

| | |
|-------------------------|--|
| 1. Record Nr. | UNINA9911018662303321 |
| Autore | Zhu Jiangong |
| Titolo | Alternating Current (AC) Heating for Lithium-Ion Batteries in Electric Vehicles : Heating Principles, Modeling, and Implementation / / by Jiangong Zhu, Ranjun Huang, Haifeng Dai |
| Pubbl/distr/stampa | Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2025 |
| ISBN | 981-9690-71-4 |
| Edizione | [1st ed. 2025.] |
| Descrizione fisica | 1 online resource (364 pages) |
| Altri autori (Persone) | HuangRanjun DaiHaifeng |
| Disciplina | 629.2 |
| Soggetti | Automotive engineering Thermodynamics Heat engineering Heat - Transmission Mass transfer Electric batteries Materials Power electronics Transportation engineering Traffic engineering Automotive Engineering Engineering Thermodynamics, Heat and Mass Transfer Batteries Power Electronics Transportation Technology and Traffic Engineering |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di contenuto | Chapter 1 Low-temperature performance of Lithium-ion batteries for Electric Vehicles -- Chapter 2 Battery Low-temperature degradation mechanisms -- Chapter 3 AC heating theory and principles. |
| Sommario/riassunto | This book provides a comprehensive and innovative exploration of low-temperature AC heating techniques for lithium-ion batteries, |

addressing a critical challenge in electric vehicle (EV) performance. By integrating theoretical insights, experimental validations, and advanced modeling approaches, it offers a systematic framework to understand and optimize battery heating under cold conditions. The book introduces novel methodologies, such as square wave AC heating and impedance-based thermal analysis, which significantly enhance heating efficiency while mitigating degradation risks like lithium plating. With a focus on practical implementation, it also presents cutting-edge solutions for AC heating system design, including integrated charger and self-heating battery pack configurations. The intended readership includes researchers, engineers, and industry professionals in the fields of battery technology, electric vehicles, and thermal management systems. Written at an advanced level, the book bridges the gap between academic research and industrial applications, making it a valuable resource for both theoretical understanding and practical innovation.
