- At the end of this course, participants will have in-depth and practical knowledge of advanced battery production and digitalization. After completing the course, participants will be able to:
- understand advanced production processes and requirements for different battery applications,
- use digital tools such as artificial intelligence, data analytics and digital twins in a targeted manner in manufacturing,
- consider aspects of quality assurance and cleanroom technology in production,
- promote sustainability through circular economy and modern material selection,
- competently support production projects for mobility, storage and industrial applications.

COURSE OUTLINE

Module 1: Content

1. Advanced Battery Production and Digitalization

- Quality Assurance in Battery Production
- Clean and Dry Rooms in Battery Production
- Production of Next-Generation Battery Cells
- Data Collection, Storage & Preparation in the Production Environment
- Digitalization for Assembly Lines – Challenges & Opportunities
- Use of Data Analytics and AI in Electromobility Component Production
- Data-Driven Production Planning & Control via Digital Twins
- Identification & Implementation of Data-Based Approaches in Battery Production

2. Battery Raw Material Production and Cell Chemistries

- Production of Anode Active Material (AAM)
- Production of Cathode Active Material (CAM)
- Manufacturing of Inactive Battery Components Inside and Outside the Cell
- Raw Material Source Recycling: Opportunities & Challenges
- System Design and Development Potentials
- Cell Design and Development Potentials
- Cell Chemistry and Development Potentials
- Modeling and Simulation of Batteries

3. Battery Circular Economy

- CO2 Footprint in the Battery Circular Economy
- Repair, Remanufacturing, and Re-use
- Design for Re-X
- Battery Recycling: Logistics, Dismantling & Deactivation
- Battery Recycling: Mechanical Pre-treatment, Pyrometallurgical and Hydrometallurgical Processes
- Battery Recycling: Direct & Production Scrap Recycling
- Raw Material Source Recycling: Opportunities & Challenges