

Electromobility is moving forward, driven by drastic cost reductions, higher performances and improved availability to support new business models of autonomous driving passenger cars and new vehicle fleets. DEMOBASE falls within this context with the main objectives to cut down development and testing efforts for e-drivetrains at least by a factor 2 and to improve their efficiency by 20%. Safety will be fully managed and new concepts developed for fleet applications. DEMOBASE is composed of 11 leading European partners with activities ranging from cells to vehicle to recycling. The main gain at vehicle level will come from global optimization taking into account interaction of the different specialties.

Objectives at battery level will be achieved by massive digitalization, substituting the sequential cell then battery system development by a parallelization of these activities. This new process can be achieved only using enhanced cells models including safety features to define the cell conception for manufacturing and realizing in the same time frame battery management. Objectives at vehicle level will be achieved with a novel approach to design light-weight chassis. It will be demonstrated on a urban demo vehicle that will integrate the advanced battery pack and novels wheel-tire systems.

To secure project deliveries and reinforce collaborations which are an innovation key factor, DEMOBASE will be an original closed-loop project. In a first loop of the EV development, building blocks and their integration processes will be investigated and their efficiency assessed using Key Performance Indicators. Then the most efficient bricks and processes will demonstrate their added value in a second step in 6 months run starting from new high performances cells to operational EV. The DEMOBASE EV will be then evaluated on tracks.

Project data

Coordinator:	Philippe Desprez, Saft SAS
Project Office:	K&S GmbH Projektmanagement
Type of Action:	RIA
Grant No:	769900
Duration:	36 month
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DEMOBASE

DEsign and MOdelling for improved BAattery Safety and Efficiency



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Project Coordinator



- » Battery parts manufacturing & expertise
- » Simulation & modelling for seamless integration
- » BMS functions and recycling

Partner



- » Battery main switch in CoolMOS™ technology
- » Pressure sensor



- » Risk analysis of the automotive battery
- » Characterization under abuse events
- » Cell and battery safety 3D models



- » Specification regarding recycling and dismantling of end-of-life battery pack
- » Safety assessment during transportation and dismantling of end-of-life battery pack
- » Development of a recycling simulation tool for different types of Li-ion batteries



- » Experimental investigation of Li-ion batteries
- » Cycling and calendar ageing experiments
- » Investigation of capacity degradation and power fade
- » Electrochemical modelling



- » Fast design of safe and high performing chassis
- » Vehicle demonstrator
- » Chassis integrated insulated battery pack



- » Suggestion of the best materials
- » Evaluation of new designs for wheels
- » Tubular chassis made by advanced high strength steels



- » Project-internal risk management and operational project management
- » Maintenance of the DEMOBASE project website
- » Definition and implementation of suitable quality management



- » Development of the Battery Management System (BMS)
- » Development of seamless battery modeling methods



- » Vehicle simulator and implementation of HIL cell tests
- » Reduction of thermal runaway models, implementation of module simulator, study of pack safety and ageing tests



Development of collaboration FMI-based simulation platform

