Battery high voltage abnormality

Why is voltage abnormality a problem in battery management system?
Furthermore,voltage abnormalities imply the potential occurrence of more severe faults. Due to the inconsistency in the voltage of the battery pack,when the battery management system fails to effectively monitor the individual voltages of power battery cells,the cell with the lowest voltage will experience over-discharge first.

Can we predict abnormal power battery voltages early?
The voltages of these cells show an expanding trend of anomalies,and the MRE between all predicted and actual voltages is 0.155%. This indicates that the proposed method can achieve early predictionof abnormal power battery voltages. Figure 9. Prediction results of all battery cell voltages of the faulty vehicle before the fault occurred. 5.2.

How can we diagnose anomalies in battery voltage?
The accuracy and timeliness of the predictions are validated through a comprehensive evaluation and comparison of the forecasted voltages. To diagnose anomalies in battery voltage,the paper proposes a fault diagnosis methodthat combines the Isolation Forest and Boxplot techniques.

What causes a voltage fault in a battery pack?
The voltage fault within battery pack is often caused by inconsistency in cells. By applying a certain detection threshold,the cell with abnormal voltage can be detected at the beginning of abnormity using the proposed method,which has vital significance for the future prognosis and safety management of the battery fault. 4.2.

How can a cell with abnormal voltage be detected?
By applying a certain detection threshold,the cell with abnormal voltage can be detected at the beginning of abnormity using the proposed method,which has vital significance for the future prognosis and safety management of the battery fault. 4.2. The security management method and discussion

What is a voltage abnormality degree for battery safety issue detection?
A voltage abnormality degree is defined for battery safety issue detection. Detecting battery safety issues is essential to ensure safe and reliable operation of electric vehicles (EVs). This paper proposes an enabling battery safety issue detection method for real-world EVs through integrated battery modeling and voltage abnormality detection.

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batteries in the ...

Battery fault diagnosis is essential for ensuring safe and reliable operation of electric vehicles. In this article, a novel battery fault diagnosis method is presented by combining the long short-term memory recurrent neural network and the equivalent circuit model.

From the detection results and the voltage variation trajectories of cells, it can be concluded that the detected abnormality is a rapid descent of voltage caused by the battery pack that is discharged with a high rate current in a low voltage stage. This kind of improper behavior that the E-scooter operates in the extreme environment may ...

The experimental results show that the hybrid model proposed in this study outperforms the state-of-the-art techniques such as informer and transformer in voltage fault prediction by achieving MAE, MSE, and MAPE metrics of 0.009272%, 0.000222%, and 0.246%, respectively, and maintains high efficiency in terms of the number of parameters and runtime.

Aiming at the issue that the voltage abnormality of EVs cannot be effectively identified in the early stage, this paper proposes a diagnostic method of voltage abnormality in ...

Abnormalities in individual lithium-ion batteries can cause the entire battery pack to fail, thereby the operation of electric vehicles is affected and safety accidents even occur in severe cases. Therefore, timely and accurate detection of abnormal monomers can prevent safety accidents and reduce property losses.

We generate the largest known dataset for lifetime-abnormality detection, which contains 215 commercial lithium-ion batteries with an abnormal rate of 3.25%. Our method can accurately identify all abnormal batteries in the dataset, with a false alarm rate of only 3.8%. The overall accuracy achieves 96.4%.

Meanwhile, Zhang et al. [35] proposed a high sampling rate-based battery voltage fault diagnosis method that predicts and diagnoses the voltage abnormality by building a neural network model and analyzing driving behavior. Moreover, wavelet neural and self-attentive networks are also used for fault diagnosis for lithium-ion batteries. Wavelet neural network ...

After combing the common faults of the battery management system, using the basic structure of RBF neural network and the advantages of the reduced clustering algorithm, ...

Numerous studies highlight that voltage abnormalities can precipitate various battery faults, broadly categorized into four types: overvoltage, undervoltage, rapid voltage ...

Aiming at the issue that the voltage abnormality of EVs cannot be effectively identified in the early stage, this paper proposes a diagnostic method of voltage abnormality in real-world vehicles based on the NCOV. The study identifies the abnormal cell of the battery system by calculating the NCOV in the cell voltage. Firstly,

the study pre ...

After combing the common faults of the battery management system, using the basic structure of RBF neural network and the advantages of the reduced clustering algorithm, for a single power battery, the power battery power abnormality detection scheme based on the improvement of reduced clustering algorithm is proposed, and the power battery abno...

Similarly, Shang et al. [17] proposed a real-time multi-fault diagnosis method based on improved sample entropy. Different kinds of early battery failures may be detected and anticipated by detecting the changed sample entropy of the battery voltage sequence in the moving window. Wang et al. [18] presented an in-situ voltage fault diagnostic ...

My 2015 Acadia with 40,000 km.has a battery voltage of 12.6 when started, with the voltage rising to 15 to 15.5 after a few minutes. In summer, this voltage stays in the 15V region as I drive for perhaps up to an hour or more, but in fall or winter it soon drops to 12.6 to 13.5 volts over the first few minutes of driving and stays there.

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