Extrusion Technologies and Recycling (ETR)

Research area at the Institute of Lightweight Structures

About this organisation

Machine translation

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

The ETR research area combines the fields of plastics processing, fibre composite technologies and machine design with the aim of implementing new innovative products, processes and machines as part of the continuous production of fibre-plastic composites. In addition to new extrusion and recycling concepts, the team also addresses high-efficiency plant systems and the development of new materials for lightweight construction solutions.

Extrusion and recycling - Process engineering development for single and twin-screw extruders - Extrusion impregnation of reinforcing fibres - Technologies for the compounding of plastics with reinforcing fibres - Compounding of bio-based materials - Property modification of plastics with elastomer recyclates - Substitution of multi-stage processes through direct processing - Recycling concepts for fibre-reinforced plastics - Reactivation and compounding of elastomer waste Machine and plant systems - Innovative twin-screw extruder systems - Reactivation systems for elastomers - Single-stage direct processing system for the production of thermoplastic pre-pregs Material development - Compounds for special applications - Bio-based polypropylene - Basalt fibre-reinforced thermoplastic compounds - Fibre reinforcement of PVC - Compounds made from plastics and elastomer recyclates - Blends with nanoparticles

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Germany
www.leichtbau.tu-chemnitz.de/forschung/etr/contact.php

Organisation type
University or higher education institution

Sectors
No specific sector

Employees
10 up to 49

Turnover
Up to €2m

Funding
n/a

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Main areas covered	Plastics processing, Compounding, Recycling, Extrusion, Impregnation
Infrastructure	one-step direct impregnation, Single and twin screw extruder, Reactruder for elastomer processing, Various pelletising systems, Film calenders & impregnating calenders
Certifications	
Keywords	Tape and organo sheet production, Thermoplastic impregnation, Extrusion, Recycling, Compounding
Memberships	

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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, Others: null	✓	✓	
Services & consulting Training, Consulting, Testing and trials, Engineering, Prototyping, Validation, Simulation, Technology transfer, Approval, Others: null	✓	✓	
Field of technology			
Design & layout Lightweight manufacturing, Lightweight design, Hybrid structures, Lightweight construction concepts, Lightweight material construction	✓	✓	
Functional integration Sensor technology, Material functionalisation	✓	✓	
Measuring and testing technology Visual analysis (e.g. microscopy, metallography), Materials analysis, Destructive analysis, Non-destructive analysis	✓	✓	
Modelling and simulation Materials	✓	✓	
Plant construction & factory automation Plant construction, Automation technology	✓	✓	
Recycling technologies Downcycling, Material separation, Recycling, Upcycling	✓	✓	

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing			
Coating (surface engineering)			
Fibre composite technology Pre-preg processing, Others: null	✓	✓	
Forming Impact extrusion, Compression moulding, Thermal converting, Deep-drawing, Rolling	✓	✓	
Joining			
Material property alteration Heat treatment	✓	✓	
Primary forming Extrusion, Pultrusion	✓	✓	
Processing and separating			
Textile technology			

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	Research	Development	Manufacturing & Supply
Material			
Biogenic materials Bioplastics, Biocomposites, Wood, Others: null	✓	✓	
Cellular materials (foam materials) Closed-pore, Open-pore, Syntactic foams	✓	✓	
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	✓	✓	
Fibres Aramid fibres, Basalt fibres, Glass fibres, Ceramic fibres, Carbon fibres, Natural fibres	✓	✓	
Functional materials			
Metals			
Plastics Thermoset plastics, Elastomers, Thermoplastics	✓	✓	
Structural ceramics			
(Technical) textiles Yarns, rovings, Meshes, Laid webs, Crocheted fabrics, Woven fabrics, Knitted fabrics, Nonwovens, mats	✓	✓	

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Contacts

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