

SuperLIB



Smart battery control system based on a charge-equalization circuit for an advanced dual-cell battery for electric vehicles

Motivation and Objectives

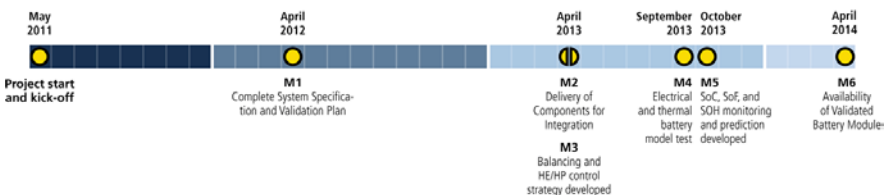
SuperLIB focuses on smart control system solutions for batteries. Overall performance is enhanced by combining High Power (HP) and High Energy (HE) cells together with a smart control strategy and a highly integrated package. This significantly improves lifetime, reliability and cost/performance ratio of the battery system. Fast charging without degrading battery lifetime becomes possible.

Main objectives of SuperLIB are:

- Smart control system for highly integrated HP+HE battery with shared cooling & charge-equalization,
- Extending the useable state of charge (SOC) range of the battery, thus increasing driving range or reducing battery size,
- Extending the lifetime of the battery pack thanks to reduction of high-current pulses in high-energy cells.

Project Plan, Milestones and Deliverables

The following figure shows the significant deliverables and milestones during the development of the advanced Dual-Cell Battery within the SuperLIB project.



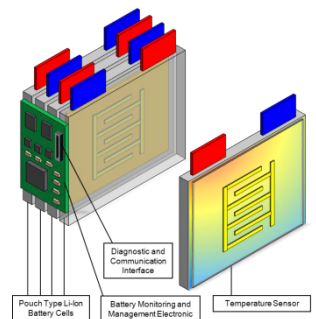
Technical Approach

The SuperLIB project focuses on smart control system solutions for traction batteries. The general concept consists of a combination of measures for:

- A dual-cell battery concept comprising high-power and high-energy cells,
- Including an electronic architecture for an efficient energy and current distribution,
- Managed by a smart control strategy,
- Monitored by cell integrated temperature sensors.

Achievements

- WP1:** Development of an energy storage concept including functional safety management.
- WP2:** Electronic architecture for battery management system.
- WP3:** Design of an overall battery management control system; optimization of the charging/discharging strategies.
- WP4:** Development of thermal sensor technology for the dual-cell battery; specific adaptation of the HP and HE cells.
- WP5:** Characterization and modeling of the dual-cell battery.
- WP6:** Design a highly integrated package; development of a smart overall thermal concept, reliability assessment.
- WP7:** Prototyping and testing of the dual-cell battery; vehicle simulation and testing under realistic operation conditions.



Budget	6.48 M€	Funding	4.18 M€
Duration	36 months	Start	May 2011
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