Battery pack quality detection method

How to identify a faulty battery pack?
By analyzing the abnormalities hidden beneath the external measurement and calcg. the fault frequency of each cell in pack, the proposed algorithm can identify the faulty type and locate the faulty cell in a timely manner. Exptl. results validate that the proposed method can accurately diagnose faults and monitor the status of battery packs.

How to diagnose a battery pack inconsistency?
Considerable research efforts have been devoted to the diagnosis and evaluation of battery pack consistency. To diagnose faults and provide early warning of the inconsistencies, existing methods can be mainly divided into model-based and data-driven methods .

Can a discrete Fréchet algorithm detect faulty battery packs?
And adaptive thresholds are set for the detection and localization of faulty cells. To the best of our knowledge, the discrete Fréchet algorithm is presented for the first time in the field of faulty detection of battery packs. The remainder of this paper is organized as follows.

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.

Are model-based fault diagnosis methods useful for battery management systems?
A battery management system (BMS) is critical to ensure the reliability, efficiency and longevity of LIBs. Recent research has witnessed the emergence of model-based fault diagnosis methods for LIBs in advanced BMSs. This paper provides a comprehensive review on these methods.

Is KPCA a reliable method for short-circuit detection of lithium-ion batteries?
However, the portability of the method is poor. The authors in ref (26) use the Kernel Principal Component Analysis (KPCA) approach to train a nonlinear data model for internal short-circuit detection of lithium-ion batteries. However, the method requires a large amount of historical data for offline training.

Internal short circuit detection for battery pack using equivalent parameter and consistency method. Journal of Power Sources 294, 272-283 (2015). Article ADS CAS Google Scholar

The inconsistencies in battery packs were detected at high state of charge (SOC) levels at the end of charging. This method can evaluate the consistency of battery packs online based on EV operation data to monitor battery safety and provide detailed information for ...

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In order to verify the feasibility and performance of the detection and diagnosis method, several types of fault detection and diagnosis experiments are set up, which use a temperature chamber, charge equipment and several 50Ah LFP batteries, as shown in Fig. 3. The frequency of measurement is 10 Hz, and the voltage accuracy is 0.1 %. In the experiments, ...

In this paper, an initial microfault diagnosis method is proposed for the data of electric vehicles in actual operation. First, a robust locally weighted regression data smoothing method is proposed that can effectively remove ...

First, the difference sample entropy (DSE) rapidly detects suspicious battery faults to ensure high FDR. Then, the correlation coefficient method precisely diagnoses suspicious faults to significantly improve DAR. Finally, the deep neural network is used to quantify the defined state of fault (SOF) for the first time. The SOF can indicate the ...

Liu et al. [160] applied the structural analysis theory for a battery pack to detect and isolate the various sensor faults and cooling system faults. A comparison is performed between the ...

This article will introduce several common lithium battery pack quality inspection methods, including visual inspection, electrical performance test, safety assessment, etc., to ...

To effective and accurate identification of failures for the battery, Schmid et al. (2021) developed a fault diagnosis method by using the fuzzy clustering algorithm. In this algorithm, the switches of reconfigurable battery system ...

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