Karlsruhe Institute of Technology (KIT)
IPEK - Institute for Product Development

About this organisation

Machine translation

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

The IPEK - Institute for Product Development is a research centre at the Karlsruhe Institute of Technology (KIT). We see ourselves as a centre for scientific product development and innovation with a focus on drive systems and mobility. We subdivide product development into its systems, methods and processes in order to do justice to the complexity of today's product development in a holistic way.

Effective lightweight construction is achieved when all potentials are consistently recognised and exploited - when lightweight construction is defined as an overriding goal within the product development process. This is why we are conducting research in international consortia with partners from industry and science into methods for a holistic view beyond (sub)systems as well as simulative and prototypical tools for tapping lightweight design potential. We are also researching ways of implementing and validating lightweight design endeavours in the product development process.
In addition to research, our aim is to continuously develop and improve these lightweight construction methods with various industrial partners in a wide range of projects and programmes and to tailor them to individual problems.

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76131 Karlsruhe
Baden-Württemberg
Germany
www.ipek.kit.edu

Organisation type
University or higher education institution

Sectors

Employees
50 up to 249

Turnover
n/a

Funding
n/a




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Main areas covered	Development methods and processes, System Design, Lightweight construction potential in the overall system, Structural simulation and optimisation, Fibre composites
Infrastructure	Extended Reality Lab, Prototype Centre, Creativity lab, Research licences, Access to KIT's mainframe computer systems
Certifications	
Keywords	Product development, Design, construction and layout, Structural and multi-body simulation, Topology and bead optimisation, Validation and verification
Memberships	Lightweight construction BW, WiGeP, NAFEMS

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Software & databases, Systems and end products	✓	✓	
Services & consulting Training, Consulting, Testing and trials, Engineering, Prototyping, 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 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	✓	✓	
Modelling and simulation Loads & stress, Multiphysics simulation, Optimisation, Processes, Structural mechanics, Materials	✓	✓	
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, Fused deposition modeling, Selective laser melting (SLM, LPBF, ...)	✓	✓	
Coating (surface engineering)			
Fibre composite technology Fibre spraying, Pre-preg processing	✓	✓	
Forming			
Joining Hybrid joining, Adhesive bonding, Riveting, Screwing	✓	✓	
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 Univ.-Prof. Dr.-Ing. Dr. h. c. Albert Albers

Institute Director

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