

Fraunhofer IWM Institute for Mechanics of Materials

About this organisation

Machine translation

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

The Fraunhofer IWM is a research and development partner for industry and public clients in the field of reliability, safety, service life and functionality of components and systems.

The materials mechanics approach of the Fraunhofer IWM aims to identify weak points and faults in materials and components, to clarify their causes and, based on this, to offer solutions for safeguarding the use of stressed components, for the development of functional materials and for resource-efficient manufacturing processes. The expertise of the Fraunhofer IWM is particularly effective where materials in components and manufacturing processes are exposed to extreme and complex load conditions and where improvements in performance and functions can therefore only be realised through a profound and holistic understanding.

Wöhlerstraße 11
79108 Freiburg
Baden-Württemberg
Germany

www.iwm.fraunhofer.de



Organisation type

Non-university research institution

Sectors



Employees

250 up to 499

Turnover

€10m - €50m

Funding

n/a

Main areas covered	Material design, Manufacturing processes, tribology, Component safety and lightweight construction, Material evaluation, Lifetime concepts
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Infrastructure	Material characterisation, Component characterisation, Microstructure analysis, Damage assessment, Material modelling and simulation
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Certifications	QM system according to ISO 9001
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Keywords	Security, reliability, Service life, Functionality
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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 Consulting, Testing and trials, Simulation, Technology transfer	✓	✓	
Field of technology			
Design & layout Lightweight manufacturing, Lightweight design, Hybrid structures, Lightweight material construction	✓	✓	
Functional integration Material functionalisation	✓	✓	
Measuring and testing technology Component and part analysis, Materials analysis, Destructive analysis	✓	✓	
Modelling and simulation Crash behaviour, Loads & stress, Life-cycle analysis, Multiphysics simulation, 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>			
Coating (surface engineering) Plasma process, Sputtering	✓	✓	
<i>Fibre composite technology</i>			
Forming Bending, Forging, Extrusion moulding, Deep-drawing, Rolling	✓	✓	
Joining Hybrid joining, Adhesive bonding, Riveting, Welding	✓	✓	
Material property alteration Mechanical treatment, Heat treatment	✓	✓	
Primary forming Casting, Pultrusion, Sintering	✓	✓	
Processing and separating Cutting	✓	✓	
<i>Textile technology</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Material			
<i>Biogenic materials</i>			
Cellular materials (foam materials) Closed-pore, Open-pore	✓		
Composites Glass-fiber reinforced plastics (GFRP), Ceramic matrix composite (CMC), Carbon-fiber reinforced plastics (CFRP), Metal-ceramic composite, Nanocomposites	✓		
<i>Fibres</i>			
Functional materials Electrorheological/magnetorheological fluids, Electrostrictive / magnetostrictive materials, Shape memory materials, Piezoelectric materials	✓		
Metals Aluminium, Intermetallic alloys, Magnesium, Steel	✓	✓	
<i>Plastics</i>			
Structural ceramics Monolithic ceramics, Non-oxidic ceramics, Oxidic ceramics	✓	✓	
<i>(Technical) textiles</i>			

Contacts

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