Application Note BATT1009

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BATT1009 - Verification of Winding Misalignment and Anode Overhang Analysis for Lithium-Ion Battery Winding Body

Introduction

To prevent abnormal heating in lithium-ion battery cells, it is important to verify the misalignment of winding and assess the anode overhang in the winding body during the manufacturing process. In these assessments, two-dimensional X-ray fluoroscopes are generally used

However, this only yields assessments from a single planar direction and does not allow for assessments of entire samples in three dimensions. X-ray CT allows the state of the insides of samples to be observed in a non-destructive manner. It also enables length measurements of entire samples and quantitative assessments of the shape of each material using analysis software.

Non-destructive imaging

- **Analysis:** Whole battery
- **Analysis method:** VGSTUDIO MAX
- **Use:** Quality assurance
- **Analyzed materials:** 18650-type Lithium-ion batteries
- **Instrument:** CT Lab HV

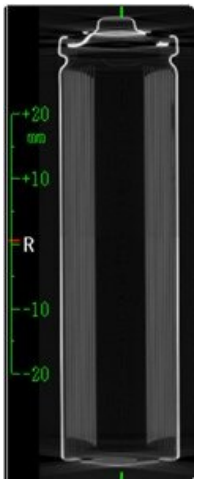

Figure 1: Cross-section image

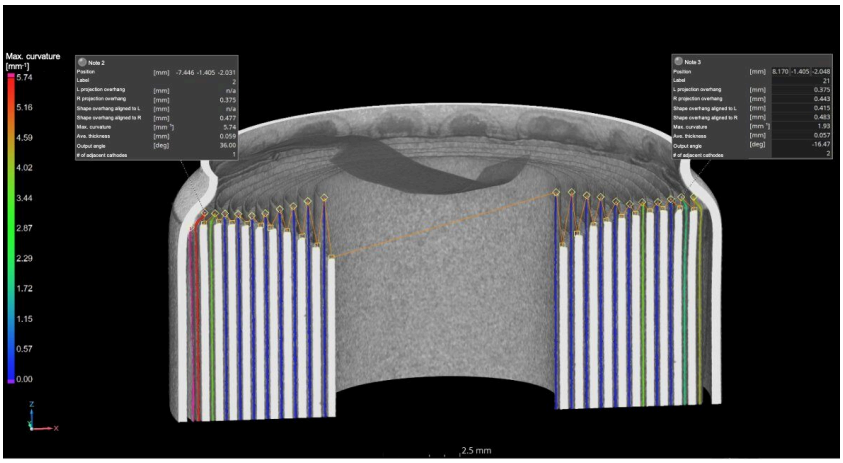

Figure 2: Anode overhang analysis

Results

A CT scan was taken of the entirety of an 18650-type lithium-ion battery. Anode overhang analysis was then performed. This made it possible to verify the presence of considerable misalignment of winding between the interior and exterior of the winding body, as well as a high curvature on the anode outside of the battery cell. A review of calendaring conditions and enclosing size of the winding body, etc. can be examined based on these results.

Related products

CT Lab HV

High-resolution industrial X-ray CT scanner for small to large samples