University of Wuppertal

Chair of Optimisation of Mechanical Structures

About this organisation

Machine translation

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

The chair is integrated into the Faculty of Mechanical Engineering and Safety Engineering. The chair researches methods for shape and topology optimisation for lightweight construction. To this end, multidisciplinary approaches are pursued, with particular expertise in crash design. The focus is on the consideration of material-dependent properties (e.g. for fibre composites) and efficiency enhancement methods.

Fields of expertise: - Calculation of mechanical properties of lightweight structures (e.g. buckling, buckling and material failure) - Development of algorithms for the optimisation of mechanical structures - Optimisation of crash structures using mathematical and heuristic methods - Optimisation of mechanical properties of components with consideration of manufacturing processes (especially: casting, deep drawing and 3D printing)

Gaußstraße 20
42119 Wuppertal
North Rhine-Westphalia
Germany
www.oms.uni-wuppertal.de

Organisation type
University or higher education institution

Sectors
No specific sector

Employees
10 up to 49

Turnover
n/a

Funding
n/a

Main areas covered	Optimisation process, Calculation method, Lightweight body construction, Aircraft structure development
Infrastructure	
Certifications	
Keywords	
Memberships	Society for Maths and Mech. (GAMM), Automotive Sim. Centre (ASCS)

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Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products			
Services & consulting Training, Consulting, Simulation	✓	✓	
Field of technology			
Design & layout Lightweight manufacturing, Lightweight design, Others (Crash structures)	✓	✓	
Functional integration			
Measuring and testing technology			
Modelling and simulation Crash behaviour, Loads & stress, Optimisation, Structural mechanics, Materials, Reliability validation	✓	✓	
Plant construction & automation			
Recycling technologies			

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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)			
Fibre composite technology Manual lamination, Vacuum infusion	✓	✓	
Forming Bending, Extrusion moulding, Deep-drawing, Rolling	✓	✓	
Joining			
Material property alteration			
Primary forming			
Processing and separating			
Textile technology			

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Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials			
Cellular materials (foam materials)			
Composites			
Fibres			
Functional materials			
Metals			
Plastics			
Structural ceramics			
(Technical) textiles			

Contacts

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Mr Prof. Dr.-Ing. Axel Schumacher

Chair holder

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