

Battery production & logistics

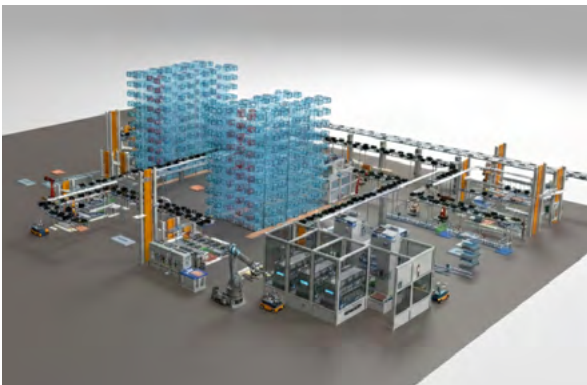


Simulation in cell production, battery assembly, electric drive and logistics

Optimise systems and processes

Process simulation is indispensable in electromobility. It enables highly complex production and logistics processes to be validated at an early stage, provides reliable forecasts on output and availability, delivers robust key figures, reduces investment risks and shortens commissioning times through well-founded decisions.

As a manufacturer-independent partner, SimPlan supports OEMs, suppliers and plant manufacturers from the concept phase through layout and control planning to virtual commissioning.



Simulation technologies are used along the entire manufacturing value chain, from cell production and battery assembly to recycling, as well as in the manufacture of electric drives.

Realistic animation and model-based analysis of complex processes create a common understanding of the process and help identify and avoid planning errors at an early stage. This enables production and logistics costs to be reduced in the long term.

Simulation

- is based on real process and layout data
- is realistic and maps entire value chains
- is always individually tailored to technologies, capacities and facilities
- is dynamic – variants, cycle times and buffers can be adjusted at any time
- can be used for decision-making in planning, engineering and operations
- can be used as a simulation game and communication tool

Added value through simulation

- Securing layout, investment and control decisions
- Reducing start-up and ramp-up times
- Planning reliability for production systems with many variants
- Manufacturer-independent evaluation of complex systems and logistics concepts
- Transparency regarding throughputs, utilisation rates, fill levels, throughput times and bottlenecks

Typical areas of application for simulation in electromobility

Cell production

Simulation is used to analyse and optimise complete process chains in battery cell production. Production steps such as mixing, coating, calendering, coil baking, notching, stacking, cell assembly, formation and ageing are considered. In addition, material flows, buffers, conveyor technology and clean room and dry room logistics can be realistically mapped, including temperature-controlled and thermally separated storage and intermediate areas along the process chain.

Assembly and drive technology

Simulation supports the design and comparison of layout variants in the manufacture of batteries and electric motors. The focus is on logistics, quality assurance, conveyor technology, type changes and automated transport solutions. Production and testing processes in rotor and stator manufacturing can be specifically decoupled and secured.

Logistics and operating resources

Simulation assists in planning internal logistics from goods receipt to goods issue. The demand for workpiece carriers, AGVs, tugger trains and other operating resources is determined, as are the necessary buffer capacities, route loads, congestion situations, plant productivity and potential bottlenecks.

Security, supply chain and special processes

In addition, safety-related processes involving high-voltage components, hazardous substances and thermally sensitive materials are being investigated. Overarching supply chain issues and special processes such as battery tray production, cell disassembly and painting can also be validated using simulation.

Interested?

We are happy to support you in analysing and optimising your processes in battery and drive technology. Whether you have specific questions or are just looking for initial guidance, we provide you with individual and practical advice.

Contact us and let us work together to clarify how simulation can be used effectively in your project.



SimPlan AG was founded in 1992 as a service provider for the simulation of operational processes and, with more than 120 employees, is now one of Germany's leading providers of simulation services.

Why SimPlan?

SimPlan is a cross-industry provider of simulation services and supports companies in analysing and optimising their processes.

Our work is based on objective and independent assessments as well as over 30 years of in-depth experience in logistics and production projects.

Please feel free to contact us

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We continuously develop simulation topics and have powerful resources at our disposal to quickly address your questions.

We focus on close, trusting cooperation with our customers and the development of practical solutions.

As a neutral distributor, we also provide support in the selection and introduction of simulation software and offer appropriate training courses.