

# Institute for Plastics Processing (IKV) at RWTH Aachen University

## About this organisation

### Machine translation

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

The Institute of Plastics Processing (IKV) at RWTH Aachen University is Europe's leading research institute in the field of plastics technology with the key topics of additive manufacturing, integrative plastics technology, Industry 4.0 in plastics technology and lightweight construction. The combination of science and industry forms the central research core at the institute. The IKV network comprises more than 290 members worldwide.

IKV develops plastic-based lightweight construction solutions along the entire process chain with a clear focus on material science and production technology aspects. The solutions range from the load-optimised use of highly resilient continuous fibre-reinforced plastics and functionally integrated long and short fibre-reinforced lightweight components to the density reduction of unreinforced plastics using foaming processes and hybrid material combinations and multi-material construction methods using plastics and metals. In addition to the development of innovative processes, the prediction of the complex interactions between material, process and component properties plays a key role. IKV's close interdisciplinary collaboration with the Aachen Centre for Integrative Lightweight Construction (AZL), which was co-founded by IKV, and other research partners at RWTH Aachen University is the key to success.

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Germany  
[www.ikv.rwth-aachen.de](http://www.ikv.rwth-aachen.de)



### Organisation type

Non-university research institution

### Sectors

No specific sector

### Employees

250 up to 499

### Turnover

€10m - €50m

### Funding

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## About this organisation

|                           |                                                                                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Main areas covered</b> | Fibre-reinforced plastics, Injection moulding, Simulation, Product development, Materials engineering                                                         |
| <b>Infrastructure</b>     | FVK technical centre, Injection moulding technology centre, Polyurethane processing centre, Extrusion technology centre, Centre for plastics analysis/testing |
| <b>Certifications</b>     |                                                                                                                                                               |
| <b>Keywords</b>           | Continuous fibre-reinforced thermoplastics, Continuous fibre-reinforced thermosets, Press processing, Injection moulding, Design and simulation               |
| <b>Memberships</b>        |                                                                                                                                                               |

## Overview of lightweighting expertise

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|                                                                                                                                                                          | Research | Development | Manufacturing<br>& Supply |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------------------|
| <b>Offer</b>                                                                                                                                                             |          |             |                           |
| <b>Products</b><br>Parts and components, Semi-finished parts, Machines and plants, Materials, Tools and moulds                                                           | ✓        | ✓           |                           |
| <b>Services &amp; consulting</b><br>Training, Consulting, Engineering, Standardisation, Prototyping, Validation, Simulation, Technology transfer, Maintenance and repair | ✓        | ✓           | ✓                         |

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|                                                                                                                                                                                                       | Research | Development | Manufacturing<br>& Supply |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------------------|
| <b>Field of technology</b>                                                                                                                                                                            |          |             |                           |
| <b>Design &amp; layout</b><br>Lightweight manufacturing, Lightweight design,<br>Hybrid structures, Lightweight construction<br>concepts, Lightweight material construction                            | ✓        | ✓           | ✓                         |
| <b>Functional integration</b><br>Media conductivity, Sensor technology, Material<br>functionalisation                                                                                                 | ✓        | ✓           |                           |
| <b>Measuring and testing technology</b><br>Component and part analysis, Visual analysis<br>(e.g. microscopy, metallography), Materials<br>analysis, Destructive analysis, Non-destructive<br>analysis | ✓        | ✓           | ✓                         |
| <b>Modelling and simulation</b><br>Crash behaviour, Loads & stress, Life-cycle<br>analysis, Optimisation, Processes, Structural<br>mechanics, Materials, Reliability validation                       | ✓        | ✓           |                           |
| <i>Plant construction &amp; automation</i>                                                                                                                                                            |          |             |                           |
| <i>Recycling technologies</i>                                                                                                                                                                         |          |             |                           |

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|                                                                                                                                                                                                                                                                                                                                                                                 | Research | Development | Manufacturing<br>& Supply |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------------------|
| <b>Manufacturing process</b>                                                                                                                                                                                                                                                                                                                                                    |          |             |                           |
| <b>Additive manufacturing</b><br>3D printing, Deposition welding, Fused deposition modeling, Selective laser melting (SLM, LPBF, ...), Others (Fluid deposition modelling, hybrid combination of additive and subtractive manufacturing, material behaviour)                                                                                                                    | ✓        | ✓           |                           |
| <b>Coating (surface engineering)</b><br>Plasma process                                                                                                                                                                                                                                                                                                                          | ✓        | ✓           |                           |
| <b>Fibre composite technology</b><br>Fibre spraying, Filament winding, Manual lamination, Resin infusion process, Resin transfer moulding, Pre-preg processing, Vacuum infusion, Others (Liquid impregnation process (RTM, gap impregnation), forming of organic sheets and UD laminates, UD tape production, pultrusion, impact extrusion (SMC/ GMT), back injection moulding) | ✓        | ✓           |                           |
| <b>Forming</b><br>Impact extrusion, Compression moulding, Thermal converting, Deep-drawing, Fluid active media based forming                                                                                                                                                                                                                                                    | ✓        | ✓           |                           |
| <b>Joining</b><br>Hybrid joining, Adhesive bonding, Welding                                                                                                                                                                                                                                                                                                                     | ✓        | ✓           |                           |
| <i>Material property alteration</i>                                                                                                                                                                                                                                                                                                                                             |          |             |                           |
| <b>Primary forming</b><br>Extrusion, Pultrusion, Injection moulding                                                                                                                                                                                                                                                                                                             | ✓        | ✓           |                           |
| <i>Processing and separating</i>                                                                                                                                                                                                                                                                                                                                                |          |             |                           |
| <b>Textile technology</b><br>Preforming                                                                                                                                                                                                                                                                                                                                         | ✓        | ✓           |                           |

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|                                                                                                                                                                                                                                         | Research | Development | Manufacturing<br>& Supply |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------------------|
| <b>Material</b>                                                                                                                                                                                                                         |          |             |                           |
| <i>Biogenic materials</i>                                                                                                                                                                                                               |          |             |                           |
| <b>Cellular materials (foam materials)</b><br>Closed-pore, Open-pore, Syntactic foams                                                                                                                                                   | ✓        | ✓           |                           |
| <b>Composites</b><br>Aramid fibre composites, Basalt fibre-reinforced plastic, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Metal-fibre-polymer composite, Natural fibre reinforced plastics (NFRP) | ✓        | ✓           |                           |
| <b>Fibres</b><br>Aramid fibres, Glass fibres, Carbon fibres                                                                                                                                                                             | ✓        | ✓           |                           |
| <i>Functional materials</i>                                                                                                                                                                                                             |          |             |                           |
| <i>Metals</i>                                                                                                                                                                                                                           |          |             |                           |
| <b>Plastics</b><br>Thermoset plastics, Elastomers, Thermoplastics                                                                                                                                                                       | ✓        | ✓           |                           |
| <i>Structural ceramics</i>                                                                                                                                                                                                              |          |             |                           |
| <b>(Technical) textiles</b><br>Yarns, rovings, Meshes, Laid webs, Woven fabrics, Nonwovens, mats                                                                                                                                        | ✓        | ✓           |                           |

## Contacts

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## Contacts

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