Paderborn University

Institute for Lightweight Design with Hybrid Systems (ILH)

About this organisation

The Institute for Lightweight Design with Hybrid Systems (ILH) is a central scientific facility Paderborn University, which combines natural sciences (chemistry and physics) and mechanical engineering. The ILH's interdisciplinary research approach enables it to cover the entire process chain of hybrid systems, from materials development, process technology and simulation to recycling.

The close collaboration of scientists from the fields of chemistry, physics and mechanical engineering enables the realisation of new hybrid systems made of different materials. At the ILH, new solutions and concepts are developed through application-oriented basic research based on these four research areas. - Methodology - Materials and Interfaces - Production Engineering - Simulation Technology

Warburger Straße 100
33098 Paderborn
North Rhine-Westphalia
Germany
ilh.uni-paderborn.de

Organisation type
University or higher education institution

Sectors
No specific sector

Employees
50 up to 249

Turnover
n/a

Funding

Main areas covered

Infrastructure

Certifications

Keywords

Memberships COMPOSITES UNITED e.V.

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Overview of lightweighting expertise

	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	✓	✓	✓
Field of technology			
Design & layout Hybrid structures, Lightweight construction concepts	✓	✓	
Functional integration			
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, Optimisation, Processes, Structural mechanics, Materials	✓	✓	
Plant construction & automation Plant construction	✓	✓	
Recycling technologies Downcycling, Material separation, Recycling	✓	✓	

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Overview of lightweighting expertise

	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing Fused deposition modeling, Selective laser melting (SLM, LPBF, ...), Selective laser sintering (SLS)	✓	✓	
Coating (surface engineering) Painting, Plasma process, Sputtering	✓	✓	
Fibre composite technology Filament winding, Manual lamination, Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion	✓	✓	✓
Forming Bending, Impact extrusion, Compression moulding, Extrusion moulding, Stretch forming, Thermal converting, Deep-drawing, Fluid active media based forming, Rolling, Others	✓	✓	
Joining Clinching, Hybrid joining, Adhesive bonding, Riveting, Welding	✓	✓	
Material property alteration Mechanical treatment, Thermomechanical treatment, Heat treatment	✓	✓	
Primary forming Extrusion, Casting, Sintering, Injection moulding	✓	✓	
Processing and separating			
Textile technology			

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Overview of lightweighting expertise

	Research	Development	Manufacturing & Supply
Material			
Biogenic materials Biocomposites, Wood	✓	✓	
Cellular materials (foam materials)			
Composites Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Nanocomposites, Laminates	✓	✓	✓
Fibres Glass fibres, Carbon fibres	✓	✓	
Functional materials			
Metals Aluminium, Intermetallic alloys, Magnesium, Steel, Titanium	✓	✓	
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
Structural ceramics			
(Technical) textiles			

Contacts

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Chairman

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