



Methods for Rechargeable Battery Analysis, Monitoring, and Diagnostics

Researchers at Purdue University have developed a novel method for determining key parameters of the electrochemical states of rechargeable batteries, including State of Health (SoH) and State of Charge (SoC). This method utilizes an equivalent circuit model (ECM) that is compatible with Spice simulators and requires low computational demand while maintaining a high level of accuracy, making it ideal for online use. This technology can be integrated into existing battery management systems (BMSs) for improved reliability and stability while also overcoming cost restriction by not requiring one sensor per battery. This technology has applications in both Electric Vehicles and Energy Storage Systems.

Technology Validation

This technology has been validated through testing of the methodology, and the researchers are working to create exemplary implementations of the battery model and parameter extraction algorithm.

Advantages

- Suitable for online use (low computing cost)
- Accuracy of model is competitive with those used in lab applications
- Increased reliability/stability due to accurate estimations of battery status

Applications

- Battery Management Systems
- Electric Vehicles
- Energy Storage Systems

TRL

4

IP Status

Technology ID

2022-JUNG-69554

Category

Automotive & Mobility
Tech/Battery Management &
Charging Technologies
Energy & Power Systems/Energy
Storage

Authors

Byunghoo Jung

View online page



Utility Patent filed 7/18/2022