

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

Department of Lightweight Technologies

About this organisation

Machine translation

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

Fraunhofer IPA is one of the largest institutes of the Fraunhofer-Gesellschaft and was founded in 1959. The 14 specialised departments of Fraunhofer IPA are complemented by the six business units Automotive, Mechanical and Plant Engineering, Electronics and Microsystems Technology, Energy, Medical and Biotechnology and Process Industry.

Fraunhofer IPA conducts research into the production engineering and automation of lightweight construction technologies. The focus is on machining processes for CFRP and other lightweight materials and their peripheral processes, such as extraction and cooling lubrication technologies and automated quality control. Fibre composite-compatible designs are implemented for constructive lightweight construction, as well as functional joining, topology and structure optimisation and generative manufacturing processes. Furthermore, functional particles such as carbon nanotubes and graphene are produced and transferred to industrial applications.

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Germany
www.ipa.fraunhofer.de/



Organisation type

Non-university research institution

Sectors



Employees

500 and more

Turnover

More than €50m

Funding



[Projects in the funding catalogue](#)

Fraunhofer Institute for Manufacturing Engineering and Automation

IPA

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About this organisation

Main areas covered	Lightweight construction, Machining technologies, Automation technology, Connection technology, Health protection and quality
Infrastructure	Finishing / Machining, Machining quality assurance, Simulation software hybrid lightweight construction, Lightweight construction methodology, Factory and production planning
Certifications	
Keywords	
Memberships	

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Offer			
Products Parts and components, Machines and plants, Materials	✓		
Services & consulting Training, Consulting, Testing and trials, Engineering, Validation, Technology transfer	✓		

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Field of technology			
Design & layout Lightweight manufacturing, Hybrid structures, Lightweight construction concepts, Lightweight material construction	✓		
Functional integration Actuator technology, Sensor technology	✓		
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 Loads & stress, Multiphysics simulation, Optimisation, Processes, Structural mechanics, Materials	✓		
Plant construction & factory automation Plant construction, Automation technology, Handling technology, Robotics	✓		
Recycling technologies Material separation	✓		

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing 3D printing, Selective laser melting (SLM, LPBF, ...), Selective laser sintering (SLS), Stereolithography	✓		
Coating (surface engineering) Galvanising, Painting, Plasma process, Powder coating	✓		
<i>Fibre composite technology</i>			
<i>Forming</i>			
Joining Adhesive bonding, Soldering, Riveting	✓		
Material property alteration Mechanical treatment, Heat treatment	✓		
<i>Primary forming</i>			
Processing and separating Drilling, Turning, Milling, Sawing, Shearing/punching, Grinding, Cutting	✓		
<i>Textile technology</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials Wood	✓		
<i>Cellular materials (foam materials)</i>			
Composites Aramid fibre composites, Basalt fibre-reinforced plastic, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Metal-fibre-polymer composite, Metal matrix composite, Nanocomposites, Natural fibre reinforced plastics (NFRP), Laminates, Particulate composites	✓		
<i>Fibres</i>			
<i>Functional materials</i>			
Metals Aluminium, Intermetallic alloys, Magnesium, Steel, Titanium	✓		
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓		
<i>Structural ceramics</i>			
<i>(Technical) textiles</i>			

Contacts

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Contacts

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