

# TU Dresden, Institute of Lightweight Engineering and Polymer Technology

## Functional integration specialist group

### About this organisation

#### Machine translation

This profile 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](https://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



[Projects in the funding catalogue](#)



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## Functional integration specialist group

### About this organisation

<b>Main areas covered</b>	Integrable sensors and actuators, Integr. electronics and interfaces, Function-integrating structures, Electromobility, Wireless charging
<b>Infrastructure</b>	Electronics laboratory, Vibroacoustic laboratory, HIL test benches, Structural dynamics and diagnostics laboratory, Advanced integration technologies
<b>Certifications</b>	
<b>Keywords</b>	Integrable sensors and actuators, Integr. electronics and interfaces, Function-integrating structures, Electromobility, Wireless charging
<b>Memberships</b>	

### Overview of lightweighting expertise

#### Machine translation

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	Research	Development	Manufacturing & Supply
<b>Offer</b>			
<b>Products</b> Parts and components, Semi-finished parts, Machines and plants, Software & databases, Systems and end products, Materials, Tools and moulds	✓	✓	
<b>Services &amp; consulting</b> Training, Consulting, Testing and trials, Engineering, Prototyping, Validation, Simulation, Technology transfer	✓	✓	

## Overview of lightweighting expertise

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

## Overview of lightweighting expertise

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

## Contacts

### Machine translation

# TU Dresden, Institute of Lightweight Engineering and Polymer Technology

*Functional integration specialist group*

## Contacts

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

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