

# TFI - Institute for Soil Systems at the RWTH Aachen e.V.

## About this organisation

### Machine translation

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

TFI's pre-competitive research covers the entire life cycle, from the use of raw materials to production, installation, utilisation and disposal at the end of the utilisation phase. One focus is the optimisation of processes with regard to production speed, flexibility and accuracy. Priority is given to the aspects of quality, ecology and economy and their interactions.

Taking weight savings, increased strength and functional integration into account, the TFI is researching the potential applications of high-performance fibre composites for components on tufting machines. The individual functional groups of the tufting machine are analysed with regard to possible weak points. Functional models or prototypes are created as proposed solutions and tested on laboratory machines through to industrial machines. The new fibre composite components can be used to replace the previous metallic elements and assemblies. The aims of research and development are - Reduction of loads in the drive trains - Increasing the performance of the overall process - Reduction of the thermal length change of components - Simplification of component groups - Elimination of wear-prone guides and bearings - Extension of maintenance intervals

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North Rhine-Westphalia  
Germany  
[www.tfi-aachen.de](http://www.tfi-aachen.de)

### Main areas covered

Lightweight element on textile machines, Process analyses

### Infrastructure

Technical centre

### Certifications

ISO 9001 for R&D

### Keywords

Tufting, Fibre composite, Compliance structures

### Memberships



### Organisation type

Non-university research institution

### Sectors



### Employees

10 up to 49

### Turnover

€2m - €10m

### Funding

n/a

## Overview of lightweighting expertise

### Machine translation

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	Research	Development	Manufacturing & Supply
<b>Offer</b>			
<b>Products</b> Parts and components	✓	✓	
<b>Services &amp; consulting</b> Consulting, Testing and trials, Engineering, Prototyping, Validation, Technology transfer	✓	✓	
<b>Field of technology</b>			
<b>Design &amp; layout</b> Lightweight manufacturing	✓	✓	
<b>Functional integration</b> Sensor technology, Material functionalisation	✓	✓	
<b>Measuring and testing technology</b> Component and part analysis, Visual analysis (e.g. microscopy, metallography), System analysis, Environmental simulation	✓	✓	
<b>Modelling and simulation</b> Loads & stress	✓	✓	
<b>Plant construction &amp; factory automation</b> Plant construction, Automation technology	✓	✓	
<i>Recycling technologies</i>			

Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
Manufacturing process			
Additive manufacturing			
Coating (surface engineering)			
Fibre composite technology			
Forming			
Joining			
Material property alteration			
Primary forming			
Processing and separating			
Textile technology			

## Overview of lightweighting expertise

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	Research	Development	Manufacturing & Supply
<b>Material</b>			
<i>Biogenic materials</i>			
<i>Cellular materials (foam materials)</i>			
<b>Composites</b> Carbon-fiber reinforced plastics (CFRP)		✓	
<b>Fibres</b> Carbon fibres		✓	
<i>Functional materials</i>			
<i>Metals</i>			
<b>Plastics</b> Thermoset plastics		✓	
<i>Structural ceramics</i>			
<b>(Technical) textiles</b> Laid webs, Woven fabrics		✓	

## Contacts

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### Contacts

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