Institute for Forming Technology and Forming Machines

Gottfried Wilhelm Leibniz University Hanover

About this organisation

Machine translation

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

The IFUM deals with both basic research and current application-orientated issues in almost all areas of forming technology. The expertise in research and development covers innovative processes and methods of cold and hot forming, future-oriented machine and tool concepts as well as the handling of new materials and composites, both experimentally and virtually.

Sheet metal forming researches the forming technology processing of fibre-reinforced plastic composites and the hardening of shapes and thus the exploitation of lightweight construction potential. The further development of mechanical joining and the improvement of sheet metal forming processes round off the research profile. The forging department is involved in the development of forming processes, the investigation of the application behaviour of modified forming tools and innovative lightweight construction concepts. A flexibly designed forging cell enables fully automated operation with high reproducibility as well as customised heating, cooling and handling systems. In this way, optimum thermal process control can be realised with regard to both the workpiece and the tool. In the field of material characterisation and simulation-supported process analysis, we have expertise in the area of modern alternative lightweight materials (including fibre-reinforced plastics).

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IFUM
Institut für Umformtechnik und Umformmaschinen
Prof. Dr.-Ing. Bernd-Arno Behrens

Organisation type
University or higher education institution

Sectors

Employees
50 up to 249

Turnover
€2m - €10m

Funding

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Main areas covered	Forming technology, Forming machines, FE simulation, Material characterisation, Wear analyses
Infrastructure	Material characterisation, Forming presses
Certifications	
Keywords	Forming technology, Forming machines
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 Training, Consulting, Prototyping, Validation, Simulation, Technology transfer	✓	✓	

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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	✓	✓	
Functional integration Actuator technology, Media conductivity, Sensor technology, Thermal activation, Material functionalisation	✓	✓	
Measuring and testing technology Component and part analysis, Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	
Modelling and simulation Life-cycle analysis, Optimisation, Processes, Materials	✓	✓	
Plant construction & automation Plant construction, Automation technology, Handling technology	✓	✓	
Recycling technologies			

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing, Deposition welding, Selective laser melting (SLM, LPBF, ...), Selective laser sintering (SLS)	✓	✓	
Coating (surface engineering) Plasma process, Powder coating, Sputtering	✓	✓	
Fibre composite technology			
Forming Impact extrusion, Compression moulding, Forging, Extrusion moulding, Stretch forming, Deep-drawing, Fluid active media based forming	✓	✓	✓
Joining Clinching, Adhesive bonding, Riveting, Welding	✓	✓	
Material property alteration Thermochemical treatment, Thermomechanical treatment, Heat treatment	✓	✓	
Primary forming Sintering	✓	✓	
Processing and separating			
Textile technology			

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

Contacts

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