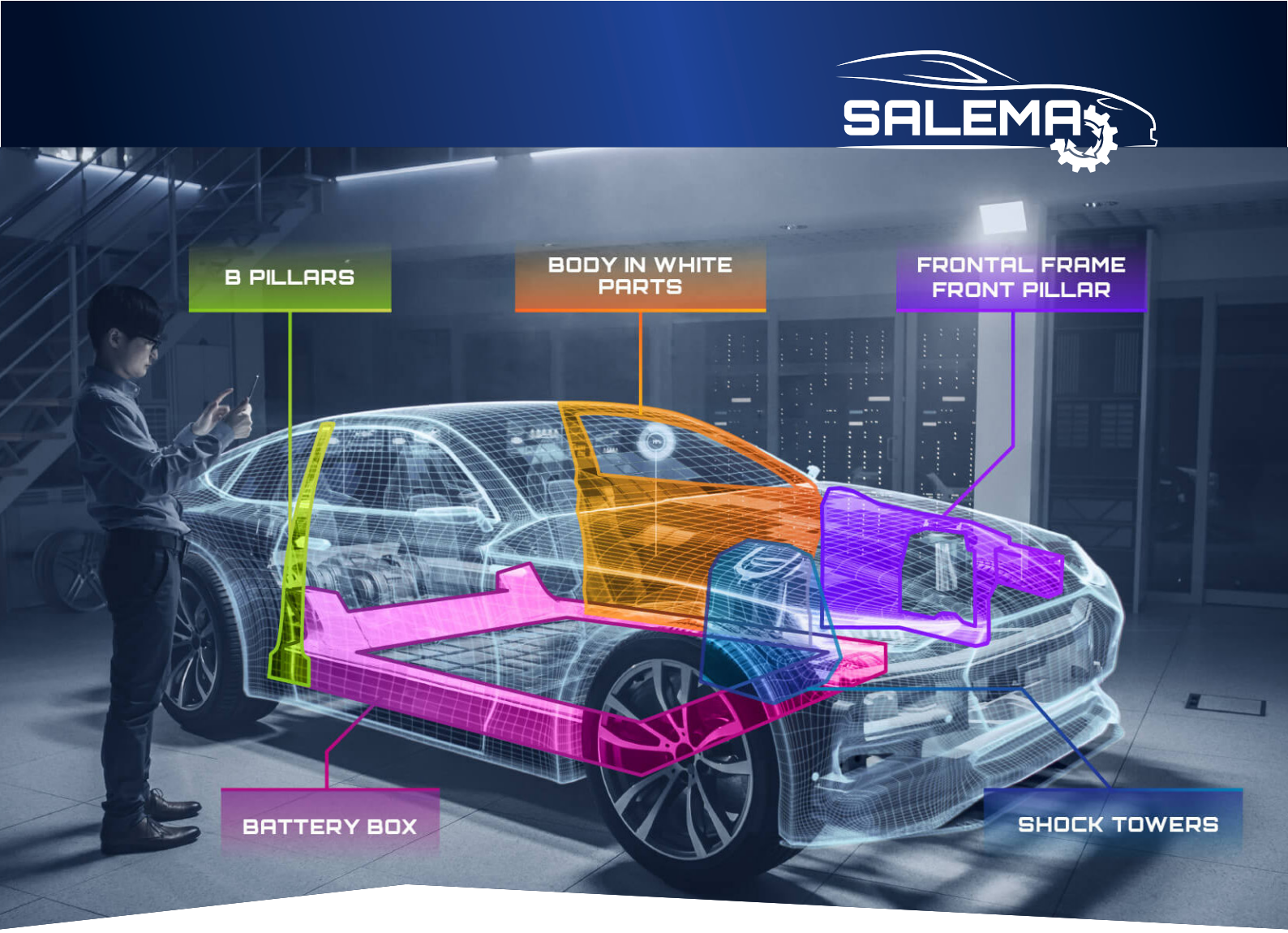

SALEMA alloys meet industry needs

The EU-funded SALEMA project created new alloys using recycled aluminium or using less critical raw materials (CRM) and assessed their performance in manufacturing processes that are typical in the automotive industry. To validate these novel alloys, SALEMA's industrial partners used them to create a variety of car parts.

The partners ensured their equipment / procedures suited the new alloys in the same way as for any new grade of aluminium used in their production processes. They assessed the suitability of the alloys for the processes used (e.g. fluidity for die casting, formability for stamping or compression for extrusion) and tested the microstructure and mechanical properties of the created parts.

- **Using SALEMA alloys does not require any major modifications of the industrial set-up**
- **The SALEMA alloys are suitable and perform well in industrial processes and in the demo car parts**

To read more about the demonstration parts, the results and the contact partners, turn the page or visit the SALEMA website.

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SHOCK TOWER

Connects the front body and shock absorber, for force dispersal, structural stability, driving comfort, crash safety.

PROCESS High-pressure die casting (HPDC)
(Usual: steel sheet-metal, multi-component. Premium cars: primary AlSi10MnMg)

ALLOY SALEMA EN AC 43500 Variant 6 (T7 tempered; 90% scrap)

CHALLENGES Alloys must meet castability & component needs (elongation & strength).

RESULTS 20% less weight, suitable for high production volumes, fewer parts in assembly. Alloy: lower criticality index & carbon footprint due to high recycling rate.

CONTACT
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BATTERY BOX

The most expensive component of an electric car, the battery is protected from impacts, heat and fire within this housing.

PROCESS Extrusion (Usual: multi-component)

ALLOY SALEMA EN AW 6063 Variant 3 (up to 90% scrap) & EN AW 6082 Variant 3 (up to 90% scrap)

CHALLENGES Alloys must meet extrudability & component needs (elongation & strength).

RESULTS Can increase recycled content in alloys and keep the same level of performance in the component.

CONTACT
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B-PILLAR

A rigid compartment protecting passengers; a critical safety-cage component controlling deformation for energy absorption.

PROCESS Hot stamping (formed with hydraulic presses)

ALLOY SALEMA EN AW 6181A Variants 2&3 (70% & 85% scrap) & SALEMA 6111 Variant 2 (85% scrap)

CHALLENGES Material must be lightweight, formable without cracks or defects and meet safety, performance and mass-production requirements.

RESULTS Part produced without issues: can increase recycled content in alloys and keep the same level of performance in the component.
→ Allows for competitive weight in electric vehicles.

CONTACT
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BODY IN WHITE

Our 'Body in White' inner hood is a structural component (for closure) that fits below the exterior hood (aesthetic component); requires high deformation and strength.

PROCESS Cold stamping (formed with hydraulic presses)

ALLOY SALEMA EN AW 5754 Variants 1&2 (70% & 85% scrap) & SALEMA EN AW 6181A Variants 2&3 (70% & 85% scrap)

CHALLENGES Material must be lightweight, formable without cracks or defects and meet safety, performance and mass-production requirements.

RESULTS Can increase recycled content in 5754 alloy, suitable for industrialisation; 6181A alloy requires some design tuning, but usable for other structural components.
→ Higher sustainability of stamped parts.

CONTACT
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FRONTAL FRAME

Interlocking parts form a framework supporting the frontal structure. Usually made of steel or with gravity casting; typically thick walled and very heavy.

PROCESSES Part 1: HPDC (Usual: low-pressure die casting); Part 2: Extrusion

ALLOY HPDC: SALEMA EN AC 43500 Variant 4 (T5 tempered; 70% scrap); Extrusion: SALEMA EN AW 6063 Variant 3 (up to 90% scrap)

CHALLENGES Alloys must meet castability/extrusion & component needs. Less weight, mass production, guaranteed availability of raw materials.

RESULTS Redesigned & validated parts for HPDC & extrusion with the new alloys.
→ Can use for developing variants in new vehicle design.

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