

TU Dresden, Institute of Lightweight Engineering and Polymer Technology

Lightweight construction 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 (ILK) at TU Dresden, nine specialist groups focus on different areas of lightweight construction. The scientists in the Lightweight Structures department research innovative, material-appropriate design and construction approaches and develop holistic lightweight components and systems - right through to the prototype component.

In international research and industrial collaborations, the Lightweight Structures Group at the Institute of Lightweight Structures and Polymer Engineering works on scientific and application-orientated projects with the aim of transferring the fundamental knowledge generated into lightweight construction solutions that go far beyond the state of the art. The development strategy is characterised above all by the material-oriented approach, which includes a consideration of all construction materials and material combinations and thus forms the basis for highly efficient lightweight construction.

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Saxony
Germany

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



Organisation type

University or higher education institution

Sectors



Employees

10 up to 49

Turnover

Up to €2m

Funding



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Main areas covered	Integrated construction method development, Near-series prototypes and testing, Chassis and drive components, Structural components and systems, Tribology
Infrastructure	Design/simulation software, Tribology laboratory, Universal testing machines
Certifications	
Keywords	Mixed construction methods, Lightweight solutions, Tribology, Construction, Product development
Memberships	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Semi-finished parts, Machines and plants, Systems and end products, Materials, Tools and moulds	✓	✓	✓
Services & consulting Training, Consulting, Testing and trials, Engineering, 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	✓	✓	✓
<i>Functional integration</i>			
Measuring and testing technology Component and part analysis, Visual analysis (e.g. microscopy, metallography), System analysis, Environmental simulation, Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	
Modelling and simulation Crash behaviour, Loads & stress, Life-cycle analysis, Multiphysics simulation, Optimisation, Processes, Structural mechanics, Materials, Reliability validation	✓	✓	
Plant construction & automation Plant construction	✓	✓	
Recycling technologies Material separation, Recycling	✓	✓	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing, Selective laser sintering (SLS)	✓	✓	
Coating (surface engineering) Others (tribological surface optimisation)	✓	✓	
Fibre composite technology Fibre spraying, Filament winding, Manual lamination, Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion	✓	✓	✓
Forming Bending, Thermal converting, Deep-drawing, Fluid active media based forming	✓	✓	✓
Joining Clinching, Hybrid joining, Adhesive bonding, Soldering, Riveting, Screwing, Welding	✓	✓	✓
Material property alteration Mechanical treatment, Thermomechanical treatment, Heat treatment	✓	✓	
Primary forming Extrusion, Casting, Pultrusion, Sintering, Injection moulding	✓	✓	✓
<i>Processing and separating</i>			
Textile technology Braiding, Preforming, Others (Nappy changing)	✓	✓	

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials Bioplastics, Biocomposites, Wood	✓	✓	
Cellular materials (foam materials) Closed-pore, Open-pore, Syntactic foams	✓		
Composites Aramid fibre composites, Basalt fibre-reinforced plastic, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Nanocomposites, Natural fibre reinforced plastics (NFRP), Laminates	✓	✓	✓
Fibres Aramid fibres, Basalt fibres, Glass fibres, Carbon fibres, Metal fibres, Natural fibres	✓		
<i>Functional materials</i>			
Metals Aluminium, Intermetallic alloys, Magnesium, Steel, Titanium	✓	✓	
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
<i>Structural ceramics</i>			
(Technical) textiles Yarns, rovings, Meshes, Laid webs, Crocheted fabrics, Woven fabrics, Knitted fabrics, Nonwovens, mats	✓		

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Contacts

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