

Karlsruhe Institute of Technology (KIT)

wbk Institute for Production Technology

About this organisation

Machine translation

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

With around 100 employees, the institute is divided into three research areas: -Manufacturing and materials technology -machines, systems and process automation - Production systems in which the knowledge and experience of selected areas of production technology is anchored. Current research focusses on -Microproduction -Lightweight construction -electromobility -Generative manufacturing - Industry 4.0

The objectives of the "Lightweight Construction" research focus include the development of production technologies for newly developed materials, processes and construction methods with high lightweight construction potential in line with requirements. The aim is to make the leap from a new technology developed in the laboratory to the automated and economical manufacture of lightweight products in series production. In addition, established manufacturing processes are being made more flexible and automated so that they can be used economically in series production. The area of lightweight production at wbk covers the areas of metals, fibre-reinforced plastics and hybrid structures. Process development and automation, joining technology, quality assurance and post-processing are addressed in all areas. Further cross-divisional connections can be made through the activities of the wbk in the KIT Lightweight Construction Network.

Kaiserstraße 12
76131 Karlsruhe
Baden-Württemberg
Germany
www.wbk.kit.edu



Organisation type

University or higher education institution

Sectors



Employees

50 up to 249

Turnover

n/a

Funding

n/a



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Main areas covered Handling and process chaining, Shaping, Hybridisation, Quality assurance, Post-processing

Infrastructure Production technology laboratory, various handling equipment, Measuring room (including computer tomography), RTM process chain, Organosheet process chain

Certifications

Keywords Automation solutions, Process development, Materials research

Memberships

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Semi-finished parts, Machines and plants, Software & databases, Materials, Tools and moulds	✓	✓	
Services & consulting Training, Consulting, Testing and trials, Engineering, Standardisation, HR services, Prototyping, Validation, Simulation, Technology transfer	✓	✓	

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	✓	✓	
Functional integration Actuator technology, Sensor technology, Thermal activation, Material functionalisation	✓	✓	
Measuring and testing technology Component and part analysis, Visual analysis (e.g. microscopy, metallography), System analysis, Destructive analysis, Non-destructive analysis	✓	✓	✓
Modelling and simulation Loads & stress, Optimisation, Processes, Structural mechanics, Materials	✓	✓	
Plant construction & automation Plant construction, Automation technology, Handling technology, Robotics	✓	✓	
<i>Recycling technologies</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing	✓	✓	✓
<i>Coating (surface engineering)</i>			
Fibre composite technology Filament winding, Manual lamination, Resin transfer moulding, Pre-preg processing, Vacuum infusion	✓	✓	
Forming Impact extrusion, Thermal converting	✓	✓	
Joining Hybrid joining	✓	✓	
<i>Material property alteration</i>			
<i>Primary forming</i>			
Processing and separating Drilling, Turning, Milling, Electrical discharge machining, Sawing	✓	✓	
Textile technology Preforming	✓	✓	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Material			
<i>Biogenic materials</i>			
<i>Cellular materials (foam materials)</i>			
Composites Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP)	✓	✓	
<i>Fibres</i>			
<i>Functional materials</i>			
Metals Aluminium, Steel	✓	✓	
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
<i>Structural ceramics</i>			
(Technical) textiles Yarns, rovings, Laid webs, Woven fabrics	✓	✓	

Contacts

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Contacts

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