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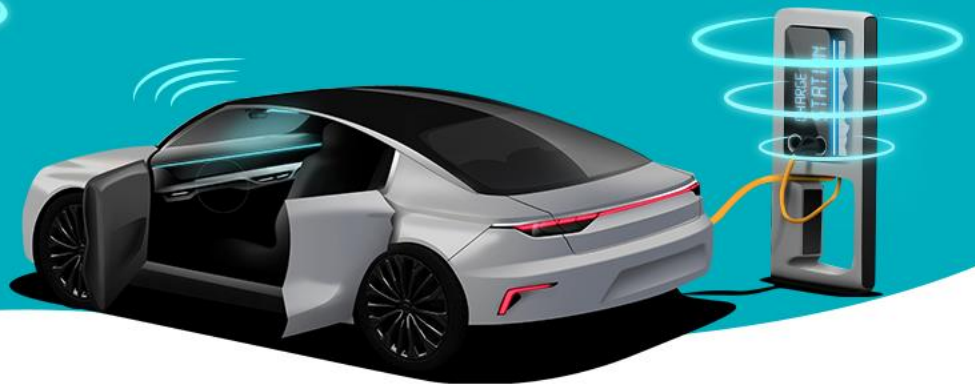
COMPOSITE EV BATTERY CASES



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Successful R & I in Europe 2024

11th European Networking Event

BETTER.
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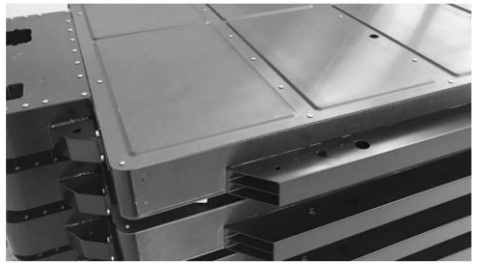
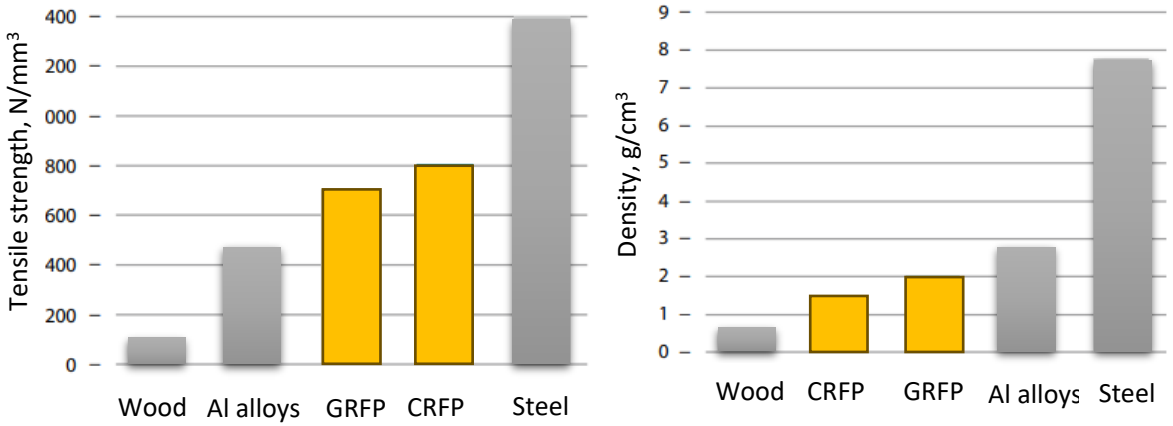
- Current status
- Concept idea
  - Objectives
  - Challenges
  - Development (process tools, materials etc)
- Experimental studies, attemptions
- Farplas contribution & sought
- Experiences in international projects

Current Status

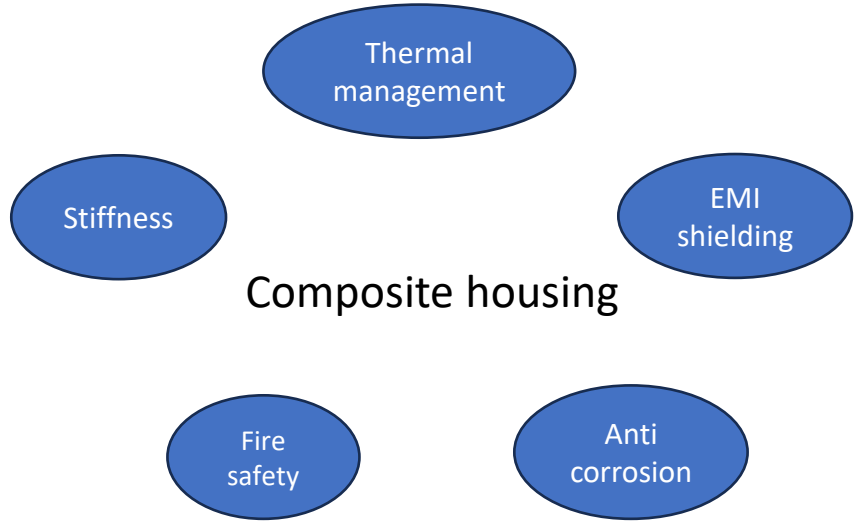
Battery housings are made of aluminium.





Plastic matrix composites are lighter and can be stronger than aluminium alloys.

Composites exhibit greater weight-saving potential, superior corrosion resistance, thermal insulation, and cost-effective, feasible processing methods.



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Concept Idea

Lid and tray can be produced by several methods such as:

- Extrusion & welding → Metals: steel or aluminium
- SMC
- Thermoforming

→ PLASTIC MATRIX COMPOSITES

- **Injection molding**

→ Robust, reliable, design and material flexibility…

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Concept Idea

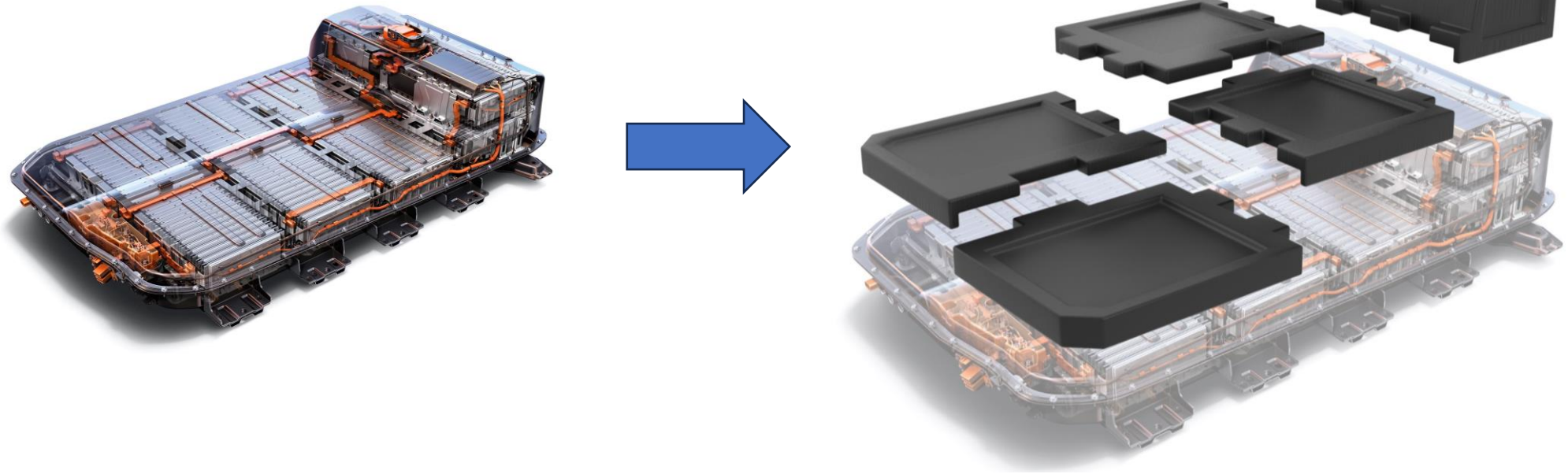
A Modular Design of Battery Housing

Objectives

- Reducing tonnage
- Eliminating warpage
- Reducing cycle time of injection

Challenges

- Complexity of modular system design & mold
- Mechanical stability
- Leak tightness



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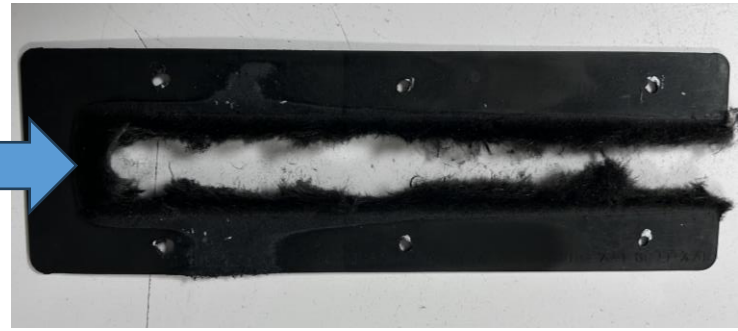
Experimental studies

Properties	Values
Tensile modulus, MPa	9140
Tensile strength, MPa	91,9
Yield strength, MPa	90,1
Elongation at break, %	2,3
Density, kg/m³	1240
Izod impact notched, J/m	7,97
HDT A, °C	154



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Farplas' Contribution & Sought

HORIZON-CL5-2024-D2-02-03

Size & weight reduction of cell and packaging of batteries system, integrating lightweight and functional materials, innovative thermal management and safe and sustainable by design approach (Batt4EU Partnership)

HORIZON-CL5-2024-D5-01-03

Advanced battery system integration for next generation vehicles (2ZERO Partnership)

HORIZON-CL5-2024-D5-01-06

New designs, shapes, functionalities of Light Commercial Vehicles (2ZERO Partnership)

Farplas can…

- Produce lightweight battery casing by using high performance materials
- Integrate efficient processes to produce safe and sustainable by design structures
- Use recycled materials upto some extent and optimise process conditions

Farplas needs contribution for…

- Material development
- Product design
- Cell development
- Simulation works
- LCA analysis
- Vehicle test & validation

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International Funded Ongoing Projects – Farplas R&D

HORIZON 2020

REVOLUTION

Supporting the Electric Vehicle REVOLUTION through maximising Electric Vehicle Range and End-of-Life Vehicle Recovery through optimisation of recycled plastics and advanced light materials

teaming.ai

Human-AI Teaming Platform for Maintaining and Evolving AI Systems in Manufacturing

multicycle

Advanced and sustainable recycling processes and value chains for plastic-based multi-materials

Industrial Data Services for Quality Control in Smart Manufacturing

HORIZON EUROPE

VITAL

InnoVatIve processing Technologies for bio-based foAmed thermopLastics

SYNTECS

SustainablY aNd digiTally driven hiErarchical laser texturing for Complex Surfaces

Mitigating Diversity Biases of AI in the Labor Market

ZEVRA

Zero Emission electric Vehicles enabled by haRmonised circulArity

CREDIT

Circularity and Remanufacturing-Enabling DIgital Twins

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