



Master thesis, diploma thesis, bachelor thesis

## **Characterization and evaluation of fiber-reinforced plastics (FRP) for use in the civil construction industry**

Student (m/f/d) Mechanical engineering, civil engineering, lightweight construction, process engineering etc.

**application deadline**  
Dez. 01, 2023

**start**  
as of now

**duration**  
4 – 6 month

**workplace**  
Denkendorf

### **Job Description**

The Institute for Textile and Fiber Technologies (ITFT) of Stuttgart University conducts research in the future-oriented field of lightweight structures with multi-material design to exploit synergy effects of different material components for use in civil engineering.

As part of a research project with partners from industry and research, an existing concept for the production of spatially branched braided structures for concrete-filled high load-bearing FRP truss structures is being further developed and extended.

The main goal of this work is a thorough characterization of FRP for use in civil engineering. The focus is, for example, on the structural safety (fire resistance, weather resistance), the mechanical properties and the CO<sub>2</sub> footprint. In conclusion, a substantiated statement on the use of FRP for braided hulls for concrete-filled high load-bearing truss structures will be made. The interview as well as the later work will take place at our site at DITF Denkendorf.

### **Tasks**

The work mainly includes the following points:

- Development of an assessment matrix (e.g. fire resistance, weathering resistance, mechanical properties, etc.) for the evaluation of FRP for their use in the civil engineering
- Conducting experimental studies on selected material combinations to evaluate the FRP according to the assessment matrix
- Formulation of recommendations for the use of FRP in civil engineering, especially with regard to their application in concrete-filled, high load-bearing FRP truss structures.

### **Qualifications**

- Interest and intrinsic motivation for fiber composite technologies in lightweight construction
- Independent and autonomous work
- Previous experience and craft skills in fiber composites preferred
- Basic knowledge in the field of experimentation preferred

The University of Stuttgart emphasizes the compatibility of private life, family and career as well as equal opportunities for persons of all genders. Disabled individuals are given preference in the case of equal suitability.



### **Contact**

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