New Energy Battery Coating Detection Method

Can a Canny algorithm detect a defect on lithium-ion battery electrodes?
Multiple requests from the same IP address are counted as one view. Aiming to address the problems of uneven brightness and small defects of low contrast on the surface of lithium-ion battery electrode (LIBE) coatings, this study proposes a defect detection method that combines background reconstruction with an enhanced Canny algorithm.

Can surface defect detection system improve the production quality of lithium battery?
The application results show that the surface defect detection system of lithium battery can accurately construct the three-dimensional model of lithium battery surface and identify the defects on the model,improving the production quality and efficiency of lithium battery.

How to qualify an automated defect detection for battery electrode production?
To qualify an automated defect detection for battery electrode production as well as to gain as much insight as possible into the processes leading to these defects and their influence on electrode performance,the best parameters for the detection as well as a good defect categorization must be developed.

What are coating defects on lithium ion batteries?
As a result of these factors, coating defects such as scratches (SC), bright spots (BS), dark spots (DS), metal leakage (ML), particles (PA), and decarburization (DE) may appear on the surface of the battery electrode during the coating process, as shown in Figure 2. Figure 1. Coating process for LIBEs. Figure 2. Types of coating defects on LIBE.

Can LIBE coating defects be detected online?
The proposed method is suitable for the online real-time defect detectionof LIBE coating defects in actual lithium-ion battery industrial production.

How to identify electrode coating defects?
In order to identify electrode coating defects,an automated optical defect detection system(type ISRA Vision SMASH) was used. This system consists of two LED arrays and two line scan cameras with 8192 pixels each to inspect the entire coating width with a real pixel size of 35 µm × 37.5 µm.

The application provides a new energy battery module glue pressing area industrial CT detection method, a system and a medium, wherein the battery module comprises a battery ...

Edge detection is a key step for the online vision measurement of lithium battery coating (LBC). However, as the vibration and rectification in LBC production, the virtualization and curling of edges could occur. In order to improve the accuracy and efficiency of on-line measurement of LBC, this paper proposed a staged edge

location method according to the production ...

Batteries 2023, 9, 111 4 of 16 Figure 2. Detection filters and their effect on noise (phantom defects) and real defects. 3. Results During the investigation of a high number of different ...

In order to ensure the safety and reliability of NEV batteries, fault detection technologies for NEV battery have been proposed and developed rapidly in last few years (Chen, Liu, Alippi, Huang, & Liu, 2022) particular, fault detection methods based on machine learning using information extracted from large amounts of new energy vehicle operational data have ...

In this context, the color-coding technique serves as a universal method for monitoring the health status of LIBs, offering a promising solution for scalable and cost ...

The architecture of YOLO[³²] is based on a) model backbone, b) model neck, and c) model head. a) Model backbone extracts the important features from the given input image.

The general detection concept is based on brightness differences in the pictures of the coating, which are filtered by the detection algorithm. The defects are categorized ...

The stator of a flat wire motor is the core component of new energy vehicles. However, detecting quality defects in the coating process in real-time is a challenge. Moreover, the number of defects is large, and the pixels of ...

Battery electrode coating is a critical process in the manufacturing of batteries, as it affects the performance, efficiency, and quality of the final product. Electrode coating involves the application of a slurry onto a ...

When manufacturing battery cells, various defects can occur that require detection so the product can be removed before shipping. Microscopic cracks can occur in the electrode materials or the separator, ...

The European Council for Automotive R& D has set targets for automotive battery energy density of 800 Wh ... 3.2.2 TR Detection Methods. In addition to balancing voltage ...

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