Lithium battery rapid sorting

How does sorting and regrouping a battery affect echelon utilization?
Sorting and regrouping batteries increase the cost of testing and labor,which affects the economy of echelon utilization. In addition,the rationality and accuracy of the sorting and regrouping seriously affect the safety of the echelon utilization and length of the remaining service life.

How are batteries sorted?
Batteries with the same side reaction characteristics are then sorted at the second level according to the life trajectory,capacity,and internal resistance; this is a three-dimensional classification problem. Furthermore,echelon utilization scenarios should be considered for the second level of sorting.

How can big data improve battery sorting efficiency?
For the retired LIBs with available historical data,big data can be analyzed to obtain the sorting criteria. This can greatly improve the sorting efficiency and accuracy and thus significantly reduce the sorting cost. A key technical challenge is accurately extracting the key battery characteristics from massive amounts of historical data.

Should retired lithium batteries be regrouped?
Evaluation of the sorting and regrouping results After retired LIBs are sorted and regrouped, the next key issue is evaluating the rationality of the classification. Regrouped batteries should meet the needs of the echelon utilization scenario and have the longest life.

What should be considered during a battery sorting process?
Typical side reactions that affect battery safety (e.g., lithium plating, SEI film thickening) or typical faults such as internal short circuits should be considered during the sorting process. In addition, predicting the battery life can help with determining the life trajectory of each sorted battery.

Is a fast sorting and regrouping method suitable at the module level?
However, existing sorting methods are generally only suitable at the cell level. To address this issue, a fast sorting and regrouping method is proposed at the module level based on a machine learning algorithm. First, the correlation between the charging curve and the remaining useful capacity of the battery is investigated.

This paper presents a comparative study of five sorting methods for Lithium-ion batteries. The principle of each method and the feather of the sorting parameters are obviously described...

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The invention discloses a lithium battery rapid sorting device and a sorting method, wherein the lithium battery rapid sorting device comprises a conveying unit, a testing unit, a sorting...

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In this study, we propose three novel electrode aging parameters to characterize battery aging behaviors at both electrode level and cell level and develop an electrode aging information-embedded rapid sorting approach based on constant-current charging data.

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For large-scale echelon utilization of LIBs, rapid and accurate sorting can influence the safety and service life of the regrouped batteries, which directly impacts their economic value. Retired LIBs with clear historical data can help realize a comprehensive evaluation of the safety and residual value, reduce testing costs, and ensure accurate ...

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