



FRP E-Mobile Battery Case Concept Study



Composite Technology is increasingly becoming a key technology in the automotive industry to develop extremely light and energy efficient vehicles. Integral Sandwich Constructions, manufactured in RTM-Technology, propose a constructive approach.

Fibre reinforced material application in the automotive industry is a big challenge for the fibre reinforced plastic (FRP) production technology development. In addition to the lightweight targets, cost-efficiency of the

production process is more significant than it is given today in the civil aircraft industry.

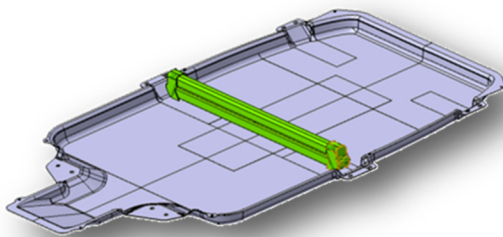
Only with highly automated production processes, low cycle times, integrated quality assurance and process monitoring this ambitious goals can be achieved.

The development has to be a holistic and iterative approach of fibre reinforced material part design, part calculation and production technology.

The CTC GmbH on behalf of an OEM , together with the Partners ONYX Composites GmbH, Dassault Systems and the CFK Valley has faced this challenge in a feasibility study.



Content of this study was the development of a battery case for an estimated quantity of 20.000 parts per year. In addition to the battery accommodation requirement the battery case also has got the function as structure component of the chassis of a future E-Car .



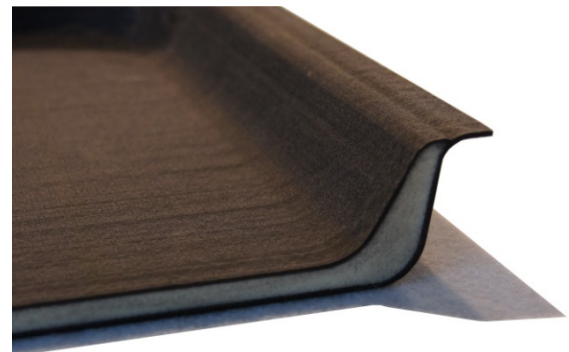
FRP Battery Case Concept - Body Structure

Scope of the concept was a design study, a crash simulation and the development of a manufacturing concept in compliance with all current requirements for the automotive series production.

The developed concept design:

- Body structure in RTM-technology
- Cover structure in SMC-technology

The body structure is designed as a highly integral Sandwich-Structure.



Manufacturing Feasibility Demonstrator - Body Structure

The most beneficial of the chosen design is the realization of nearly all structural elements in one preform combined with a one shot injection. This is the essential basis for the required low cycle times. Furthermore the sandwich structure allows the integration of a high amount of functional elements.



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