

**ENLIGHT**

## Enhanced Lightweight Design

**MOTIVATION AND OBJECTIVES**

Lightweight materials such as carbon-fibre reinforced plastics (CFRPs) have been used up to now mostly in high-performance cars with relatively high cost and low production volumes. However, the need for weight reduction in future Electric Vehicles (EVs), without unduly compromising performance and safety, is even stronger since additional weight translates into either reduced driving range or in larger, heavier and more expensive batteries. Thus, the electric cars of the future require lightweight solutions that not only enable specific design requirements to be respected but are also cost-effective and sustainable throughout their life cycle.

ENLIGHT aims to accelerate the technological development of a portfolio of innovative thermoset, thermoplastic, bio-based and hybrid materials which together offer a strong potential to reduce weight and overall carbon footprint to enable their viable application to medium-high volume EVs in 2020-25.

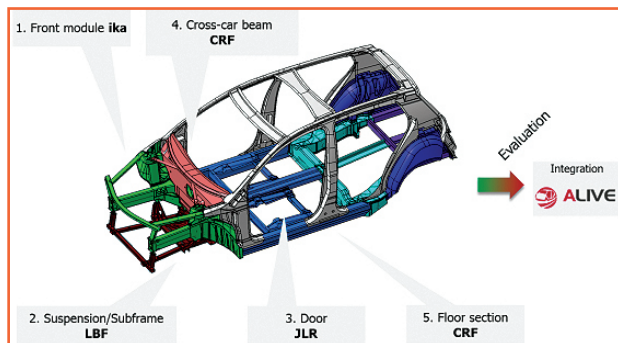
**PROJECT PLAN, MILESTONES AND DELIVERABLES**

Seven technical work packages addressing

- Design & simulation
- Material development
- Manufacturing technologies
- Testing & validation
- Life cycle assessment (LCA)

Baseline is the vehicle architecture developed in ALIVE.

Five modules selected for validation.

**TECHNICAL APPROACH**

- Development of highly innovative lightweight/low embedded CO<sub>2</sub> materials for their application in medium-volume automotive production (50.000 units/year)
- Design capabilities for affordable medium-volume lightweight EVs
- Manufacturing and joining capabilities for affordable medium-volume lightweight EVs
- Experimental and simulation validation environments to enable rapid & reliable multi-parameter optimisation loops when designing with these new materials
- LCA and economic analysis to ensure the highest probability of application by 2020, taking into account all salient factors

**ACHIEVEMENTS**

- Each considered module saves 40% weight compared to the SuperLightCar project.
- Implementation of advanced lightweight materials such as hybrids, CFRPs or thermoplastics.
- Cost-effective manufacturing technologies for medium-scale production advanced lightweight materials.
- Qualification of renewables and low-cost fibres for the automotive sector meeting current automotive standards and required manufacturing costs.

Current status:

- Final design for each module ready.
- Materials and manufacturing route selected for each module.
- Material development finished.
- Simulation and testing on-going.
- LCA on-going.

<b>Budget</b>	10.9 M€	<b>Funding</b>	7.1 M€
<b>Duration</b>	48 months	<b>Start</b>	October 2012
<b>DG</b>	Research & Innovation	<b>Contract n°</b>	314567
<b>Coordinator</b>	Thilo Bein, Fraunhofer LBF	<b>Contact</b>	thilo.bein@lbf.fraunhofer.de
<b>Partners</b>	21 partners among them Renault, CRF, Jaguar Land Rover, Volvo, Benteler, DSM		
<b>Website</b>	www.project-enlight.eu / www.seam-cluster.eu		

