



Smart and Safe Integration of Batteries in Electric Vehicles

Results in Brief

Smart, safe batteries for fully electric vehicles

Thanks to an EU-funded initiative, safe and economic fully electric vehicles (EVs) that contribute to global emissions reductions are a step nearer to being fully realised.



The 'Smart and safe integration of batteries in electric vehicles' (<u>SMARTBATT</u>) \checkmark project developed and tested an innovative lightweight construction housing for the battery system of the purely electrical vehicles of the future. The result is a fully integrated battery case that forms a basic structural component of the vehicle and is suitable for mass production.

Project partners successfully met the challenge of combining lightweight design with

a high level of safety by addressing different kinds of hazards, the optimisation of functions and the intelligent design of interfaces for on-board systems. This was achieved by developing new simulation tools and the use of lightweight construction technology combined with lightweight materials.

Researchers assessed all the risks related to battery integration and operation, covering the entire life cycle from assembly, handling, mounting into the vehicle, operating, maintenance and service, dismounting and recycling. Furthermore, the

final product was capable of complying with the highest international safety standards.

Battery design was based on a number of considerations. These were that the battery must be protected from the ingress of water and condensation, and that the leakage of coolant must be prevented. In addition, the battery case must be able to withstand the effects of crushing in the event of a crash.

The consortium planned and conducted a range of tests, which included tests for thermal shock, mechanical shock, nail penetration, short circuits and thermal stability. Researchers also conducted fire resistance tests to determine how the battery housing would behave in the event of an external fire.

SMARTBATT provided the basis for a new generation of light, safe and smart battery systems, thereby improving the safety of EVs. Their work will benefit customers seeking more environment friendly vehicles as well as ensuring the competitiveness of Europe's engineering and automotive industries. By becoming a world leader in the field of EVs, the EU will also be able to provide employment in its manufacturing sector.

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Project Information

SMARTBATT

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Coordinated by AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH

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