Energy storage battery grouping principle

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.

How to group used batteries?
Presently,retired batteries are first screened to select usable batteries and then a proper secondary application is choosen according to the battery performance. Here,a complete process for grouping used batteries is proposed including safety checking,performance evaluation,data processing,and clustering of batteries.

How a battery pack is used in energy storage condition?
The battery pack used in energy storage condition contains 6 cells connected in series,and the cells are obtained by using the multi-factor sorting method (the closest to the center point) and obtained by a single capacity factor respectively.

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.

What is distributed battery grouping?
A two-stagedistributed battery grouping scheme that splits the original centralized clustering approach into local clustering and global merging is proposed for consistency and efficiency improvement. These two stages are implemented on edge computing devices and cloud data center respectively.

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Web: https://solarcomplete.co.za/contact-us/
Email: energystorage2000@gmail.com
WhatsApp: 8613816583346