

About this organisation

Machine translation

This organisation has been machine-translated based on data provided in German.

At the Institute of Automotive Systems Technology (FAST) at the Karlsruhe Institute of Technology (KIT), lightweight construction is positioned as a cross-sectional topic and offers an interdisciplinary approach to reducing vehicle mass. The KIT combines the tasks of a university of the state of Baden-Württemberg and a major research institution of the Helmholtz Association with programme-oriented and application-oriented research, teaching and innovation.

The focus of application-oriented research at the Lightweight Construction (LB) department is on fibre composite lightweight construction in the context of a mixed construction method. Expertise from the fields of methods, materials and production is pooled and applied holistically (MWP research approach) to develop lightweight, high-performance fibre composite and hybrid components suitable for large-scale production. This engineering approach is pursued in close cooperation with the Fraunhofer Institute for Chemical Technology (ICT). The ICT focuses on production technologies for long fibre and continuous fibre composites. Against the background of process development and analyses at the ICT, the LB develops numerical methods and material models for process simulation and component simulation of fibre composite structures. In addition, virtual process chains (CAE chains) are developed, which enable production-related influences to be taken into account and holistically optimised.

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Baden-Württemberg
Germany
www.fast.kit.edu/lbt/index.php



Organisation type

University or higher education institution

Sectors



Employees

10 up to 49

Turnover

€2m - €10m

Funding

n/a



About this organisation

Main areas covered	Long and continuous fibre composites, Process and structural simulation, Process and structural optimisation, Material model development, CAE chains
Infrastructure	Virtual process chains, Material models, Workstations, Research licences, Access to large computer systems of the KIT
Certifications	
Keywords	Forming simulation, Mould filling simulation, curing, Warpage, structural simulation, RTM, wet pressing, tape laying, Prepreg, LFT, SMC, BMC
Memberships	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Software & databases	✓	✓	
Services & consulting Training, Engineering, Simulation	✓	✓	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Field of technology			
Design & layout Lightweight manufacturing, Lightweight design, Hybrid structures, Lightweight construction concepts, Lightweight material construction	✓	✓	
<i>Functional integration</i>			
<i>Measuring and testing technology</i>			
Modelling and simulation Loads & stress, Optimisation, Processes, Structural mechanics, Materials, Reliability validation	✓	✓	
<i>Plant construction & automation</i>			
<i>Recycling technologies</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
<i>Additive manufacturing</i>			
<i>Coating (surface engineering)</i>			
Fibre composite technology			
Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion	✓	✓	
Forming			
Impact extrusion, Fluid active media based forming, Others (Draping)	✓	✓	
<i>Joining</i>			
<i>Material property alteration</i>			
<i>Primary forming</i>			
<i>Processing and separating</i>			
<i>Textile technology</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Material			
<i>Biogenic materials</i>			
<i>Cellular materials (foam materials)</i>			
<i>Composites</i>			
<i>Fibres</i>			
<i>Functional materials</i>			
<i>Metals</i>			
<i>Plastics</i>			
<i>Structural ceramics</i>			
<i>(Technical) textiles</i>			

Contacts

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Contacts

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