Lightweight Construction Competence Centre at Landshut University of Applied Sciences (LLK)

About this organisation

Machine translation

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

The LLK deals with the characterisation, modelling and application of lightweight materials and structures. Efficient lightweight construction solutions are conceptualised, designed and developed using lightweight system construction combined with a design methodology. In research and development projects, the LLK can cover the areas of materials analysis, design and simulation, prototype production and experimental testing.

The fatigue strength behaviour of wrought magnesium alloys and the static and cyclic behaviour of cellular composites (glass foam granules in EP matrix) were investigated and modelled in research projects. The development and production of hybrid structures (hybrid hollow profiles, sandwiches) has made it possible to identify suitable applications for cellular composites. An Interreg project is currently researching the fatigue strength analysis for notched and formed magnesium sheets, the thermo-mechanical properties of intermetallics (TiAl) and cellular composites produced using T-RTM as well as GRP laminates with a polyamide matrix. The Materials Analysis Laboratory supports the development of lightweight materials using scanning electron microscopy, nano-computed tomography and plastics analysis (TGA, DSC, TMA, DMA). Bilateral co-operations range from material and component testing to experimental durability analysis of structures up to 8 tonnes.

Am Lurzenhof 1
84036 Landshut
Bavaria
Germany
www.kompetenzzentrum-leichtbau.de

Organisation type
University or higher education institution

Sectors

Employees
Up to 9

Turnover
n/a

Funding
n/a

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Main areas covered	Fatigue strength Mg wrought alloy, Damage to cellular composites, TMF high-temperature materials, TiAl, Development of hybrid structures, T-RTM, composites, sandwich elements
Infrastructure	Servohydraul. Test benches 7-160kN, Universal tensile testing machines 20-150kN, Swing foundation, 2.5x6m span, Environmental simulation (temp., humidity), REM, CT, TMA, DMA TGA, DSC
Certifications	
Keywords	Material analysis and modelling, Testing and testing technology, Lightweight construction, simulation, Lightweight materials, production, Lightweight system construction, connection technology
Memberships	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products			
Services & consulting Training, Testing and trials, Engineering, Validation, Simulation	✓	✓	

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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			
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, Others (Fatigue strength test)	✓	✓	
Modelling and simulation Crash behaviour, Loads & stress, Structural mechanics, Materials, Reliability validation, Others (Fatigue strength analyses)	✓	✓	
Plant construction & automation			
Recycling technologies			

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing		✓	
Coating (surface engineering)			
Fibre composite technology Resin transfer moulding, Others (T-RTM)	✓		
Forming Bending, Compression moulding, Thermal converting, Others (Forming of Mg sheets)	✓	✓	
Joining			
Material property alteration Heat treatment	✓	✓	
Primary forming			
Processing and separating			
Textile technology			

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials			
Cellular materials (foam materials) Closed-pore, Syntactic foams	✓	✓	
Composites Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Others (cellular composites (glass foam granules in epoxy or PA6 matrix))	✓	✓	
Fibres Glass fibres, Carbon fibres		✓	
Functional materials			
Metals Aluminium, Intermetallic alloys, Magnesium, Steel	✓	✓	
Plastics Thermoset plastics, Thermoplastics	✓		
Structural ceramics			
(Technical) textiles			

Contacts

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Contacts

Mr B.-Eng. Marcus Diewald	Mr Prof. Dr.-Ing. Otto Huber
Laboratory engineer	*Institute Director*
marcus.diewald@haw-landshut.de	Otto.Huber@haw-landshut.de