Fraunhofer Institute for Microstructure of Materials and Systems IMWS

Polymer Applications business division

About this organisation

Machine translation

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

The Fraunhofer IMWS is a methodologically orientated Fraunhofer Institute in the specialist disciplines of materials science and materials engineering. The Polymer Applications business unit of the Fraunhofer IMWS is the material and process specialist for fibre-reinforced high-performance thermoplastics and innovative rubber composites for use in large-scale production.

The Polymer Applications business unit of the Fraunhofer IMWS deals with the characterisation and optimisation of composite materials, the development of testing and processing methods and the investigation of the application behaviour, design and prototype production of polymer-based components. The main focus of the work is the research and development of thermoplastic prepregs as an innovative semi-finished product for fibre composite structures suitable for large-scale production as well as component and technology development for highly resilient continuous fibre-reinforced, thermoplastic structural components. In addition, methods are being developed that allow microstructure-based in-/on- and at-line diagnostics for the integrative quality assessment of high-performance fibre composite structures.

Fraunhofer IMWS

Organisation type
Non-university research institution

Sectors

Employees
50 up to 249

Turnover
€10m - €50m

Funding

Walter-Hülse-Str. 1
06120 Halle (Saale)
Saxony-Anhalt
Germany
www.imws.fraunhofer.de/

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Main areas covered	UD tape and laminate production, Hybrid injection moulding, Load-path-compatible component design, Component testing and evaluation, Material characterisation
Infrastructure	UD tape system, Hybrid injection moulding system, IMC injection moulding system, Non-destructive testing methods (NDT), Mechanical testing and FEM
Certifications	ISO 9001
Keywords	Thermoplastic fibre composites, UD tape, Effect of Defects, Hybrid injection moulding, Quality assessment
Memberships	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Semi-finished parts, Materials	✓	✓	✓
Services & consulting Consulting, Testing and trials, Engineering, Validation, Simulation, Technology transfer	✓	✓	✓

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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, Environmental simulation, Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	✓
Modelling and simulation Loads & stress, Optimisation, Processes, Structural mechanics, Materials, Reliability validation	✓	✓	✓
Plant construction & automation Plant construction, Automation technology, Handling technology	✓	✓	
Recycling technologies Downcycling, Recycling	✓	✓	✓

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Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing	✓	✓	
Coating (surface engineering) Painting, Plasma process, Sputtering	✓	✓	✓
Fibre composite technology Pre-preg processing, Vacuum infusion	✓	✓	✓
Forming Thermal converting	✓	✓	✓
Joining Adhesive bonding	✓	✓	✓
Material property alteration Mechanical treatment, Thermochemical treatment, Thermomechanical treatment, Heat treatment	✓	✓	
Primary forming Extrusion, Injection moulding	✓	✓	✓
Processing and separating Milling, Sawing, Cutting			✓
Textile technology Textile surface treatment and finishing	✓	✓	

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials Bioplastics, Biocomposites	✓	✓	✓
Cellular materials (foam materials) Closed-pore, Open-pore	✓	✓	
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, Particulate composites	✓	✓	✓
Fibres Aramid fibres, Basalt fibres, Glass fibres, Carbon fibres, Natural fibres	✓	✓	
Functional materials			
Metals Aluminium, Steel	✓	✓	
Plastics Elastomers, Thermoplastics	✓	✓	✓
Structural ceramics			
(Technical) textiles Yarns, rovings, Meshes, Laid webs, Woven fabrics, Nonwovens, mats	✓	✓	

Contacts

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