

**Project title:** "Fortschrittsskolleg Verbund.NRW": Increasing Resource Efficiency in the Use of Composite Materials and Constructions in the Civil Engineering Sector

**Partner:** **RWTH Aachen:**  
Institut fuer Textiltechnik (ITA), Lehrstuhl für Controlling (CON), Lehrstuhl für Operations Management (LOM), Institut für Aufbereitung und Recycling (IAR), Lehrstuhl für Baustoffkunde (IBAC), Lehr- und Forschungsgebiet Internationale Wirtschaftsbeziehungen (IW), Lehrstuhl für Technik- und Organisationssoziologie (TOS), Lehr- und Forschungsgebiet Technologie der Energierohstoffe (TEER)  
**FH Münster:**  
Lehr- und Forschungsgebiet Baubetrieb/ Projektmanagement (LBP), Institut für unterirdisches Bauen (IuB), Institut für Wasser-Ressourcen-Umwelt (IWARU);  
Beirat aus Industrie, Verbänden und Behörden (37 Partner)

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### Mission Statement

Due to the growth of the world population and the worldwide economic development there is a clear overuse of natural resources.

A particularly important field of research for North-Rhinewestfalia, according to the state government, is the development and targeted use of composite and multi-material construction methods. The novelty and structural complexity of composite materials, however, represent an increasing challenge for material cycles, as there are currently no recycling technologies available for the newly developed products.

### Solution approach

In order to achieve a real increase in resource efficiency, integral considerations along the entire plant creation chain are necessary.

The aim of the project at ITA is to harness the benefits of fibre-reinforced materials in the construction industry in a way that already includes solutions for separation, reprocessing and use of the individual material groups at the end of the component life cycle. This means that the project is at the very beginning of the value chain in the production and processing of fibre-reinforced composites.

In cooperation with the company Fydra BV, Ede, Netherlands, the resource and material efficiency of production is evaluated and increased.

In addition, the recycling behaviour of carbon and glass textile reinforced concrete is investigated and the key influences on good separability are identified. The following figure shows an example of how the use of different reinforcement textiles can influence recycling.



In further steps, new construction materials and their applications are developed in order to reuse high-grade recycled carbon fibres, e.g. from recycled carbon concrete components or carbon fibre reinforced plastics.

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