Correct detection method for new energy batteries

Can model-based fault detection be used in battery management system?

In this paper,a novel model-based fault detection in the battery management system of an electric vehicle is proposed. Two adaptive observers are designed to detect state-of-charge faults and voltage sensor faults,considering the impact of battery aging.

What is the diagnostic approach for battery faults?

As electric vehicles advance in electrification and intelligence,the diagnostic approach for battery faults is transitioning from individual battery cell analysis to comprehensive assessment of the entire battery system. This shift involves integrating multidimensional data to effectively identify and predict faults.

What are the analysis and prediction methods for battery failure?

At present,the analysis and prediction methods for battery failure are mainly divided into three categories: data-driven,model-based,and threshold-based. The three methods have different characteristics and limitations due to their different mechanisms. This paper first introduces the types and principles of battery faults.

Can a battery cell anomaly detection method prevent safety accidents?

Therefore,timely and accurate detection of abnormal monomers can prevent safety accidentsand reduce property losses. In this paper,a battery cell anomaly detection method is proposed based on time series decomposition and an improved Manhattan distance algorithm for actual operating data of electric vehicles.

How to detect faults in a battery?

Different fault detection approaches based on model,signal-processing,or knowledge can be applied for the battery. The model-based approaches consider an electrochemical model or an equivalent circuit model,to detect faults.

Why is voltage anomaly important in battery anomaly detection?

Many existing studies have shown that when there are various abnormal faults in the battery, the voltage of the battery exhibits more pronounced fluctuations compared to other data during abnormal conditions. Therefore, voltage anomaly is an extremely important fault indicator in battery anomaly detection.

As an essential component of the new energy vehicle battery, current collectors affect the performance of battery and are crucial to the safety of passengers. The significant differences in shape and scale among defect types make it challenging for the model detection of current collector defects. In order to reduce application costs and conduct real ...

This paper proposes a novel network structure for power battery anomaly detection based on an improved TimesNet. Firstly, the original battery data undergo ...

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Composition of high voltage equipment for new energy vehicles 2.1. Power Battery Pack. ...

Currently, many traditional energy sources, such as oil, natural gas, and coal, are accelerating global climate change, posing serious challenges to the sustainable development of energy [1], [2] pared with traditional energy storage facilities, lithium-ion batteries (LIBs) have the advantages of high energy density, high efficiency, longer lifespan, and less pollution, showing ...

The current research on SOH estimation at home and abroad mainly includes model-based, data-driven, and fusion technology prediction methods. Model-based methods primarily fit the external characteristics of the battery through electrochemical, equivalent circuit, or empirical models, and then utilize filtering methods for parameter identification to achieve ...

Initially, a wavelet threshold denoising algorithm is used to effectively remove voltage data noise while retaining fault characteristics. Subsequently, an early fault warning ...

This paper introduces a new energy battery active-passive hybrid binocular intelligent inspection system, using structured light and laser line-scan instruments to acquire battery surface image information. Based on the existing 3D reconstruction technology, the active-passive hybrid binocular system is designed. In order to reduce the interference of multiple factors, the 3D ...

The existing diagnosis methods for TR caused by overcharging in LIBs usually involve feature measurements based on voltage, gas, or cell temperature [[10], [11], [12]] terms of voltage-based detection, Zhong et al. [13] conducted thermal runaway tests on 18,650 batteries, indicating that the drastic voltage drop occurs between 127 and 409 s before ...

We mainly study the detection of arc faults in the direct current (DC) system of lithium battery energy storage power station. Lithium battery DC systems are widely used, but traditional DC protection devices are unable to achieve adequate protection of equipment and circuits. We build an experimental platform based on an energy storage power station with ...

International Journal of Smart Grid and Clean Energy . A new concept to improve the lithium plating detection sensitivity in lithium-ion batteries . WMG, The University of Warwick, Coventry CV4 7AL, United Kingdom . Abstract Lithium plating significantly reduces the lifetime of lithium-ion batteries and may even pose a safety risk in the form

The DETR model is often affected by noise information such as complex backgrounds in the application of defect detection tasks, resulting in detection of some targets is ignored. In this paper, AIA DETR model is proposed by adding AIA (attention in attention) module into transformer encoder part, which makes the model pay more attention to correct defect ...

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