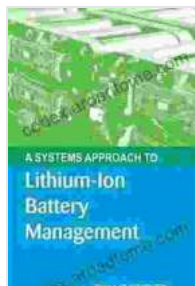


Systems Approach to Lithium-Ion Battery Management



A Systems Approach to Lithium-Ion Battery Management (Artech House Power Engineering)

by Phillip Weicker

★★★★☆ 4.9 out of 5

Language : English

File size : 11884 KB

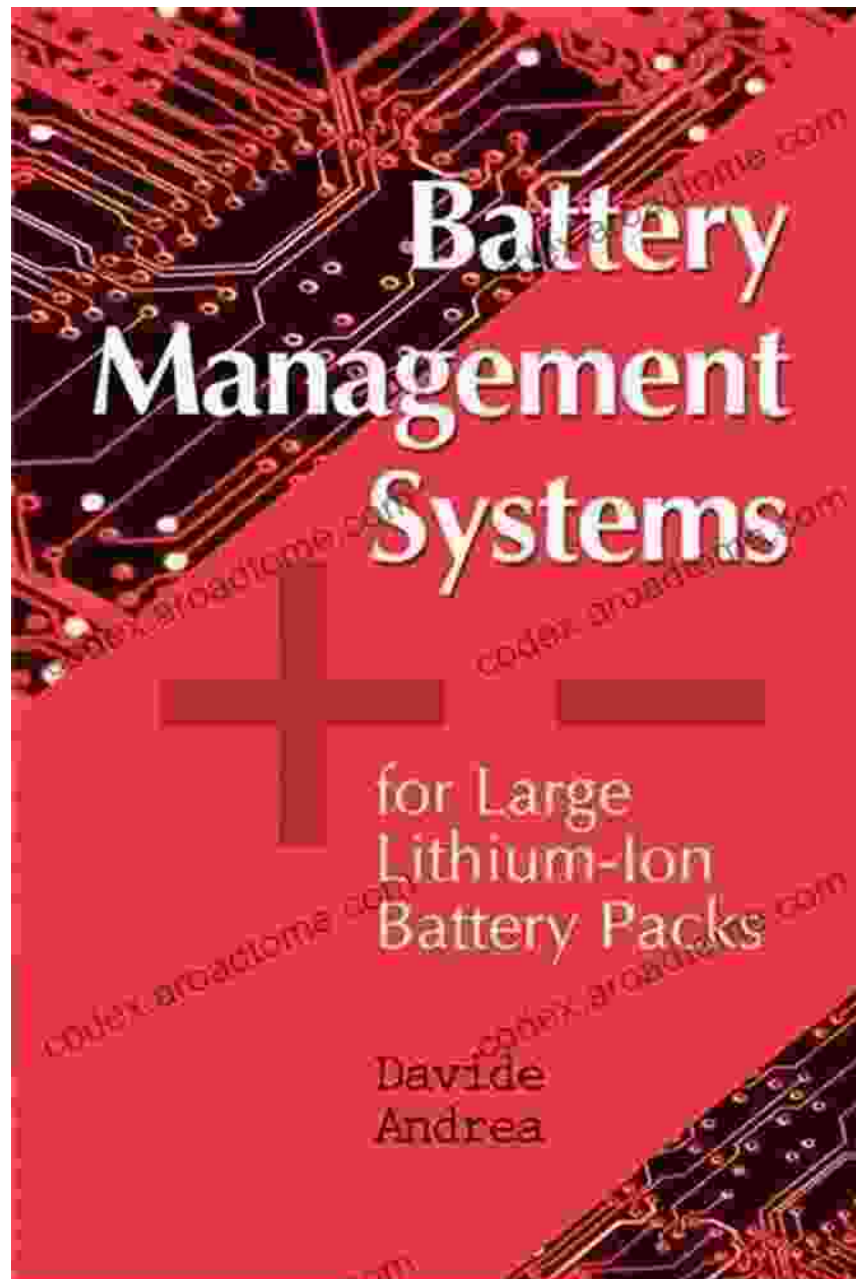
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Enhanced typesetting : Enabled

Print length : 301 pages



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By Daniel J. Gabrisch

Lithium-ion batteries are rapidly becoming the preferred energy storage solution for a wide range of applications, from laptops to electric vehicles. However, these batteries are complex and require careful management to ensure they perform safely and reliably.

In this book, Daniel J. Gabrisch provides a comprehensive systems approach to lithium-ion battery management. This approach considers all aspects of the battery system, from the cell level to the pack level, and provides the information you need to design, develop, and optimize advanced battery systems.

- Covers all aspects of lithium-ion battery management, from cell level to pack level
- Provides a comprehensive systems approach to battery management
- Includes real-world examples and case studies
- Written by a leading expert in the field

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Overview

Lithium-ion batteries are a type of rechargeable battery that uses lithium ions as the active material. They are lightweight, powerful, and have a long cycle life. However, they can also be dangerous if they are not managed properly.

The systems approach to lithium-ion battery management is a comprehensive approach that considers all aspects of the battery system, from the cell level to the pack level. This approach ensures that the battery system is safe, reliable, and efficient.

The Systems Approach

The systems approach to lithium-ion battery management includes the following steps:

1. **Define the system requirements.** The first step is to define the requirements for the battery system. This includes the voltage, capacity, power, and cycle life requirements.
2. **Select the battery cells.** The next step is to select the battery cells that will be used in the system. The cells should be matched to the system requirements and should be from a reputable manufacturer.
3. **Design the battery pack.** The battery pack is the enclosure that holds the battery cells. The pack should be designed to protect the cells from damage and to provide the necessary electrical connections.
4. **Develop the battery management system.** The battery management system (BMS) is the electronic circuitry that controls the battery system. The BMS monitors the battery cells and ensures that they are operating safely and efficiently.
5. **Test the battery system.** The final step is to test the battery system to ensure that it meets the requirements. The testing should include safety tests, performance tests, and environmental tests.

Benefits of the Systems Approach

The systems approach to lithium-ion battery management has several benefits, including:

- **Improved safety.** The systems approach ensures that the battery system is safe and reliable. The BMS monitors the battery cells and prevents them from operating in unsafe conditions.
- **Increased performance.** The systems approach optimizes the performance of the battery system. The BMS ensures that the battery

cells are operating at their optimal voltage and temperature.

- **Extended cycle life.** The systems approach extends the cycle life of the battery system. The BMS prevents the battery cells from being overcharged or overdischarged.
- **Reduced cost.** The systems approach can reduce the cost of the battery system. The BMS can extend the cycle life of the battery cells, which reduces the need for replacement batteries.

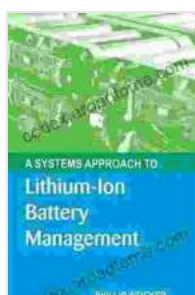
The systems approach to lithium-ion battery management is a comprehensive approach that ensures that the battery system is safe, reliable, and efficient. By following the steps outlined in this book, you can design, develop, and optimize advanced battery systems.

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Free Download your copy of **Systems Approach to Lithium-Ion Battery Management** today and gain the knowledge you need to design, develop, and optimize advanced battery systems.

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