ALBATROSS

Advanced Light-weight BATteRy systems Optimized for fast charging, Safety, and Second-life applications

NEWSLETTER

November 2024

🔋 ALBATROSS Innovations:

Leading the Charge in Battery Technology ⚡

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This project received funding from the European Union´s Horizon 2020 research and innovation programme under grant agreement No 963580- ALBATROSS

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🔋 Battery Management System ⚙️

We are thrilled to share the latest advancements from the **ALBATROSS project**, developed by our partner **FEV Türkiye**. Our team has been hard at work, and we are proud to highlight several cutting-edge innovations and activities in battery management systems (BMS) for electric vehicles. Here are some of the key breakthroughs:

AI-Powered Algorithms 🤖

The BMS leverages advanced artificial intelligence algorithms to enhance battery health monitoring, fault detection, and diagnostics. These AI algorithms enable the system to operate beyond the limitations of traditional code, significantly improving efficiency and reliability. FEV engineers have developed advanced software functions within the ALBATROSS project, including AI-based estimation algorithms for critical battery parameters such as State of Charge (SoC) and State of Health (SoH).

Cloud Connectivity ☁️

The system features robust cloud connectivity, allowing for real-time data processing and remote monitoring. This connectivity supports advanced battery health tracking and predictive maintenance, ensuring optimal performance and safety.

High Voltage Support ⚡

The hardware architecture of the BMS is designed to support batteries with voltages up to 800 volts. This capability is essential for the next generation of electric vehicles, which require higher voltage systems for improved performance.

Innovative Hardware Design 🛠️

The BMS includes a sophisticated hardware design that enhances packaging efficiency and safety. This design ensures that the system can meet the demands of modern electric vehicles while maintaining high safety standards.

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Battery Management System

Electrochemical Impedance Spectroscopy (EIS)

The BMS uses EIS to analyse the electrochemical properties of batteries. This technique involves applying a small AC signal to the battery cells and measuring the response, providing valuable insights into battery performance, health, and thermal behaviour.

Wireless Communication

The BMS employs wireless communication protocols to transmit vital battery data in real time, eliminating the need for cumbersome cables and making installation easier. This approach also increases flexibility and scalability for different battery pack configurations.

Anode Controlled Charging (ACC)

This innovative method optimizes charging by adjusting the charge current based on neural network and cloud operations, maximizing charging speed without affecting cell aging performance.

Model Predictive Control (MPC) Strategies

The ALBATROSS project includes the development of MPC strategies for thermal management in electric vehicles, which help improve battery conditioning and cabin conditioning, leading to enhanced range and reduced energy consumption.

Battery Cell Laboratory

FEV has opened a state-of-the-art battery cell laboratory in Aachen, Germany, focusing on the analysis and benchmarking of battery cells in terms of performance, lifetime, and safety behaviour. This lab supports the development of customized solutions for sustainable mobility and exploitation of the results from ALBATROSS.

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FEV had the pleasure of participating in the Battery Technologies Summit, which featured 32 speakers and attracted 750 participants. **It was an incredible opportunity to demonstrate the cutting-edge innovations from ALBATROSS through a simulation bench,** and to discover the future of energy while networking with industry leaders and enthusiasts. We are grateful for the chance to share our advancements at this event and to connect with so many passionate individuals thanks to our partner FEV Türkiye.

These innovations and activities highlight ALBATROSS's commitment to advancing battery technology and promoting sustainability in the electric mobility sector. 🌍 🔋 🚗

Thank you for your continued support and interest in our work. We look forward to sharing more exciting updates with you soon!

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