Consistency of lithium battery pack

How to evaluate lithium-ion battery pack consistency?
Consistency evaluation features can be extracted online. An improved fuzzy clustering algorithm is developed to evaluate pack consistency. The proposed methods are validated by nine months of electric vehicle data. Consistency is an essential factor affecting the operation of lithium-ion battery packs.

Are grouped lithium-ion batteries consistent?
Qian et al. evaluated the consistency of grouped lithium-ion batteries based on characteristic peaks of incremental capacity curves. This method can quickly describe the consistency issue of battery packs and can be applied during the charging process of battery packs.

Why is consistency important in battery packs?
The evaluation of consistency in battery packs is therefore crucial. The initial consistency concerns the differences between batteries,even for those manufactured in the same batch .

How do you evaluate the pack consistency of a battery?
In Ref. ,the voltage variation rateis employed to evaluate the pack consistency. Model-based: These approaches employ filters or parameter identification algorithms to estimate the battery parameters. Then,the pack consistency is evaluated by the parameter distribution.

What is the SOC consistency of battery pack?
The SOC consistency of battery pack can be employed as evaluation index representing the battery consistency level. As is known,the SOC-OCV function is a representative for a particular battery,and is generally a nonlinear monotone function between SOC and OCV for all lithium-ion batteries.

Does capacity consistency matter in battery pack performance testing & maintenance?
The results show that the proposed method can accurately diagnose the capacity consistency of the tested battery pack,which provides a basis for battery pack performance testing and maintenance. The capacity inconsistency among commercial lithium-ion battery packs is an important factor affecting their service life.

This study proposes an evaluation method for the consistency of lithium-ion battery packs in EVs based on the Mahalanobis-Taguchi system (MTS). First, a Douglas-Peucker (D P) algorithm was developed to compress high-dimensional cell voltage data, which reduced the feature extraction time by 81.64 %. Next, the consistency features were extracted based on ...

This paper starts from the consistency evaluation method based on voltage curve similarity and determines the characterization parameters that can characterize the ...

Lithium-ion batteries (LIBs), the main pillar of energy storage technology for electric vehicles (EVs), suffer

from performance degradation during usage and storage in terms of capacity and power [1].Typically, they reach their end-of-life when their remaining capacity reaches 80% of the nominal capacity [2] or their internal resistance reaches 200% of that of ...

This article proposes an information analysis-based multiple adaptive forgetting factors (FFs) recursive least squares (IA-MAFF-RLS) method to identify model parameters of ...

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In this work, a battery pack consistency evaluation approach is proposed based on multi-feature information fusion. Ohmic resistance, polarization resistance and open circuit voltage are identified as feature parameters from electric vehicle operation data.

Consistency is an essential factor affecting the operation of lithium-ion battery packs. Pack consistency evaluation is of considerable significance to the usage of batteries. Many existing methods are limited for they are based on a single feature or can only be implemented offline. This paper develops a comprehensive method to evaluate the pack consistency based ...

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