Battery pack voltage detection method

How to detect abnormal cell voltage in a battery pack?
By applying the designed coefficient,the systematic faults of battery pack and possible abnormal state can be timely diagnosed. 2) The t-SNE technique,The K-means clustering and Z-score methodsare exploited to detect and accurately locate the abnormal cell voltage.

What is the fault diagnosis voltage for a battery pack?
For the upper-limit voltage of the battery pack,the fault diagnosis voltage was 410 Vwhen the actual voltage of the battery pack recorded by the sensor was 450 V. The fault level for this condition is denoted No. I.

How to detect a faulty battery pack?
The systematic faults of battery pack and possible abnormal state can be diagnosed by one coefficient. For the voltage abnormality,an accurate detection and location algorithm of the abnormal cell voltage are attained by combining the data analysis method and the visualization technique.

What is battery voltage fault diagnosis method?
A battery voltage fault diagnosis method is proposed by using the mutual informationin this work,which can identify faulty cells timely. Specifically,the voltage of battery pack in an electric vehicle is collected,and the mutual information of voltages between each paired-cells is calculated.

Can a recursive least square algorithm be used to diagnose a battery pack?
Tian et al. (2020) developed a sensor fault diagnosis algorithm using the equivalent models and particle filters. Then this diagnosis was employed to test the battery pack using the recursive least square algorithm. The results show that the algorithm proposed in this study can be used to identify the diagnosis of the battery pack.

Which method is suitable for detecting faults in lithium-ion batteries?
The proposed method is more suitable for handling constant or slow-varying faults. Three sliding mode observers and three filters are designed, to realize fault diagnosis, isolation, and estimation in the lithium-ion battery voltage, current, and temperature sensors.

A low-redundancy battery pack diagnosis method is proposed to address the data redundancy issue in electric vehicle battery pack fault detection of ISC and VC. The fault diagnosis efficiency can be improved dramatically if the fault diagnosis process is executed only in abnormal cells. Via extracting a novel extreme voltage sequences, a low ...

To tackle the issues described above, this work focuses on three LiB pack faults (i.e., sensor fault, connection fault and ESC fault), and proposes a graph-based method to ...

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battery pack with parallel-series hybrid connections @article{Yue2020InternalSC, title={Internal short circuit detection for lithium-ion battery pack with parallel-series hybrid connections}, author={Pan Yue and Xuning Feng and Zhang Mingxuan and Xuebing Han and ...

To tackle the issues described above, this work focuses on three LiB pack faults (i.e., sensor fault, connection fault and ESC fault), and proposes a graph-based method to locate the anomaly voltage sensors and detect the fault types of LiB packs. More specifically, the graph-based method takes advantages of deep autoencoder and the structure ...

In order to suppress leakage current caused in the traditional multi-cells series Li-ion battery pack protection system, a new battery voltage transfer method is presented in this paper, which ...

Rapid detection and accurate diagnosis of voltage fault are crucial for ensuring the safety of battery packs. A battery voltage fault diagnosis method is proposed by using the mutual information in this work, which can identify faulty cells timely.

Descriptor proportional and derivate observer systems are applied for sensor diagnosis, based on electrical and thermal models of lithium-ion batteries, which can realize the real-time estimation of voltage sensor fault, current sensor fault, and temperature sensor fault.

CV time (T cv)Typically, battery charging is performed using the protocol of constant current (CC) or constant power (CP) charging followed by constant voltage (CV) charging 61,62.The time taken ...

The battery pack voltage of lithium iron phosphate battery packs ranges from 275 to 401.5 V. Considering the safety during the experiments, a 315-361.5 V battery pack voltage was adopted. For the upper-limit voltage of the battery pack, the fault diagnosis voltage was 410 V when the actual voltage of the battery pack recorded by the sensor ...

Zhang et al. and Pan et al. proposed a method for diagnosing ISC faults in Li-ion battery packs based on symmetric loop topology, which performs fault detection and localization through the distribution of short-circuit currents in the symmetric loop topology (Pan et al., 2020, Zhang et al., 2018). However, the method only applies to parallel batteries and requires single ...

This study investigates a novel fault diagnosis and abnormality detection method for battery packs of electric scooters based on statistical distribution of operation data that are stored in the cloud monitoring platform. According to the battery current and scooter speed, the operation states of electric scooters are clarified, and the ...

However, when voltages of individual cells in a lithium-ion battery pack are not provided, the effect of internal short circuit in the battery pack is not readily observed in whole terminal ...

Descriptor proportional and derivate observer systems are applied for sensor diagnosis, based on electrical and thermal models of lithium-ion batteries, which can realize the real-time estimation of voltage sensor fault, ...

First, a robust locally weighted regression data smoothing method is proposed that can effectively remove noisy data and retain fault characteristics. Second, an ordinary-least-squares-based voltage potential ...

Due to the insignificant anomalies and the nonlinear time-varying properties of the cell, current methods for identifying the diverse faults in battery packs suffer from low ...

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