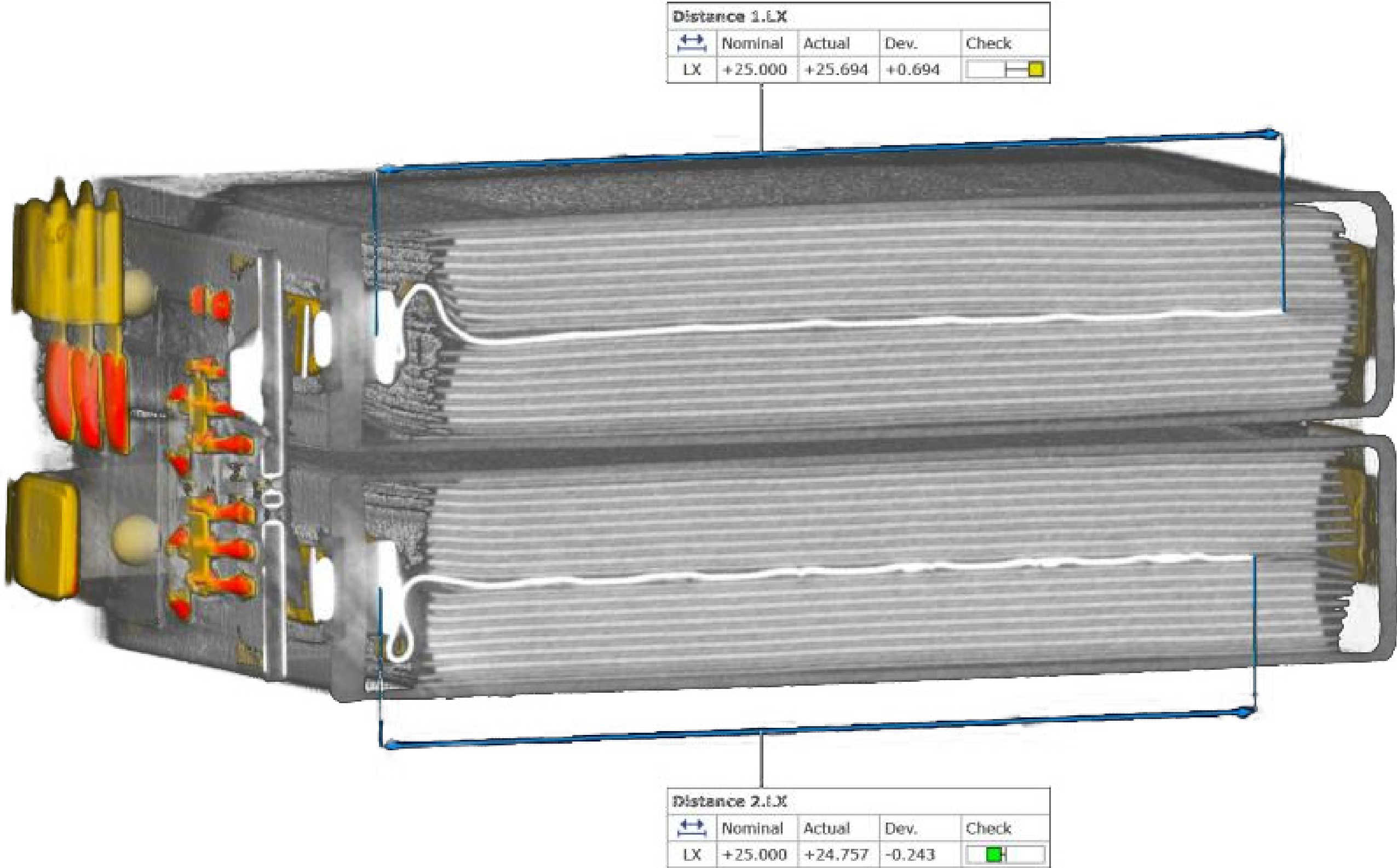


Battery CT Inspection Data Analysis

by ZEISS INSPECT X-Ray

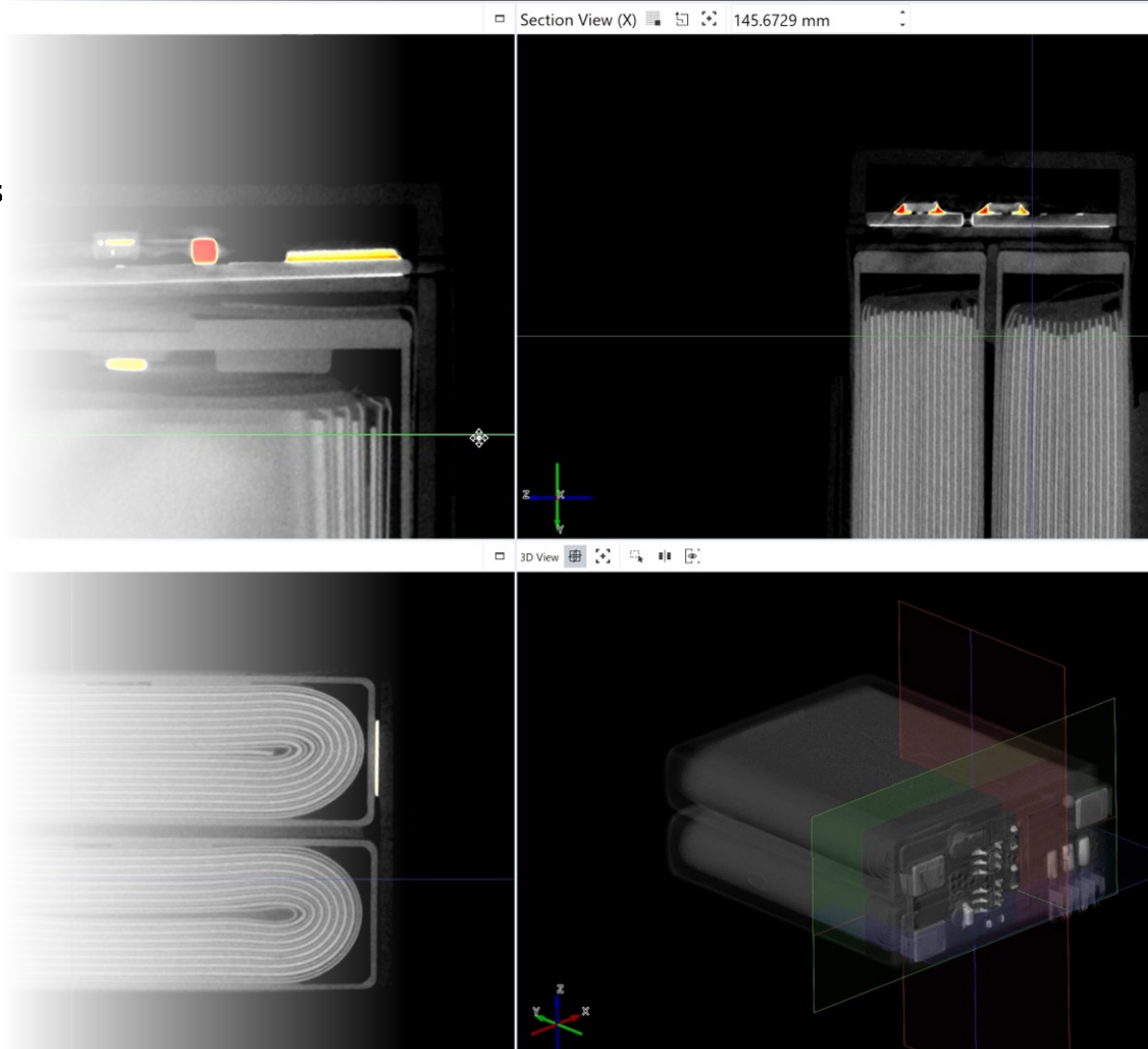


Battery CT inspection data analysis by all-in-one software

High-performance battery system is the heart of the new energy vehicle (NEV). With the growth of NEV market, the production scale of battery cells and modules is expanding, and battery design and manufacturing processes are being upgraded. Throughout the production process, battery manufacturers must pay attention to quality control gates by incorporating non-destructive inspection solutions.

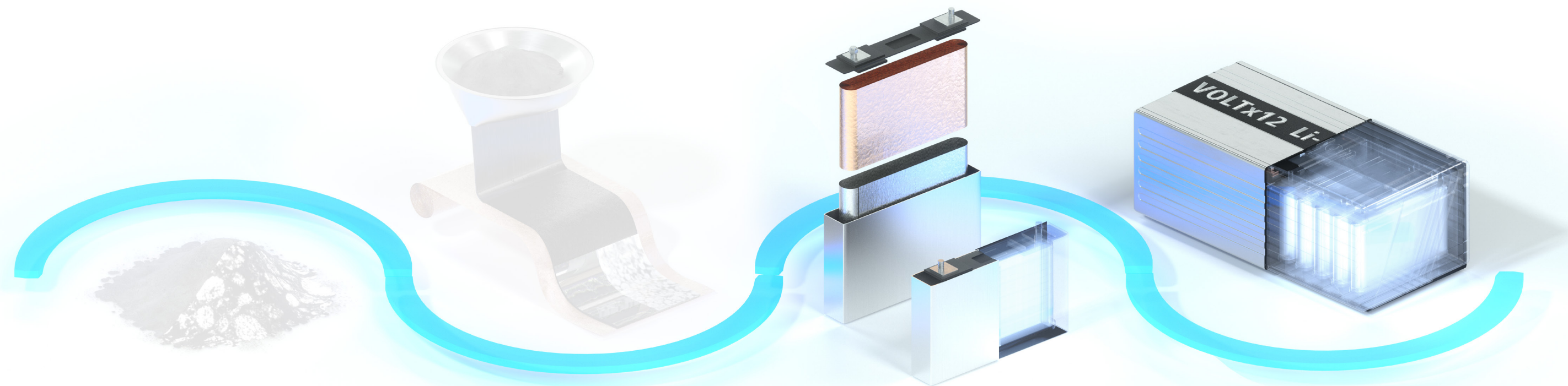
After batteries have been acquired with an industrial computed tomography (CT) scanner, the CT data need to be evaluated. ZEISS provides battery system quality solutions based on CT and powerful data analysis software called ZEISS INSPECT X-Ray.

ZEISS INSPECT X-Ray can analyze the quality data generated by CT, discover the defect, and export inspection report with the pre-defined standard, which helps sort out NG parts and perform root cause analysis for further manufacturing process upgrades. ZEISS INSPECT also supports AI model trained by deep learning methods to conduct automatic defect recognition and measurement.

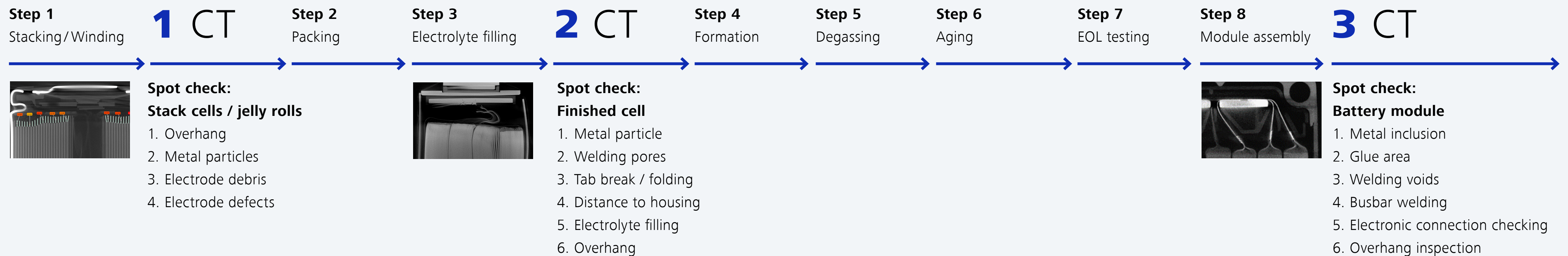


Ensuring battery quality throughout the production process

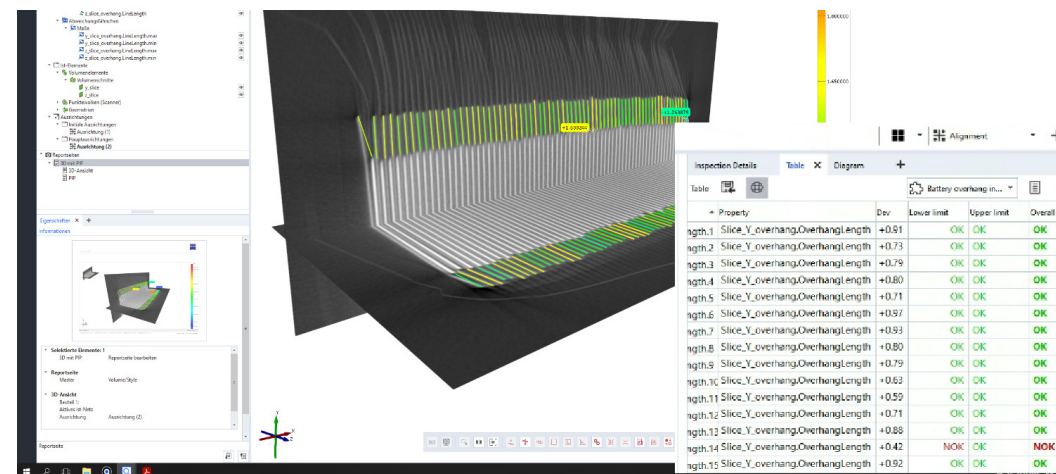
Every step especially battery cell and module production process can trigger major quality issues further downstream. Non-destructive inspection is therefore required at several intervals to pinpoint problems as early as possible. ZEISS INSPECT X-Ray spot checks ensure rapid and accurate identification of multiple issues ranging from overhang to metal particle contamination.



Production process of battery cell and module

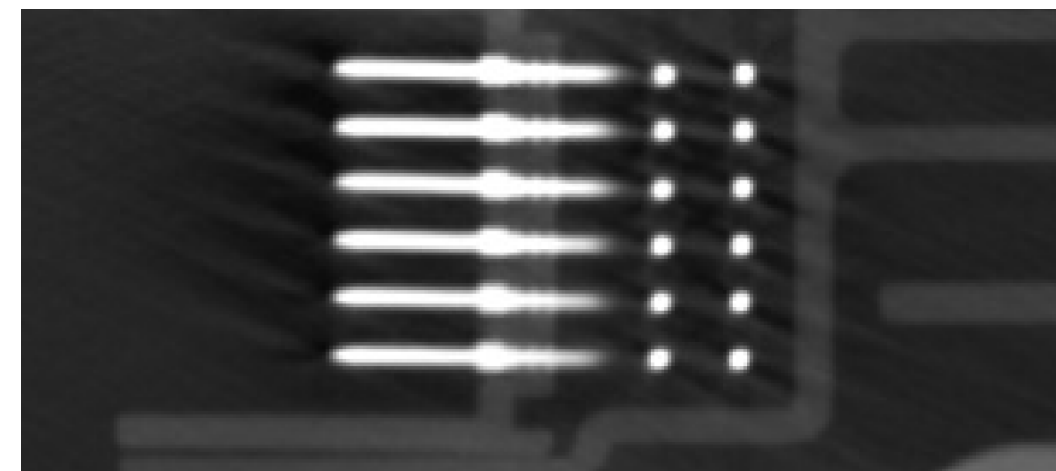


Application areas of battery CT inspection data analysis



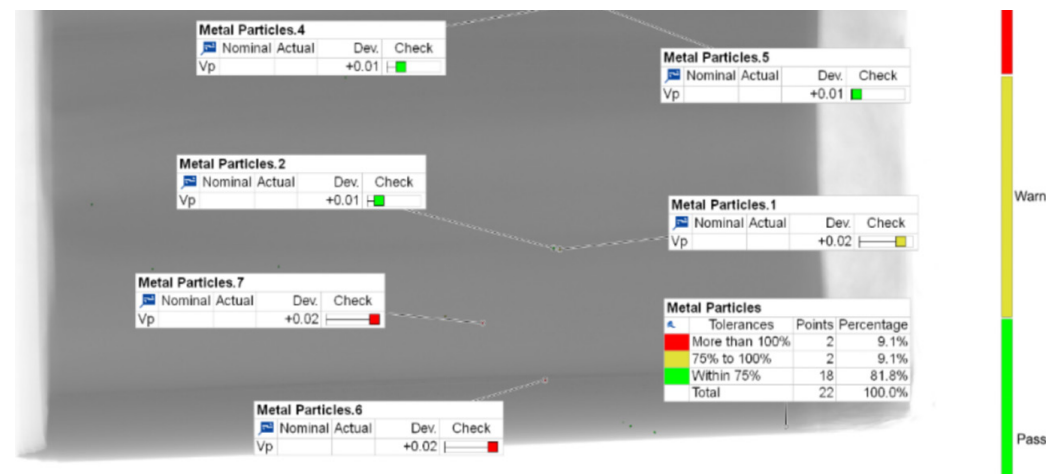
Automatic overhang measurement

- Zig-zag, end to end and curve following OH measurement modes
- Highly robust AI model



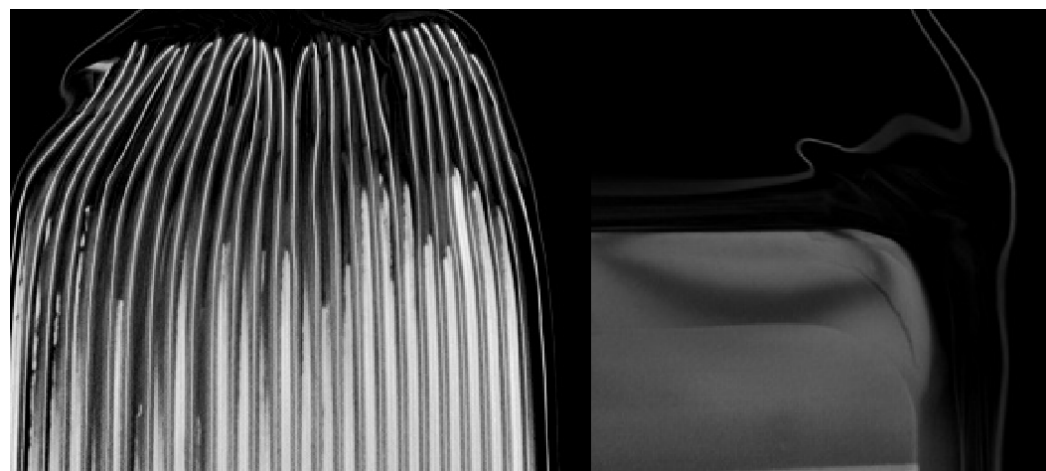
Electronic connection checking

- Connection quality checking
- Contact area measurement



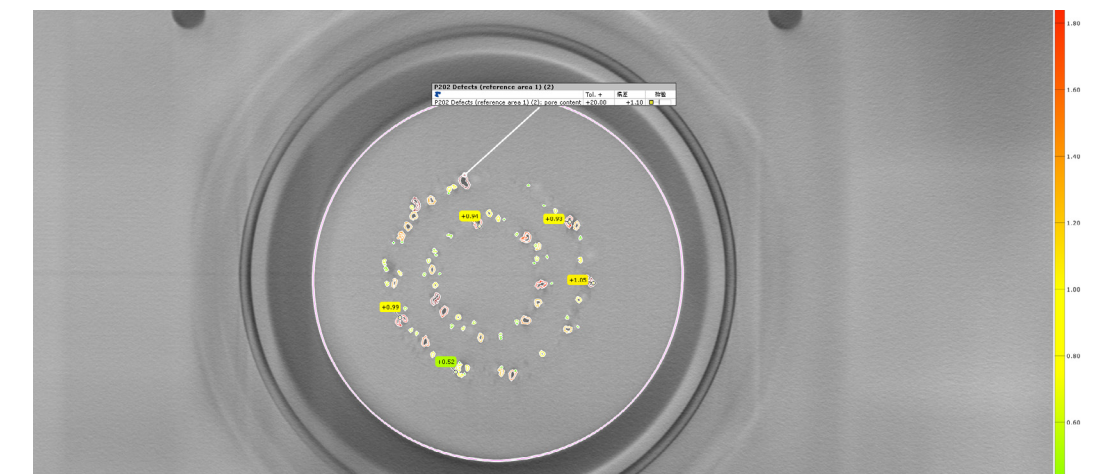
Automatic defect detection

- Automatic AI detection of various particle defects
- Volume and dimensions of each particle defects



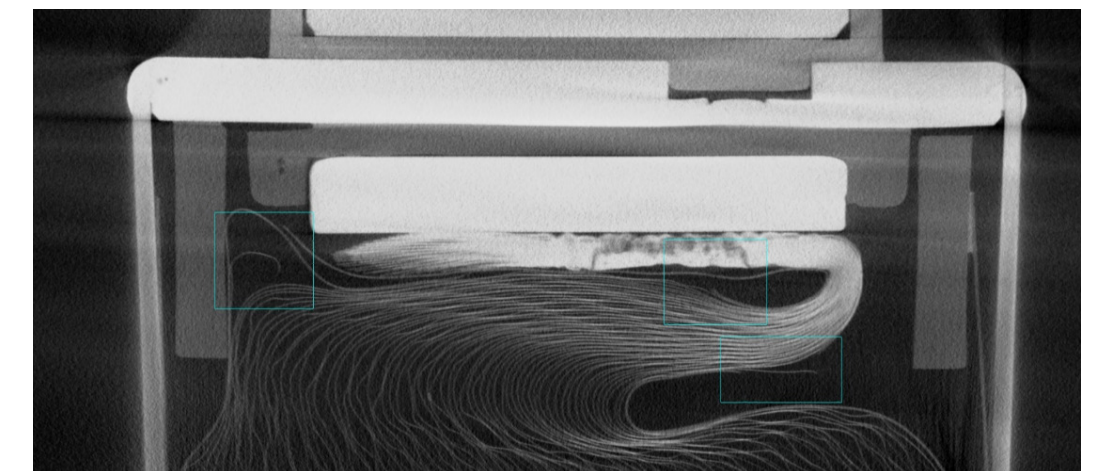
Electrode inspection

- Broken electrode detection
- Folded electrode detection



Welding inspection

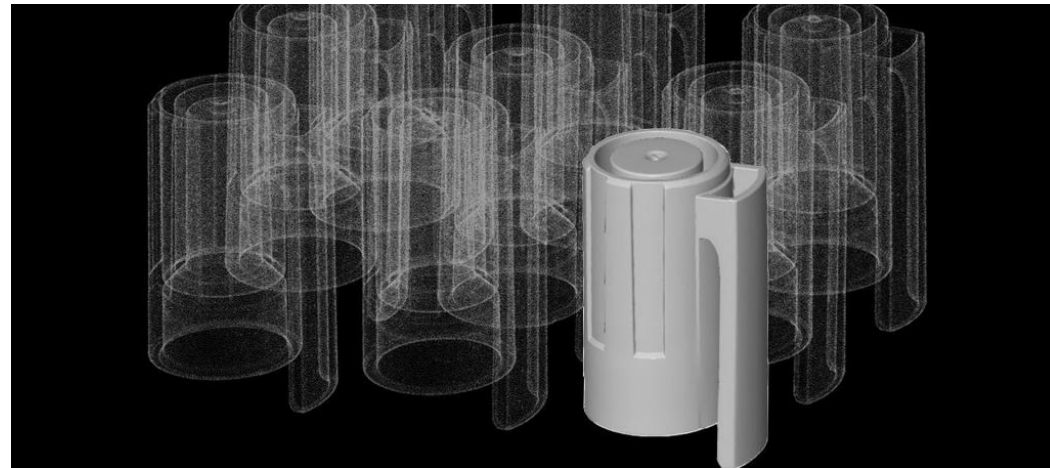
- Volume and max size of each welding pore
- Porosity of welding region



Tab defect inspection

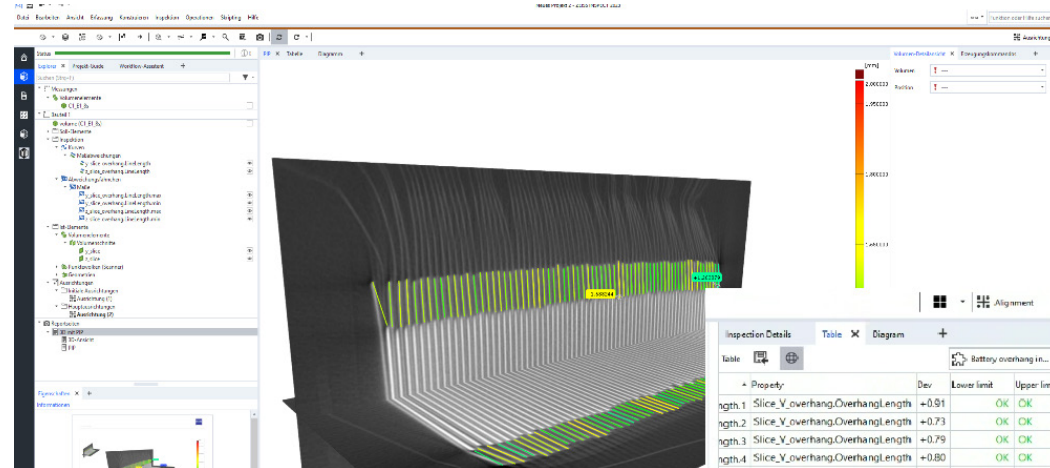
- Broken tab detection
- Tab intrusion defect detection

Value proposition of ZEISS software solution



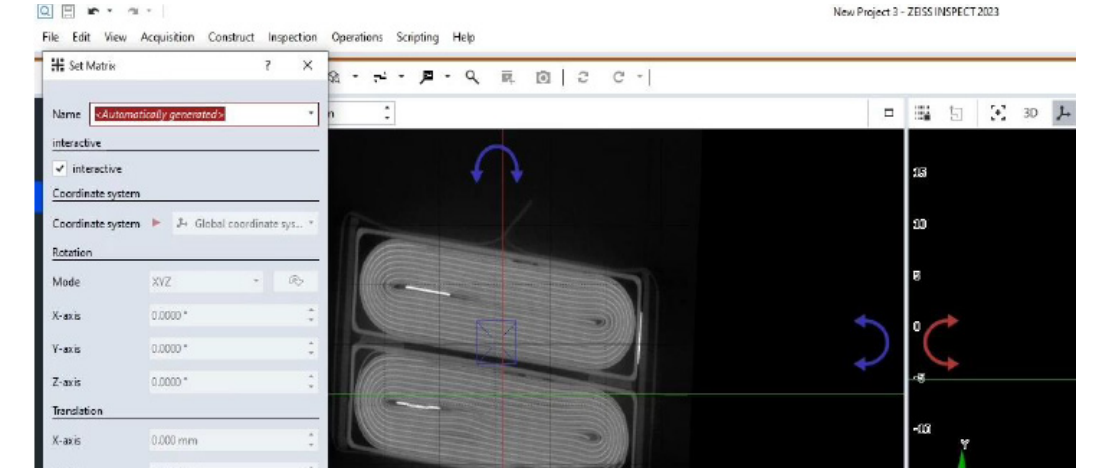
Easy to separate batch scanning data

- Automated volume separation into individual volumes for one-time scanning of several battery cells



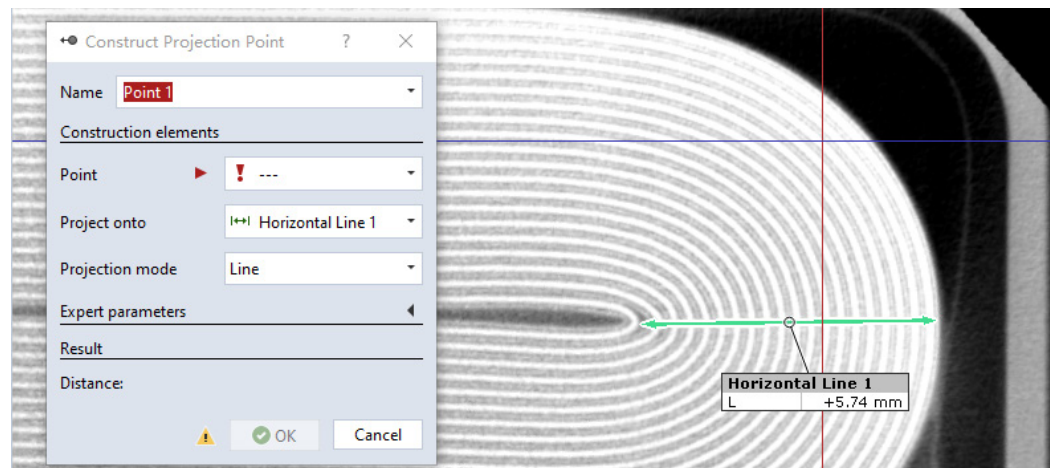
High efficiency by automatic analysis

- Fully automatic detection of battery particle defect and electrode overhang measurement by using AI model



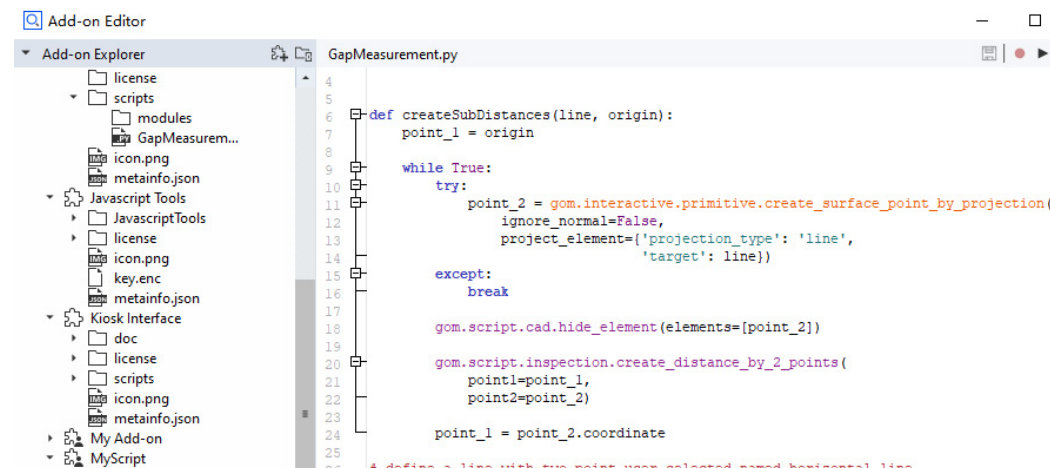
One-click translation and rotation

- One-click function for rotating screen registration, angle displacement registration, and automatic script registration



Standardizable analysis process

- Users can define the software operation steps and standardize the analysis process for repeating tasks



Easy to customize by secondary development

- By Python script interface, users can freely program and develop new functions



Visualized data statistics

- Users can get data statistics of the comparisons and trends of different inspection projects

Recommended portfolio

Powerful battery CT inspection data analysis software

ZEISS INSPECT X-Ray

Data type	Volume data
Customer segment focus	All
Application focus	<ul style="list-style-type: none">• Visual inspection• Metrology• Defect detection• Reporting
Corresponding hardware for data acquisition	ZEISS CT systems (METROTOM 1, METROTOM 6 scout, VoluMax 9 Titan, other portfolio to be further implemented)
Hardware-agnostic data analysis	Yes
Special functions	<ul style="list-style-type: none">• Multiview• Region of Interest• Batch scan
Most important Apps	<ul style="list-style-type: none">• ZADD (AI defect detection)• De-Warp• Cavity number recognition



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Sales & Service
Organizations

63

Quality
Excellence
Centers

11

Locations

245

Sales Partners
Worldwide

Global Metrology Network

Our global service network provides easy access to ZEISS expertise around the world. We use local teams to ensure a swift response and reduced downtime. Make your operations even more secure and reliable with ZEISS.

Find your perfect solution today.
Contact our global experts.

