China New Energy Battery Leakage Detection

The new energy vehicle system is in the initial stage of application, so the probability of fault is greater. Therefore, its reliability urgently needs to be improved. In order to improve the fault diagnosis effect of new energy vehicles, this paper proposes a fault diagnosis system of new energy vehicle electric drive system based on improved machine learning and ...

In order to reduce application costs and conduct real-time detection with limited computing resources, we propose an end-to-end adaptive and lightweight defect detection model for the battery current collector (BCC), DGNet.

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 accuracy and an inability to precisely determine the type of fault, a method has been proposed that utilizes the Random Forest algorithm (RF) to select key factors influencing voltage, optimizes model ...

Inspired by this, this paper proposes an improved Euclidean distance method and a cosine similarity method for online diagnosis of multi-fault in series connected battery packs, and compares them with the correlation coefficient method. The ...

Inspired by this, this paper proposes an improved Euclidean distance method and a cosine similarity method for online diagnosis of multi-fault in series connected battery packs, and compares them with the correlation coefficient method. The voltage sensor positions are arranged according to the interleaved voltage measurement design.

Battery thermal runaway is a critical factor limiting the development of the battery industry. Battery electrolytes are flammable, and leakage of the electrolyte can easily trigger thermal runaway. Currently, the detection of leakage faults largely relies on sensors, which are expensive and have poor detection stability. In this study, firstly, the leakage behavior of lithium-ion batteries is ...

Testing for leak tightness requires some form of leak detection. Although various leak detection methods are available, helium mass spectrometer leak detection (HMSLD) is the preferred and is being used broadly to ensure low air and water permeation rates in cells.

It is well-known that metal-oxide semiconductors (MOS) have significant gas sensing activity and are widely used in harmful gas monitoring in various environments. With the rapid development of new energy vehicles, the monitoring of the gas composition and concentration in LIB has become an effective way to avoid safety problems. However, the ...

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As a result, China"s new energy vehicle market has ranked first in the world since 2015. To systematically solve the key problems of battery electric vehicles (BEVs) such as "driving range anxiety, long battery charging time, and driving safety hazards", China took the lead in putting forward a "system engineering-based technology system architecture for BEVs" and ...

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Herein, sensors based on rare-earth Nd-doped SnO 2 nanofibers are reported for detecting DMC vapor in LIB. The excellent sensitivity (distinct response to 20 ppb DMC), high response (~38.13-50 ppm DMC), and ...

Additionally, sensors are widely used by researchers to monitor the composition of electrolytes in batteries. To improve the performance of sensors in detecting electrolyte composition, researchers often optimize the structure design of the components [18, 19], adjust the thickness of the semiconductor layer [20, 21], and implant functional receptors ...

Uncovering subtle battery behavior changes for improved fault detection. Specific focus on multidimensional signals to enhance safety strategies. Future trends in battery fault diagnosis driven by AI and multidimensional data.

As one of the ideal energy storage systems, lithium-ion battery ... These results showed that our research is promising in the preparation of high-performance LIB leakage detection sensors with high responsiveness and rapid detection capabilities, which is important for monitoring the leakage of LIB electrolyte and improving the safety of LIB. Therefore, our ...

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With a swift detection time of 0.073 seconds per image, the model meets the stringent requirements for accuracy and real-time performance in identifying battery collector tray defects within real-world industrial environments.

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