

German Aerospace Centre (DLR)

Institute of Composite Structures and Adaptive Systems

About this organisation

Machine translation

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

As a leading institution in the field of lightweight fibre composite construction, the institute has been researching more efficient manufacturing processes for CFRP structures as well as improved analysis and design methods for many years. Adaptronics, another pillar of the institute, also opens up possibilities for upgrading CFRP components both technically and economically by integrating additional capabilities into the composite.

The DLR Institute of Composite Structures and Adaptive Systems has expertise in the design and realisation of adaptable, efficient composite structures and lightweight systems. The research serves to minimise the weight of load-bearing structures, improve cost efficiency in production and operation, maximise the functionality integrated into the structure, increase comfort and improve environmental compatibility. In addition to fundamental work in future research, the institute focusses on six key areas of application research. These serve to carry out large, practice-orientated projects with a cross-departmental and interdisciplinary character. Unique testing and production facilities such as thermomechanical test benches, a buckling facility for dynamic component loads and a microwave autoclave are available to clarify questions of stability, strength and thermal analysis.

Lilienthalplatz 7
38108 Braunschweig
Lower Saxony
Germany
www.dlr.de/fa



Organisation type

Non-university research institution

Sectors



Employees

50 up to 249

Turnover

n/a

Funding



[Projects in the funding catalogue](#)

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About this organisation

Main areas covered Multifunctional materials, Structural mechanics, Functional lightweight construction, Fibre composite technology, adaptronics, Composite process technology

Infrastructure Thermomechanical test benches, Buckling systems, Airbus certified test laboratory, RTM process line, Fibre placement technologies

Certifications DIN EN ISO 9001:2008

Keywords

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, Systems and end products, Materials, Tools and moulds	✓	✓	✓
Services & consulting Training, Consulting, Testing and trials, Engineering, Standardisation, Prototyping, Validation, Simulation, Technology transfer, Maintenance and repair	✓	✓	✓

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, Sensor technology, Material functionalisation	✓	✓	✓
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	✓	✓	
Modelling and simulation Crash behaviour, Loads & stress, Life-cycle analysis, Optimisation, Processes, Structural mechanics, Materials, Reliability validation	✓	✓	✓
Plant construction & factory automation Plant construction, Automation technology, Robotics	✓	✓	✓
<i>Recycling technologies</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing	✓	✓	✓
Coating (surface engineering) Plasma process, Powder coating	✓	✓	✓
Fibre composite technology Fibre spraying, Filament winding, Manual lamination, Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion	✓	✓	✓
Forming Compression moulding	✓	✓	✓
Joining Adhesive bonding, Riveting, Screwing	✓	✓	✓
<i>Material property alteration</i>			
Primary forming Casting, Pultrusion	✓	✓	✓
Processing and separating Drilling, Turning, Milling, Sawing, Grinding, Cutting	✓	✓	✓
<i>Textile technology</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials Bioplastics, Biocomposites, Wood	✓	✓	✓
<i>Cellular materials (foam materials)</i>			
Composites Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Nanocomposites, Natural fibre reinforced plastics (NFRP)	✓	✓	✓
Fibres Glass fibres, Carbon fibres, Natural fibres	✓	✓	✓
Functional materials Piezoelectric materials	✓	✓	✓
<i>Metals</i>			
Plastics Elastomers, Thermoplastics	✓	✓	✓
<i>Structural ceramics</i>			
<i>(Technical) textiles</i>			

Contacts

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Contacts

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