FiveVB

Five Volt Lithium Ion Batteries with Silicon Anodes produced for Next Generation Electric Vehicles

GENERAL PROJECT DESCRIPTION
The FiveVB project developed a new cell technology based on innovative materials such as high capacity (Silicon-) anodes, high voltage cathodes and stable, safe and environmentally friendly electrolytes. FiveVB demonstrated the integration of cell chemistry developed from scratch into an industrial standard (PHEV1 cell). Scale-up processes for the cell materials were developed, and on battery system level a module concept was elaborated, according to predefined requirements. Furthermore, an early development and validation of test procedures for the reduction of development time from material to cell was established. This methodology development was strongly supported by simulation activities, tackling key challenges of the future cell technology (e.g. swelling). The FiveVB approach enables an energy density increase of 20% with a corresponding decrease in overall cost.

CONTENT OF AVL WORK
• Project Coordination
• Requirement engineering (Interface cell <-> system)
• Development of a design concept for the newly developed cell chemistry
• Prototyping and testing
• Dissemination

AVL PROJECT RESULTS & RELEVANCE FOR AVL
• Consortium-wide development methodologies have been established for accelerated advanced Li-ion battery cell development and -industrialization
• System prototype (non-functional) realized
• Comprehensive cell technology development know-how available (e.g. swelling)

COMMENTS, NEXT STEPS
Successful methodology should be utilized in further projects (framework Horizon 2020 or similar) for allowing an early-stage system-integrated technology assessment. AVL internal in-depth study of the swelling phenomenon (cell thickness variation during operation of cell) is highly necessary.

FUNDING PROGRAM: GV1-2014, Horizon 2020
PROJECT DURATION: 1st May 2015 – 30th April 2018
PARTNERS: AVL, JRC, Virtual Vehicle, Umicore, 3M Deutschland, Arkema, ZSW, Bosch, VUB, BMW

FURTHER INFORMATION: www.fivevb.eu