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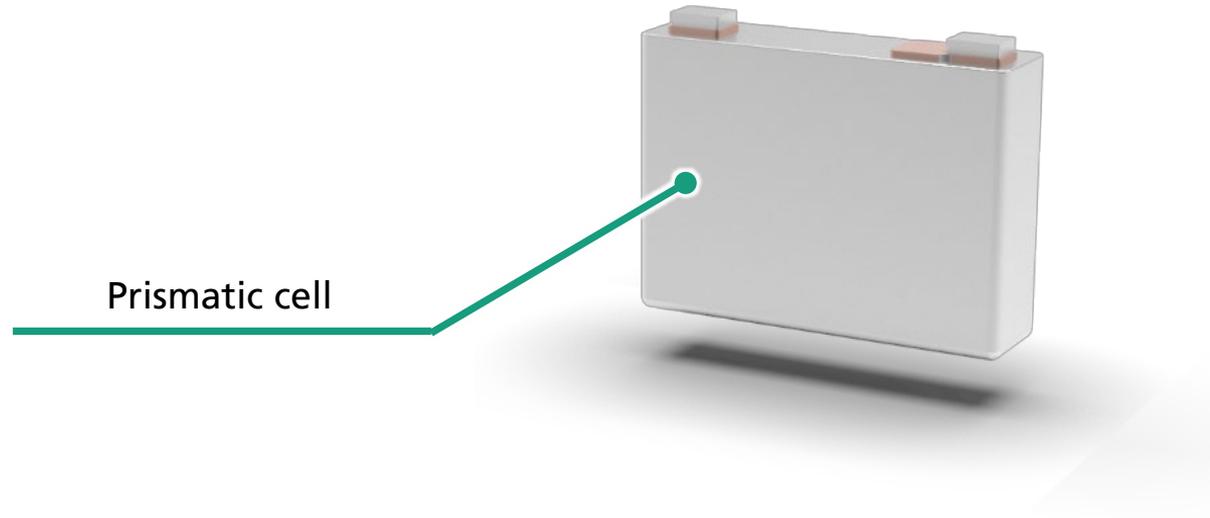
# Concept for a Traction Battery System with a composite housing

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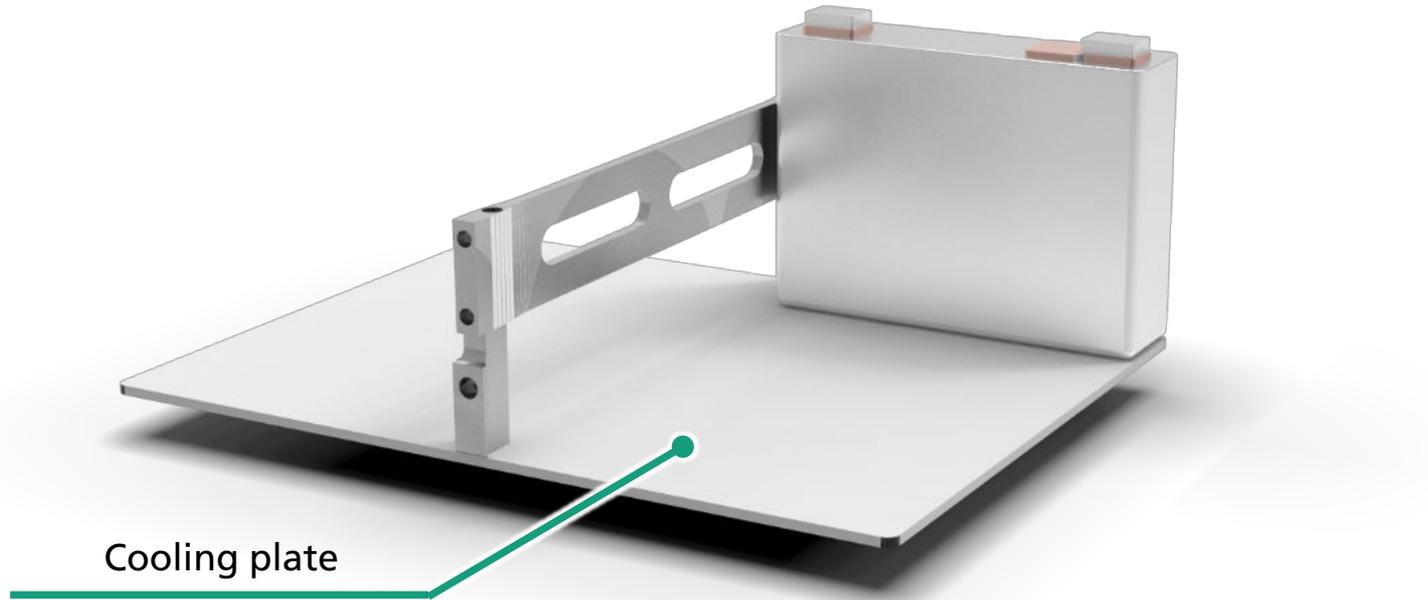


 **Fraunhofer**  
ICT

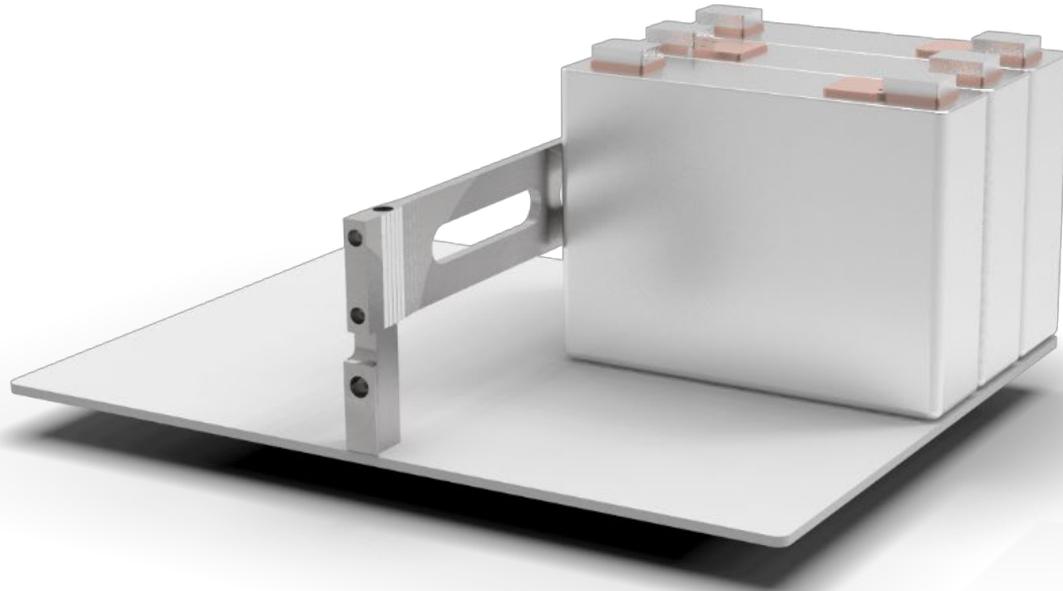
# Battery Module Concept



# Battery Module Concept

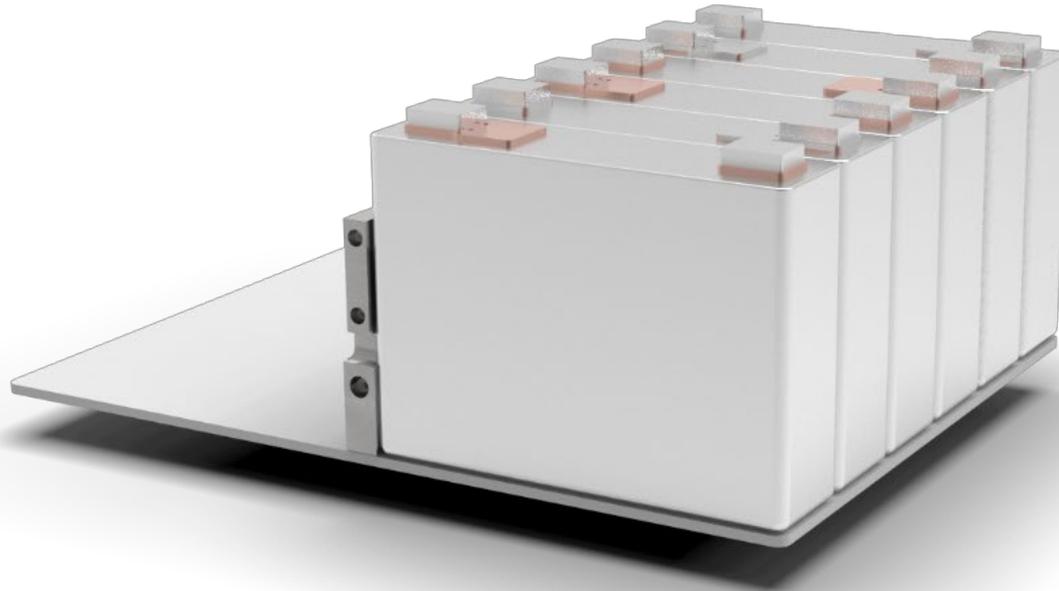


# Battery Module Concept



Cell assembly on cooling plate

# Battery Module Concept



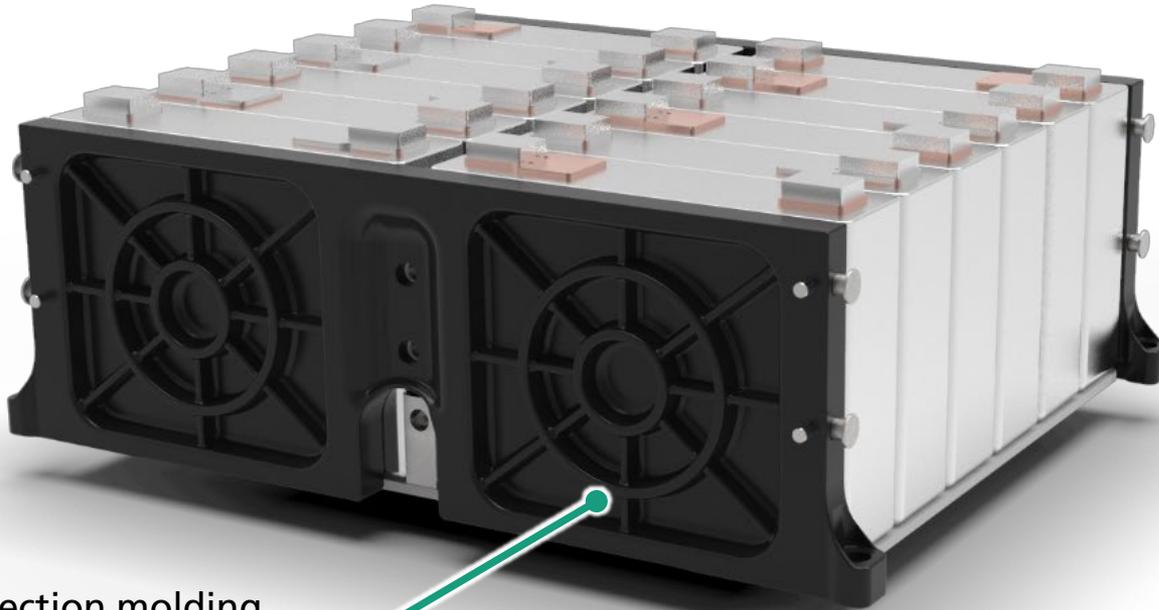
Cell assembly on cooling plate

# Battery Module Concept



Cell assembly on cooling plate

# Battery Module Concept



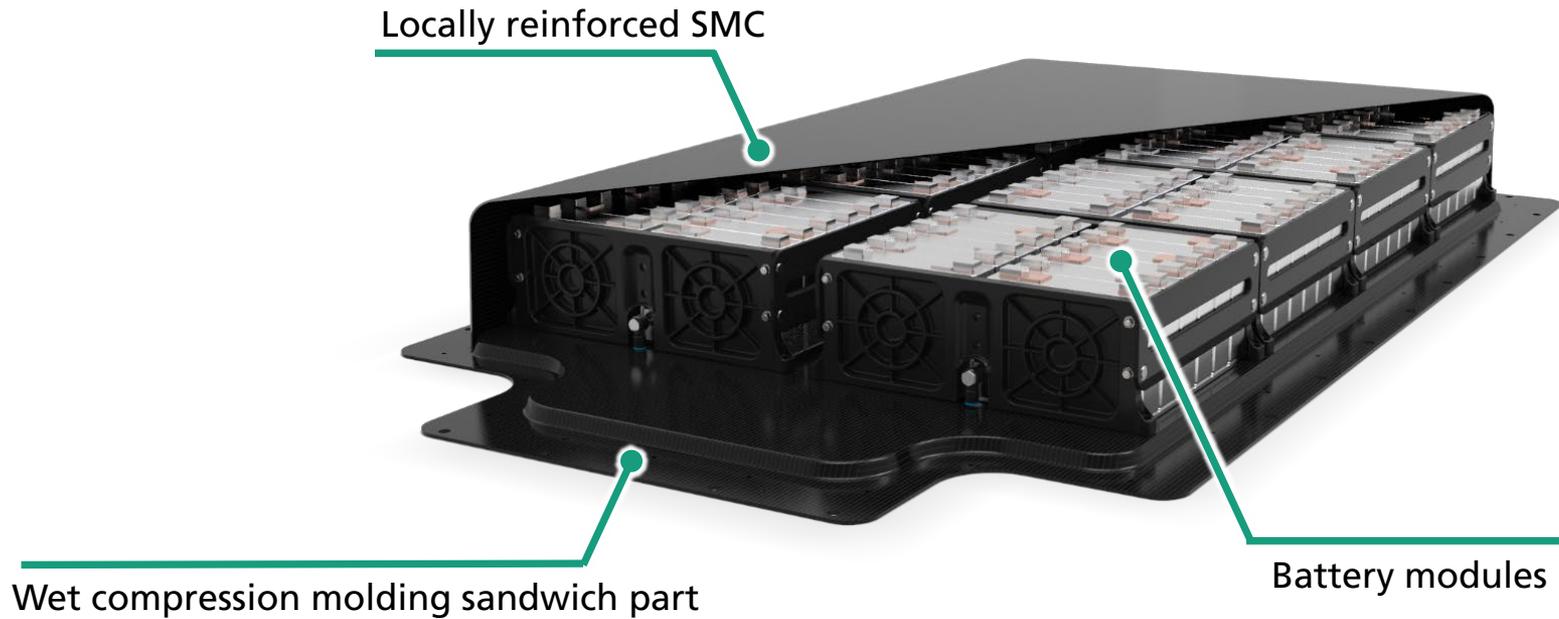
Thermoset injection molding

# Battery Module Concept



Thermoplastic Tape

# Battery Enclosure Concept



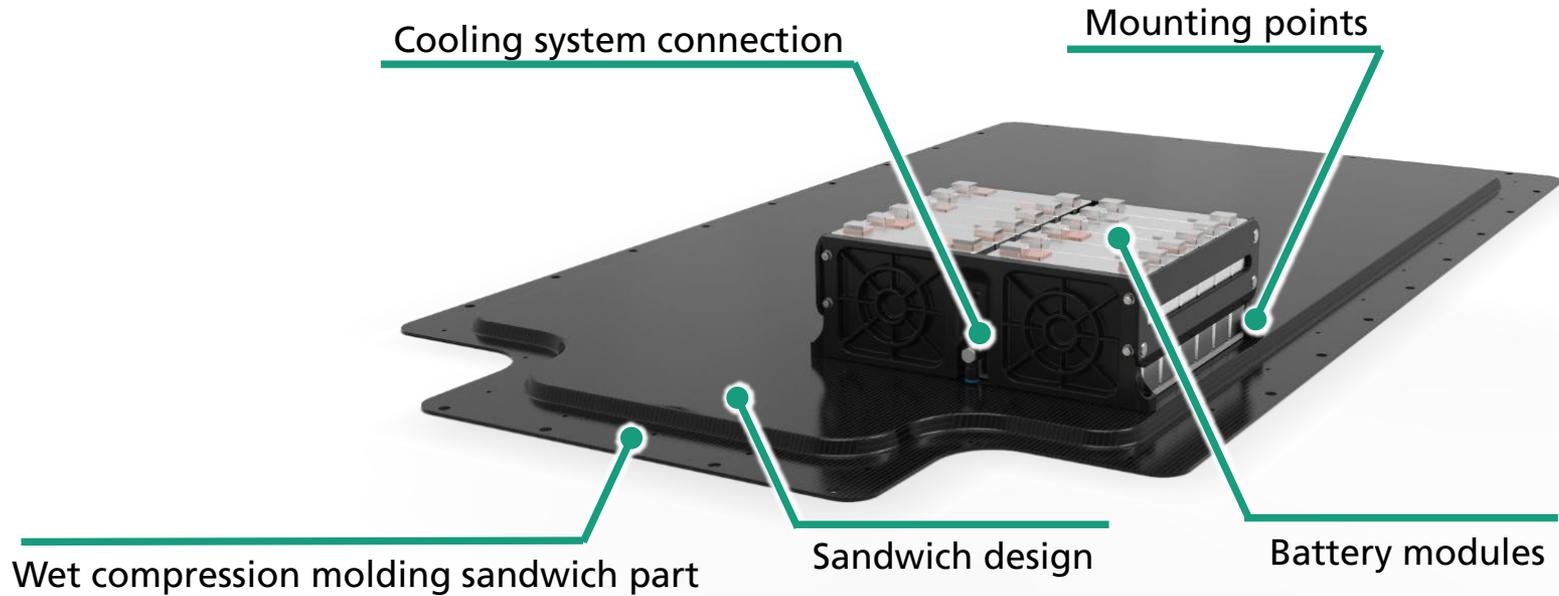
# Battery Enclosure Concept



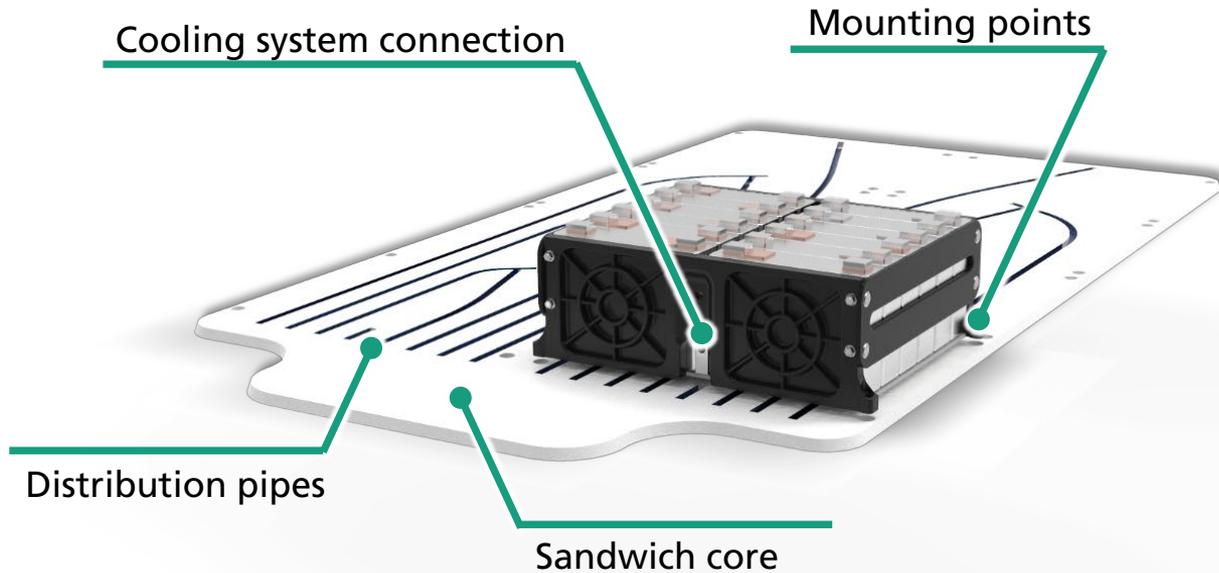
Wet compression molding sandwich part

Battery modules

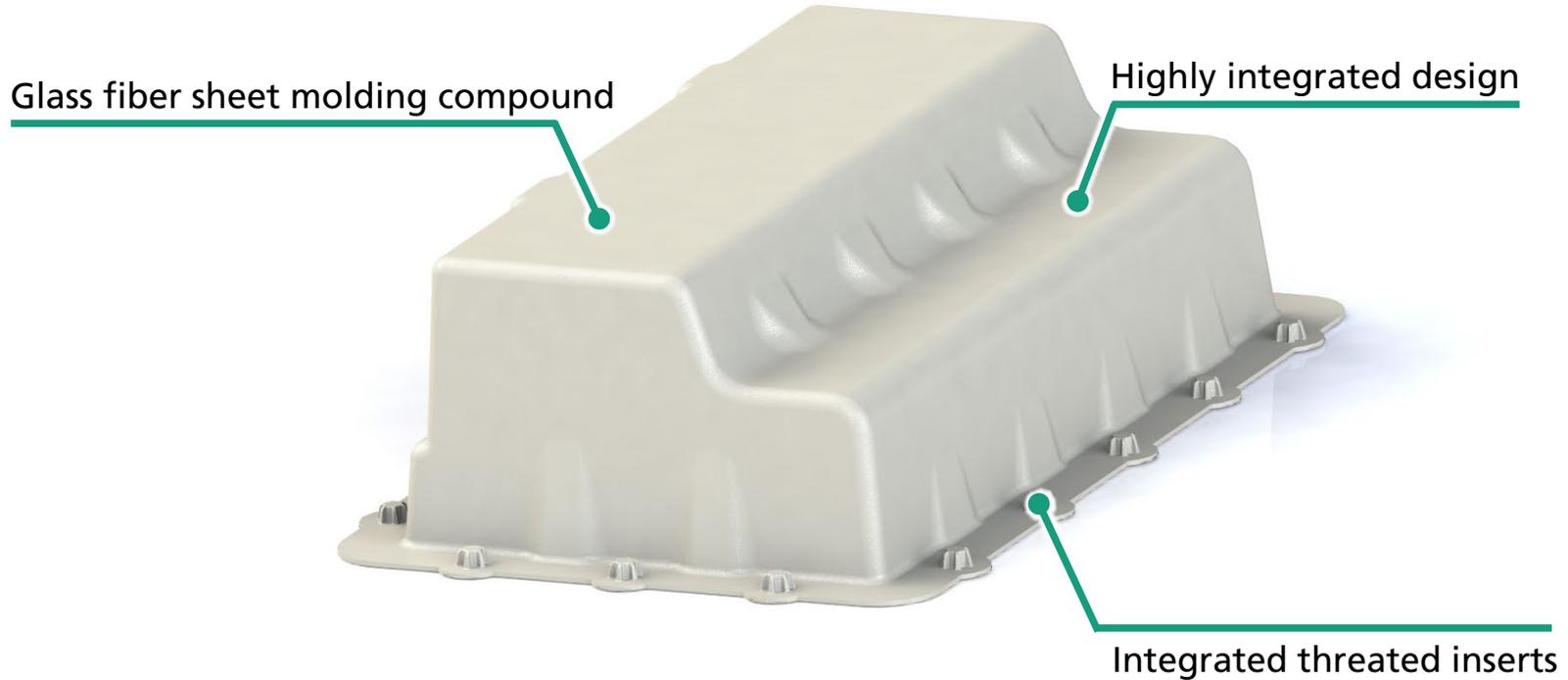
# Battery Enclosure Concept



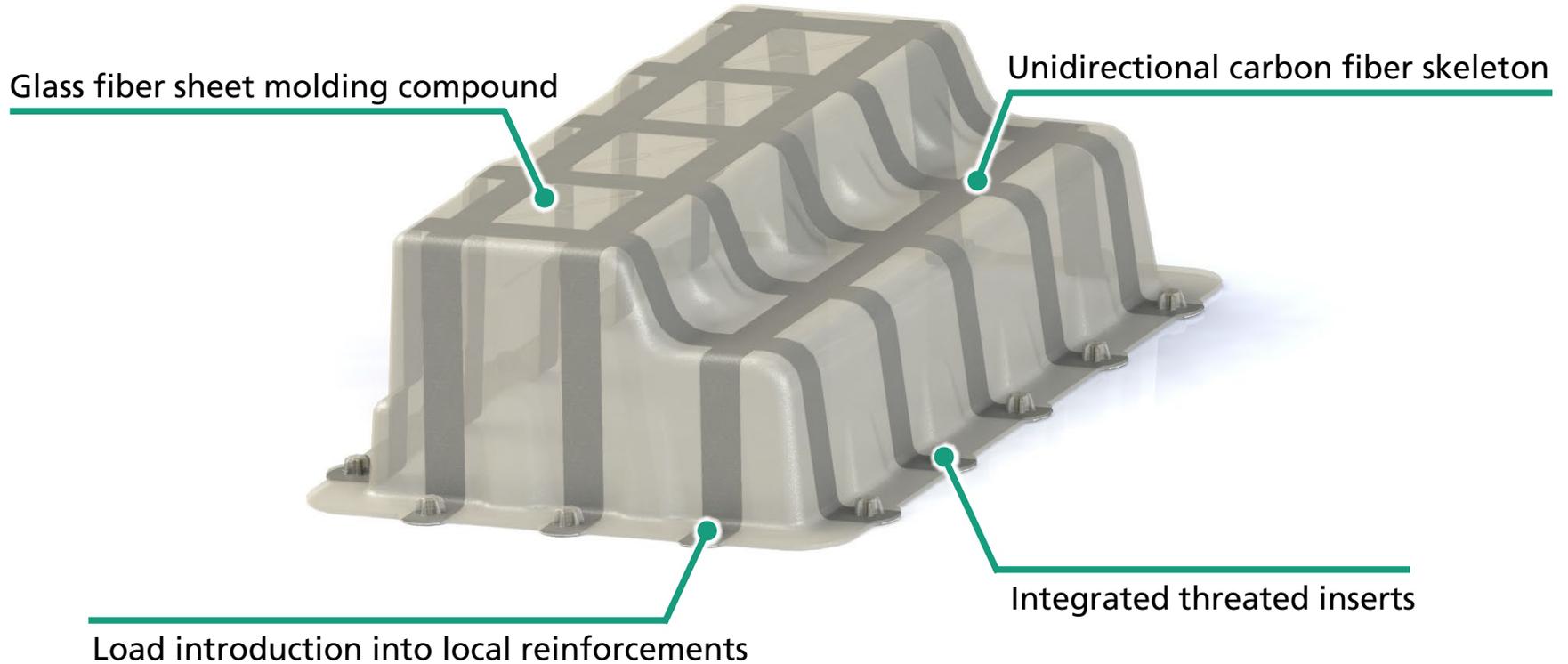
# Battery Enclosure Concept



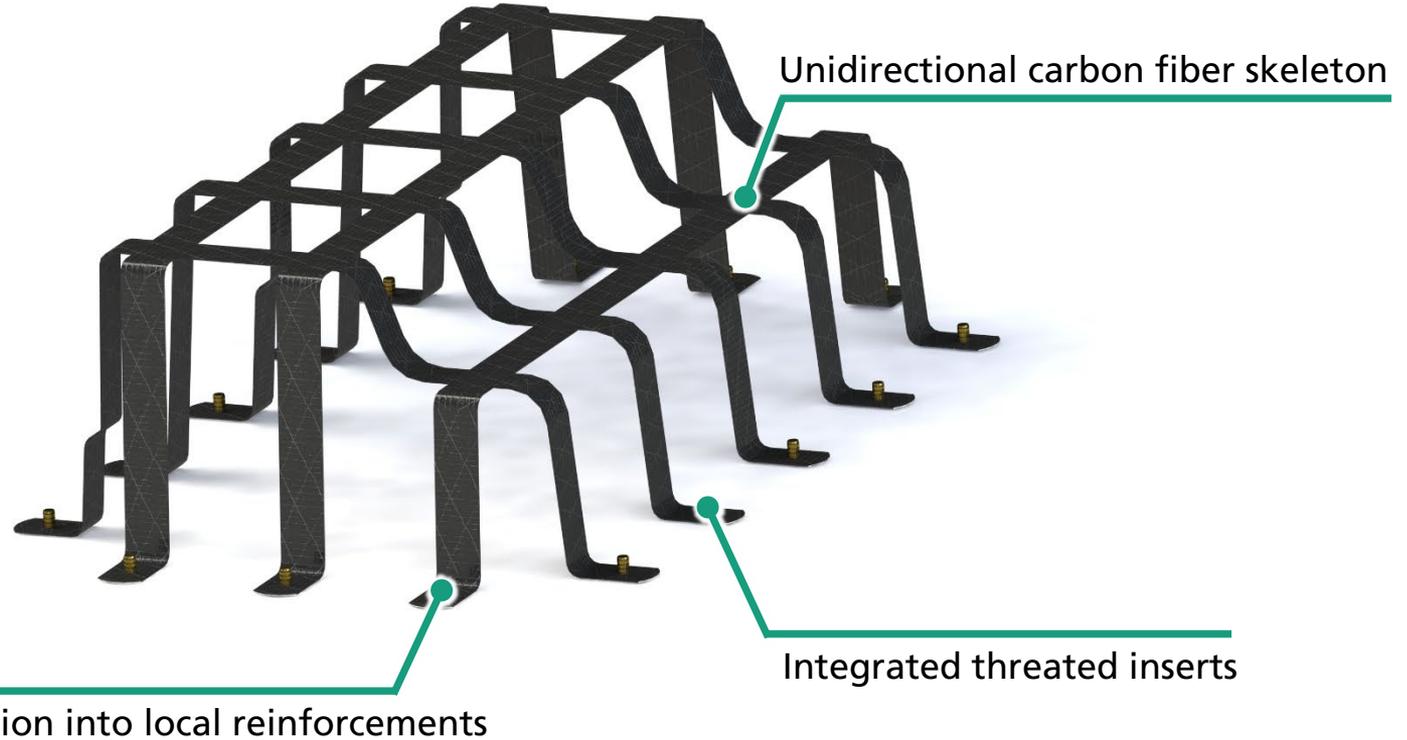
# Battery Enclosure Concept



# Battery Enclosure Concept

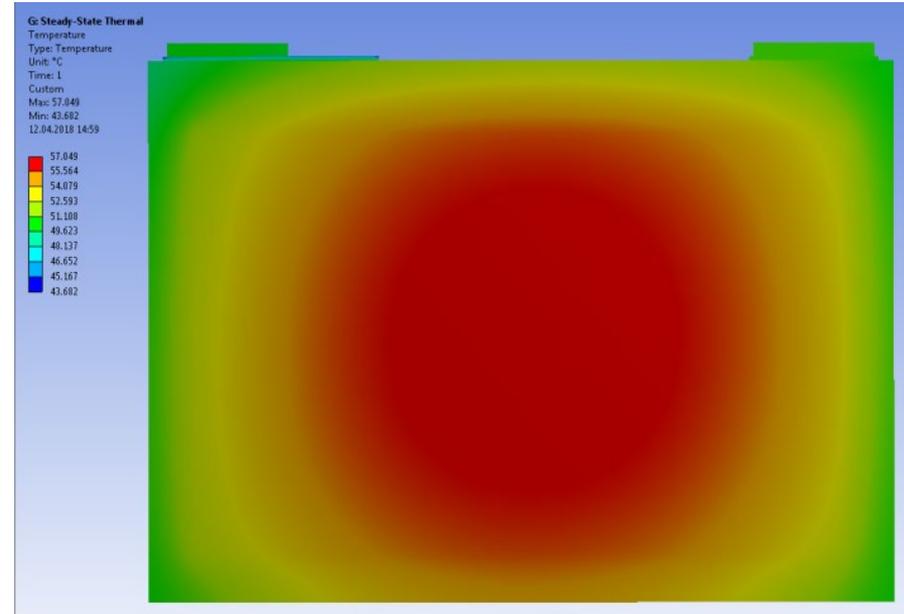


# Battery Enclosure Concept



# Thermal Characterization and Simulation of battery cells

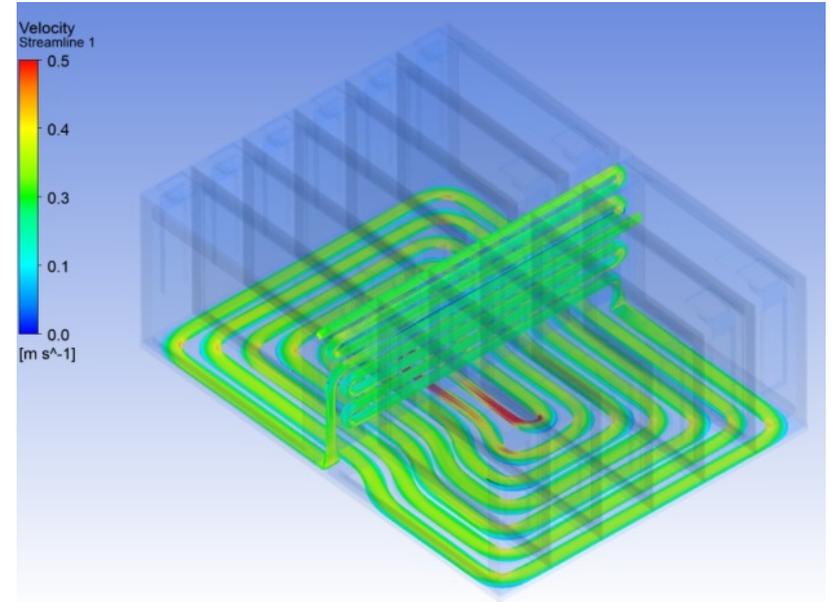
- Characterization of the heat development within the cells
  - Hardware tests of the cells at Fraunhofer ICT
  - Investigation of relevant loading and unloading conditions
- Setup Simulation model for the design of a thermal management system



Thermal simulation model of a 60 Ah BEV cell at 4 C charge rate

# Thermal Characterization and Simulation of battery cells

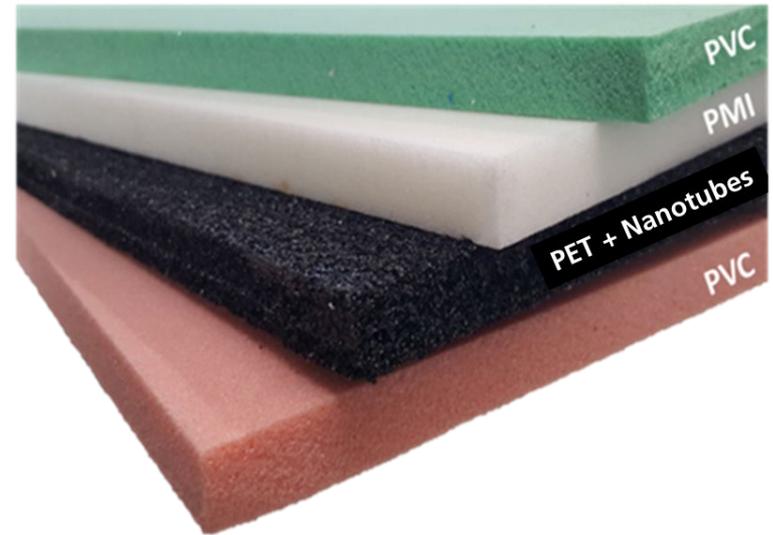
- Design of a thermal management system
  - Numerical validation of thermal management systems
  - CHT simulation to evaluate different solutions



CFD simulation - calculation of the flow velocity in the cooling system of a battery module

# Material and Process Development

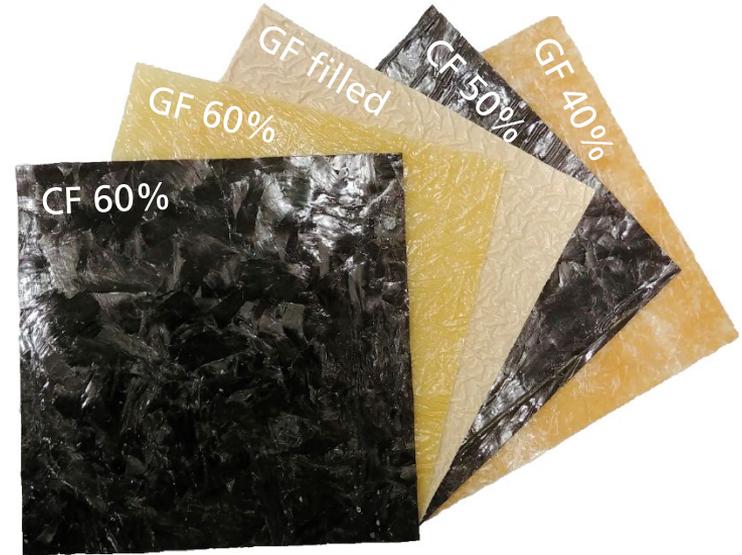
- Material-appropriate conception and design
- Development of a wet compression process route for integration of:
  - Various core materials in sandwich base plate
  - Colling fluid distribution pipes within the sandwich material
  - Metallic inserts as mounting points for the battery modules



Variation of core materials for the Sandwich base plate

# Material and Process Development

- Development of a sheet molding compound process route for integration of:
  - Flame retardant SMC materials
  - Local reinforcements with UD carbon fibers
  - Compression molding process with material flow for complex integrated designs
  - Metallic inserts for screw connections and load introduction into the local reinforcements
  - Electromagnetic shielding



Variation of SMC materials for the battery cover