

German Aerospace Centre (DLR)

Institute for Vehicle Concepts

About this organisation

Machine translation

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

The Institute of Vehicle Concepts is a systems institute. It works on and coordinates transport-related research topics on new vehicle concepts and vehicle technologies. The Institute's fields of work address the development of future technology systems for sustainable, safe and affordable vehicle generations on road and rail.

The institute's competences and work range from conception and design, construction, calculation and simulation to the presentation of research demonstrators and vehicles, as well as innovative material and process applications and joining technologies for road and rail vehicles. The institute links and integrates conceptualisation, design and simulation capabilities with options for the presentation, testing and vehicle integration of demonstrators. Sustainable construction methods and their application are researched and developed along the entire development chain right up to prototype realisation. Another of the institute's tasks is to recognise and make the best possible use of material and process potential. Based on an understanding of the requirements of the overall system, new material solutions are identified, the properties are researched, simulation methods are developed and the potential of generic components is demonstrated.

Pfaffenwaldring 38-40
70569 Stuttgart
Baden-Württemberg
Germany
www.dlr.de/fk



Organisation type

Non-university research institution

Sectors



Employees

50 up to 249

Turnover

n/a

Funding

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Main areas covered	Vehicle design and architecture, Digitalisation, GPD, Industry 4.0, Simulation and structural optimisation, Material properties, joining technology, Passive/active safety
Infrastructure	Generic Part Design, Add. Manufacturing, Component testing system, clamping field, Joining laboratory, component/specimen testing, Simulation and calculation cluster
Certifications	ISO 9001:2015
Keywords	Materials, joining technology, corrosion, Construction, modelling, Simulation, structural optimisation, Add. Manufacturing, GPD, Digitisation, Testing, validation, prototypes
Memberships	ARENA2023 (founding member), Composites United e.V., German Society for Materials Science, DIN Standards Committee Materials Testing, International Magnesium Association

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Software & databases, Materials, Tools and moulds, Others (innovative vehicle structure concepts, new material application ideas,)	✓	✓	
Services & consulting Consulting, Testing and trials, Engineering, Validation, Simulation, Technology transfer, Others (Customised training courses, e.g. joining techniques in the automotive industry)	✓	✓	

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, Others (Innovative cast components, magnesium castings, sheet metal and profile components, wood hybrid structures, sandwich structures)	✓	✓	
Functional integration Actuator technology, Media conductivity, Sensor technology, Thermal activation, Material functionalisation, Others (Intelligent functional integration in cast components)	✓	✓	
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 (Dynamic material properties, component crash test, fatigue test, corrosion test according to VDA 233-102, machine learning, AI methods)	✓	✓	
Modelling and simulation Crash behaviour, Loads & stress, Life-cycle analysis, Multiphysics simulation, Optimisation, Structural mechanics, Materials	✓	✓	
<i>Plant construction & automation</i>			
<i>Recycling technologies</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing, Selective laser sintering (SLS)	✓	✓	
<i>Coating (surface engineering)</i>			
<i>Fibre composite technology</i>			
<i>Forming</i>			
Joining Clinching, Hybrid joining, Adhesive bonding, Riveting, Screwing, Others (Flow-Drill- Fastening)	✓	✓	
<i>Material property alteration</i>			
Primary forming Others (Design of innovative cast components, simulation methods for new aluminium casting alloys)	✓	✓	
<i>Processing and separating</i>			
<i>Textile technology</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials Bioplastics, Biocomposites, Wood, Others (Wood for structural road and rail vehicle applications)	✓	✓	
<i>Cellular materials (foam materials)</i>			
Composites Basalt fibre-reinforced plastic, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Short fibre-reinforced concrete, Others (Wood/metal hybrids, wood/FRP hybrids)	✓	✓	
<i>Fibres</i>			
<i>Functional materials</i>			
Metals Aluminium, Intermetallic alloys, Magnesium, Steel, Titanium, Others (Scandium)	✓	✓	
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
<i>Structural ceramics</i>			
<i>(Technical) textiles</i>			

Contacts

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Contacts

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