

Rolls-Royce University Technology Centre (UTC) Dresden

UTC Dresden "Lightweight Structures and Materials and Robust Design"

About this organisation

Machine translation

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

The University Technology Centre (UTC) in Dresden focuses on the development of lightweight materials and structures. Research is also being conducted into improved methods for predicting the service life of high-temperature components subject to complex stresses and optimising component design.

The UTC Dresden "Lightweight Structures and Materials and Robust Design" deals with the development of lightweight materials and structures for engines in order to reduce weight and make an important contribution to lowering fuel consumption. Lightweight construction also enables the development of new engine concepts for the fan, compressor, gearbox and engine housing. In addition, the UTC is researching improved methods for predicting the service life of highly stressed engine components and the optimised design of components. These methods are implemented at the UTC Dresden in a linked development process, which makes it possible to drastically reduce the development effort in terms of costs and time. The UTC Dresden was founded in 2006 by the engine manufacturer Rolls-Royce and has since achieved important results in the field of engine weight reduction.



Rolls-Royce

Organisation type

University or higher education institution

Sectors



Employees

50 up to 249

Turnover

€2m - €10m

Funding

n/a

Holbeinstr. 3
01307 Dresden
Saxony
Germany

tu-dresden.de/ing/maschinenwesen/ilk/utc



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Main areas covered	Turbomachinery and engines, Multi-material design, Material and structure simulation, Robust design, Gearbox development and simulation
Infrastructure	Materials mechanics testing laboratory, Rotor test rigs, Low-pressure compressor test bench, Hot gas test bench, System test benches
Certifications	
Keywords	Aviation, Fibre composites, Robust design, Engine, Manufacturing processes
Memberships	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Semi-finished parts, Machines and plants, Systems and end products, Materials, Tools and moulds	✓	✓	
Services & consulting Training, Consulting, Testing and trials, Engineering, Standardisation, Prototyping, Validation, Simulation	✓	✓	

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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, Media conductivity, Sensor technology, Thermal activation, Material functionalisation, Others: null	✓	✓	
Measuring and testing technology Component and part analysis, Visual analysis (e.g. microscopy, metallography), System analysis, Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	
Modelling and simulation Crash behaviour, Loads & stress, Life-cycle analysis, Multiphysics simulation, Optimisation, Processes, Structural mechanics, Materials, Reliability validation	✓	✓	
<i>Plant construction & factory automation</i>			
<i>Recycling technologies</i>			

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing, Laminated object manufacturing (LOM), Selective laser melting (SLM, LPBF, ...)	✓	✓	
<i>Coating (surface engineering)</i>			
Fibre composite technology Filament winding, Manual lamination, Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion	✓	✓	
Forming Impact extrusion, Compression moulding, Thermal converting	✓	✓	
Joining Hybrid joining, Adhesive bonding	✓	✓	
<i>Material property alteration</i>			
Primary forming Pultrusion, Injection moulding	✓	✓	
<i>Processing and separating</i>			
Textile technology Braiding, Yarn & roving production, Preforming, Knitting, Weaving, Knitting, laid web production	✓	✓	

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	Research	Development	Manufacturing & Supply
Material			
<i>Biogenic materials</i>			
<i>Cellular materials (foam materials)</i>			
Composites Aramid fibre composites, Glass-fiber reinforced plastics (GFRP), Ceramic matrix composite (CMC), Carbon-fiber reinforced plastics (CFRP), Metal matrix composite, Laminates	✓	✓	
Fibres Glass fibres, Ceramic fibres, Carbon fibres	✓		
Functional materials Electrorheological/magnetorheological fluids, Piezoelectric materials	✓		
Metals Intermetallic alloys	✓		
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
Structural ceramics Others: null	✓	✓	
(Technical) textiles Meshes	✓	✓	

Contacts

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Contacts

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