Lithium battery cell grouping and pairing method

How does a lithium-ion battery grouping process work?
In a typical lithium-ion battery grouping process, the charging and discharging data are collected by formation cabinets and sent to host computers for temporary storage. Each host computer manages a formation cabinet group and controls the behaviors of all cabinets in the group.

Why is grouping important for lithium-ion power battery packs?
The service life,safety,and capacity of lithium-ion power battery packs relies heavily on the consistency among battery cells. Grouping is an effective procedure to improve consistencyby screening cells with similar performance and assembling them into an identical group.

How can battery grouping be achieved?
Battery grouping can be achieved via clustering techniquesbased on characteristics like static capacity,internal resistance etc. The dynamic characteristics-based method considers the battery performance during the entire charging-discharging process and has become one of the most promising grouping method.

Which sorting method is used for lithium ion batteries?
A comparative study of sorting methods for lithium-ion batteries A novel grouping method for lithium iron phosphate batteries based on a fractional joint Kalman filter and a new modified K-means clustering algorithm M.S.H. Lipu, M.A. Hannan, A. Hussain, M.M. Hoque, P.J. Ker, M.H.M. Saad, A. Ayob

What is a distributed multisource data fusion based battery grouping approach?
To solve these problems,we propose a distributed multisource data fusion based battery grouping approach. The proposed approach designs an effective network structure for multisource data fusion,and a self supervised scheme for feature extraction from both static and dynamic multisource data.

What is battery grouping?
Essentially,battery grouping aims to categorize battery cells according to their diversities in various characteristics. These characteristics mainly comprise static capacity,voltage,internal resistance (Li,2014) and thermal behavior (Fang et al.,2013). Battery grouping can be achieved via a similarity analysis of any characteristic above.

In this paper, we propose a cell screening method based on the pre-trained data-driven model by using the multi-source time series data of cells from the battery production process for LIB grouping. Our screening model pre-training on a large unlabeled dataset and fine-tuned on a small labeled dataset to screen cells for better consistency ...

Data-driven methods were introduced to solve real world evaluation problems which does not need accurate

model for complex nonlinear battery systems. In order to reduce ...

A novel grouping method for lithium-ion battery pack considering cell divergence Abstract: The inconsistency between battery monomers are often ignored in the process of battery SOC (State of Charge) estimation, the usual approach is to consider a battery module as a whole, and to obtain the "averaged SOC" by using the method of SOC estimation applied in one cell. In fact, ...

Cell Screening with multi-source time series data for lithium-ion battery (LIB) grouping is a challenging task in the production of LIB pack. Currently, most of these cell screening methods adopt a plain data fusion strategy that does not consider the relationship between different sources in the multi-source time series data.

In this paper, we propose a cell screening method based on the pre-trained data-driven model by using the multi-source time series data of cells from the battery production process for LIB grouping. Our screening model pre-training on a large unlabeled dataset and fine-tuned on a small labeled dataset to screen cells for better ...

DOI: 10.1109/CAC.2017.8243716 Corpus ID: 27036593; A novel grouping method for lithium-ion battery pack considering cell divergence @article{Xiong2017ANG, title={A novel grouping method for lithium-ion battery pack considering cell divergence}, author={Rui Xiong and Liang Lv and Hao Mu}, journal={2017 Chinese Automation Congress (CAC)}, year={2017}, pages={5269-5273}, ...

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Grouping is an effective procedure to improve consistency by screening cells with similar performance and assembling them into an identical group. Battery grouping can be achieved via clustering techniques based on characteristics like static capacity, internal ...

In this paper, we propose a cell screening method based on the pre-trained data-driven model by using the multi-source time series data of cells from the battery ...

Grouping is an effective procedure to improve consistency by screening cells with similar performance and assembling them into an identical group. Battery grouping can be achieved via clustering techniques based on characteristics like ...

In this paper, two approaches are proposed for mitigating the effects of inconsistency, in order to reduce the initial inconsistency, a PFA (principal factor analysis) based screening and...

For cell selection and grouping, prognostics and health management (PHM), ... An online method for lithium-ion battery remaining useful life estimation using importance sampling and neural networks. Appl

Energ, 173 (2016), pp. 134-140. View PDF View article View in Scopus Google Scholar [21] Y. Zhang, R. Xiong, H. He, M.G. Pecht. Long short-term ...

In this paper, the principles of battery model selection, physical meaning and identification method of model parameters, data preprocessing and equal-number clustering method for battery...

Obtaining precise reducer order battery models is a key component in designing lithium-ion battery management systems. In general, with conventional order reduction techniques, low order is followed by low accuracy. To overcome such limitation, this paper presents a frequency-based constructive method to obtain broad-band low-order ...

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To solve these problems, we propose a distributed multisource data fusion based battery grouping approach. The proposed approach designs an effective network structure for multisource data fusing and feature extracting from both static and dynamic multisource data. We apply our approach on real battery modules and record state of health (SOH ...

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