


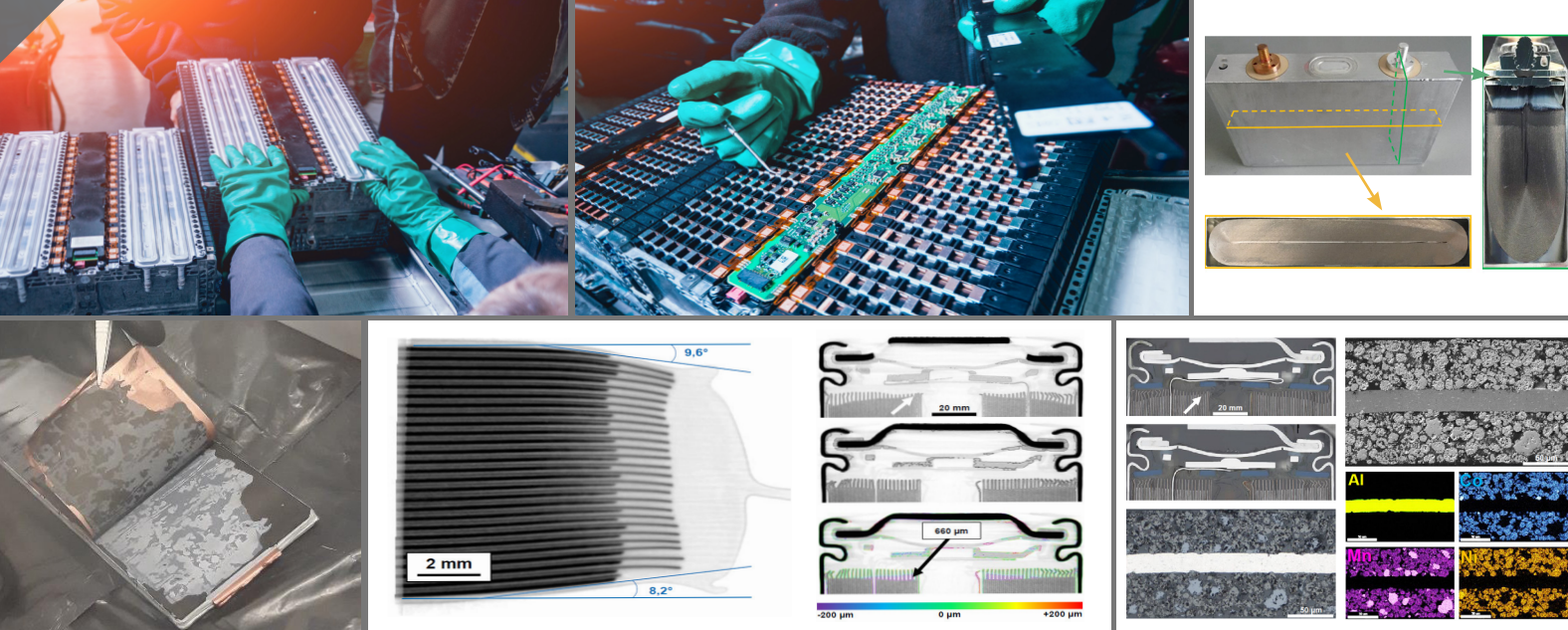




Energy storage:
open-heart examination

YOUR PARTNER FOR

-  Engineering
-  Simulation
-  Testing



ENERGY STORAGE: OPEN-HEART EXAMINATION

The number of energy storage applications and the associated quality and market requirements are growing constantly.

In order to perform comprehensive failure analyses and to determine important parameters for models and simulations, the test specimens are opened – “open-heart examinations”. As an independent development and testing service provider, PTS-Prüftechnik accompanies the entire development process of energy storage systems. In our state-of-the-art analysis and testing laboratories, we use an extensive repertoire of electrochemical methods and measuring instruments to carry out, among other things, battery diagnostics, tear-down analyses or post-mortem examinations to clarify aging mechanisms and causes of damage.

Battery diagnostics

- Execution of examinations on Li-Ion complete systems, modules and cells
- Disassembly up to cell opening and documentation
- Evaluation of measurement results and preparation of test and diagnostic reports

Analysis of structure and microstructure

- Non-destructive X-ray computed tomography, e.g. macroscopic structure, contacting, winding deformation, impurities
- Cell opening, preparation and microscopy of the internal structure of Li-ion cells
- X-ray and chemical analysis to determine elemental components and crystal structure
- Qualitative and quantitative evaluation of manufacturing quality
- Post-mortem analysis to elucidate aging mechanisms and causes of damage

Materialography / microscopy

- Grinding and polishing machines with extraction
- Ion polishing system
- Sputtering chamber for contrasting
- High-end light microscopy
- High-resolution FIB-SEM for nanoanalysis with EDX, EBSD and multichannel GIS

X-ray analytics

- 3D X-ray computed tomography with micro- and NanoFocus tubes
- X-ray diffraction with Rietveld refinement

TOGETHER INTO THE CO₂-NEUTRAL FUTURE!