

TU Dresden, Institute of Lightweight Engineering and Polymer Technology

Functional integration specialist group

About this organisation

Machine translation

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

At the Institute of Lightweight Engineering and Polymer Technology at TU Dresden, nine specialist groups focus on different areas of lightweight construction. One particular focus of this specialist group is the integration of mechanical, electrical, acoustic, haptic, actuator and sensor functions into an overall system.

The Functional Integration Group at the Institute of Lightweight Engineering and Polymer Technology at TU Dresden brings together experts from a wide range of disciplines, such as lightweight construction, electrical and mechatronics engineers and computer scientists. Mechanical, electronic and software development are specifically combined at the ILK in order to develop products and solutions that go far beyond the state of the art. The scientists in the Functional Integration specialist group analyse the interactions at system level that result from boundary conditions in different "worlds". Synergies are also identified across sectors (aviation, electromobility, energy sector, equipment and plant engineering, medical technology, consumer products, special machine construction, safety technology) and utilised in a targeted manner. The greatest challenge here is the close collaboration between lightweight construction, electronics and software experts.

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tu-dresden.de/ing/maschinenwesen/ilk/forschung/fachgruppe-funktionsintegration



Organisation type

University or higher education institution

Sectors



Employees

10 up to 49

Turnover

n/a

Funding

n/a



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Main areas covered	Integrable sensors and actuators, Integr. electronics and interfaces, Function-integrating structures, Electromobility, Wireless charging
Infrastructure	Electronics laboratory, Vibroacoustic laboratory, HIL test benches, Structural dynamics and diagnostics laboratory, Advanced integration technologies
Certifications	
Keywords	Integrable sensors and actuators, Integr. electronics and interfaces, Function-integrating structures, Electromobility, Wireless charging
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, Systems and end products, Materials, Tools and moulds	✓	✓	
Services & consulting Training, Consulting, Testing and trials, Engineering, Prototyping, Validation, Simulation, Technology transfer	✓	✓	

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	Research	Development	Manufacturing & Supply
Field of technology			
Design & layout Hybrid structures, Lightweight construction concepts, Lightweight material construction	✓	✓	
Functional integration Actuator technology, Media conductivity, Sensor technology, Thermal activation, Material functionalisation	✓	✓	
Measuring and testing technology Component and part analysis, System analysis, Non-destructive analysis	✓	✓	
Modelling and simulation Loads & stress, Multiphysics simulation, Optimisation, Processes, Structural mechanics, Materials	✓	✓	
Plant construction & automation Automation technology, Handling technology, Robotics	✓	✓	
<i>Recycling technologies</i>			

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	Research	Development	Manufacturing & Supply
Manufacturing process			
<i>Additive manufacturing</i>			
<i>Coating (surface engineering)</i>			
Fibre composite technology Filament winding, Manual lamination, Resin transfer moulding, Pre-preg processing	✓	✓	
Forming Thermal converting	✓	✓	
<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			
Biogenic materials Bioplastics, Biocomposites	✓	✓	
Cellular materials (foam materials) Open-pore	✓	✓	
Composites Aramid fibre composites, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Laminates	✓	✓	
Fibres Aramid fibres, Glass fibres, Carbon fibres	✓	✓	
Functional materials Electrostrictive / magnetostrictive materials, Shape memory materials, Piezoelectric materials	✓	✓	
Metals Aluminium, Steel, Titanium	✓	✓	
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
<i>Structural ceramics</i>			
<i>(Technical) textiles</i>			

Contacts

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