Battery Solutions
to enable the mobility of the future
We are a system partner for all important components of the process chains car body and powertrain in the automotive industry. The product range also includes automation solutions for electrical storage and drive systems and solutions for innovative lightweight designs.

Especially in the field of battery manufacturing, we offer our customers the entire product range: from cell assembly through the entire battery process to the End of Line test.

Customer benefits

- Turnkey production systems from a strong and trustful partner
- A reliable program execution due to many years of experience and know-how in the battery industry
- Machine and line design according to local rules and regulations
- Our global footprint with local service and support keeps your line running
Our solutions for battery manufacturing

One of the key businesses of thyssenkrupp System Engineering is the development and building of assembly lines for high voltage energy storages. The scope varies from low cost manual to fully automated manufacturing lines.

Battery producers can benefit from our combined knowledge, how to build up Li-Ion batteries and designing assembly equipment. More than 400 experts at our center of competence will contribute their know-how to your project. We offer customized engineering to plan your project and realize it on a turnkey basis. Afterwards we assist with the necessary service and maintenance.
The battery pack contains a large number of sensitive parts. In order to run a hazard-protected production along with a high technical availability, we offer consultation for an optimal manufacturing process and propose proven solutions to ensure an undisturbed production over the years. Our product focus ranges from small and flexible systems for different battery sizes to optimized high volume lines. If you require prototypes or pre-series, we can assist you by building them in our workshops.

**Our line components**

- Conveyor systems
- Case preparation
- Module insertion
- Battery management system (BMS) insertion
- LV/HV connection
- Run down
- Leak test
- End of line test

**Benefits of our solution**

- We design optimal layouts for you, due to our extensive experience in the field of manufacturing engineering.
- A smooth production process provided by our high performing factory automation and reliable data tracking.
- Our lines are designed to reduce scrap rates in using proven processes and robust designs for serial production lines.

“The highest value part gets the greatest attention”
Module assembly lines

Modules, arrays, mini-packs or blocks – however it is called, cells have to be arranged in a battery friendly block size. We offer proven assembly systems for large format cells to build modules of any size.

“The high number of processed cells requires a fast and lean assembly process”

Those systems are usually customized engineered to the specific product size and production volume. Certain flexibility for a product family can be accommodated. Preliminary to the serial production, a simultaneous engineering process can be offered to optimize the manufacturing process.

Our line components

- Cell preparation
- Tab trimming
- Foil application
- Cell stacking
- Frame welding
- Bus bar welding
- Sealant application
- Quality test

Benefits of our solution

Flexible line designs to accommodate different cells or module variations.

Reliable project execution guarantees a prompt start of production and the satisfaction of your customers.

You can benefit from our extensive knowhow in module assembly reviewing a large number of realized projects.
Fast processing of Li-Ion cells on a constant quality level

Cell formation and finishing

During the production of Li-Ion cells, the last step is the electrification and hence forming of the Solid Electrolyte Interphase layer (SEI) as well as the finishing and quality check. We offer turnkey systems for the entire formation process.

Our line components

- Chambers
- Cell clamping
- Contacting systems
- Formation channels
- Software
- Energy management
- Line automation
- Safety design solutions

Benefits of our solution

Our formation channels combine high power and precision with an integrated impedance spectroscopy feature.

The recipe procedure for charging and maturing the cells can be easily controlled with our software due to its simple operation.

The data manufacturing execution and management system reliably processes a large amount of data and enables complete process monitoring of each cell.

By integrating an innovative recuperation approach, formation plants can be operated in a highly efficient and cost-effective manner.

In order to protect the plant against fire, the cells are charged in a specially designed chamber which meets all European safety requirements.

To keep maintenance low, the cell contacts are designed to last a lifetime.
Benefits of our solution

Smart factory planning is the basis for a good serial production. We support you in the planning process and production engineering.

We develop the suitable process for your material and deliver the entire welding cell for your production. Laser processing is one of our key expertise.

Pouch cells need some special cell finishing after the formation. Cutting and folding of the pouch seals, trimming of the terminals, weight and thickness check as well as leakage and capacity test and grading. All can be done on a small line, also with final packaging for shipping.

Li-Ion cell assembly lines

One of the key steps in the production of Li-Ion battery cells is the cell assembly. We can supply you with our own machines for selected process steps as well as turnkey lines along with best-fit external equipment. All processes have been developed and tested at our technology center.

Our line components

- Cell leak test
- Can welding
- Laser heads
- Bi-metal joining
- Laser cutting
- Active thermography
- Laser ablation
- Prototype build

„We recommend a preliminary process and machine validation to ensure a reliable process and a low scrap rate”

Tobias Grobe, Account Manager Battery Solutions, thyssenkrupp System Engineering
Once the battery cell, module or pack is finished, the quality has to be tested. Our test benches are custom made according to your requirements. We design and configure our testing equipment such as cyclers, power management, connectors, housing and safety features to your specifications.

**Our scope of supply**

- Battery pack testing
- Cell and module testing
- Source and sink systems
- Testing software and database
- HV/LV Connectors
- Leakage testing
- CAN Bus/LIN Bus/FlexRay protocols

**Benefits of our solution**

The mechanical stability, electrical conductivity as well as the safety of the product has to be verified. We combine all features and functions in one test bench.

The renowned universal testing software (ups64) provides you a toolbox for the engineering and maintenance team on the line as well as the product experts in the back office.

The testing procedure generates a massive amount of data. We provide a special software system with real time measurement, statistical analysis and visualization.
Our worldwide service network guarantees a fast reaction to required changes.

Every machine or line needs service over the time. We offer a wide range of service. Apart from the normal machine and line documentation and spare part list for your maintenance personnel, modern instruments like remote attendance by logging into the system via VPN for fixing problems is meanwhile a common procedure. Furthermore, your operators can wear data glasses and our experts can assist remotely.

Global service

- Training
- Spare parts management
- Maintenance
- Relocation & refitting
- Remote solutions
- Data solutions

Benefits of our service

- Quick spare part supply and prompt assistance at crashes or breakdowns will be done by our local personnel.
- At ramp up, we can support with extra personnel until your line is fully equipped with manpower.
- Looking at the industry 4.0, we can help you log data from your production to optimize processes and to get new findings of your KPIs.
Our locations for battery solutions

Battery headquarters in Hohenstein-Ernstthal
- Engineering center
- Administration
- Pre-build up and commissioning of workstations and small lines

Research & development center in Pleissa
- Validation for design and engineering
- Benchmarking
- Prototype production

Assembly plant in Chemnitz
- Pre-assembly and commissioning of complete lines and machines
- Procurement and production engineering
- Central storage and logistics