University of Stuttgart
Institute of Aircraft Design

About this organisation

Eco-efficient flying, lighter construction with fiber composites, generating energy from wind power - Welcome to the Institute of Aircraft Design! With our areas of aircraft design, lightweight construction, manufacturing technology and wind energy, we are active in research and teaching on current, interesting and relevant topics. Find out more about them on our homepage and feel free to visit us at the Stuttgart-Vaihingen campus. Translated w

The research area Lightweight Design and Manufacturing Technology at the Institute of Aircraft Design is dedicated to the design, dimensioning and manufacturing of structural components. The main focus is on: - the development of analytical calculation methods, which are used in particular in preliminary design. - the simulation of fiber-reinforced plastics (FRP) and their processes - the research and development of new FRP processes and material

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70569 Stuttgart
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Organisation type
University or higher education institution

Sectors

Employees
50 up to 249

Turnover
n/a

Funding

Main areas covered

Infrastructure

Certifications

Keywords

Memberships

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Overview of lightweighting expertise

	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Semi-finished parts, Materials	✓	✓	
Services & consulting Training, Consulting, Testing and trials, Engineering, Prototyping, Validation, Simulation, Technology transfer	✓	✓	✓
Field of technology			
Design & layout Lightweight manufacturing, Lightweight design, Hybrid structures, Lightweight construction concepts, Lightweight material construction	✓	✓	
Functional integration Sensor technology, Thermal activation	✓	✓	
Measuring and testing technology Component and part analysis, Visual analysis (e.g. microscopy, metallography), Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	
Modelling and simulation Crash behaviour, Loads & stress, Optimisation, Processes, Structural mechanics, Materials	✓	✓	
Plant construction & automation Automation technology, Handling technology, Robotics	✓	✓	
Recycling technologies Downcycling, Recycling	✓	✓	

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Overview of lightweighting expertise

	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing, Selective laser sintering (SLS)	✓	✓	
Coating (surface engineering)			
Fibre composite technology Filament winding, Manual lamination, Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion	✓	✓	
Forming			
Joining Adhesive bonding, Sewing, Screwing	✓	✓	
Material property alteration			
Primary forming			
Processing and separating Drilling, Turning, Milling, Sawing, Cutting	✓	✓	
Textile technology Braiding, Preforming	✓	✓	

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Overview of lightweighting expertise

	Research	Development	Manufacturing & Supply
Material			
Biogenic materials			
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)	✓	✓	
Fibres Aramid fibres, Basalt fibres, Glass fibres, Carbon fibres	✓	✓	
Functional materials			
Metals Aluminium, Titanium	✓	✓	
Plastics Thermoset plastics, Thermoplastics	✓	✓	
Structural ceramics			
(Technical) textiles Yarns, rovings, Meshes, Laid webs, Woven fabrics, Nonwovens, mats	✓	✓	

Contacts

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