



**Project title:** **CarboLase**  
Highly productive, automated and tailor-made just-in-time composites component production

**Partner:**

- Institut für Textiltechnik (ITA) der RWTH Aachen University
- Fraunhofer Institut für Lasertechnik ILT
- AMPHOS GmbH
- Kohlhage Fasteners GmbH und Co. KG
- LUNOVU Integrated Laser Solutions GmbH

**Duration:** 03/2017 - 07/2019

**Funding Agency:** OP.EFRE

Mission Statement

The demand for fiber composite components is increasing due to the growing importance of energy and resource efficiency. Simultaneously, there is a demand for increasing component performance. For manufacturing technology, this means that process chains must be simplified and costs reduced.

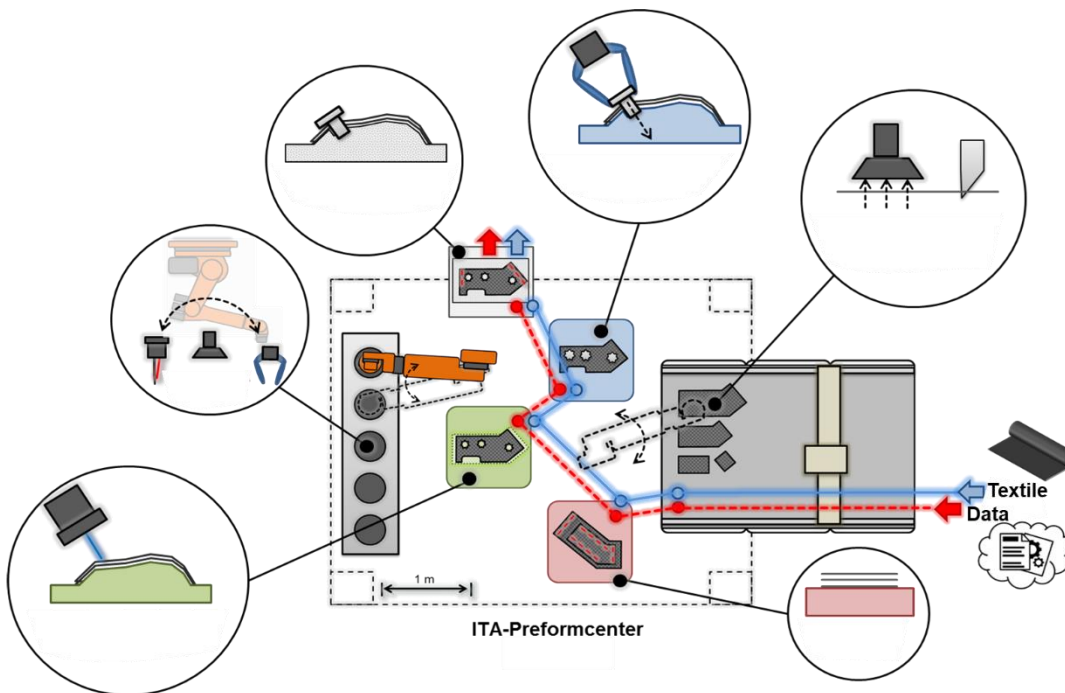
The main objective and core innovation of the CarboLase project is the combination of productive 2D CNC cutting, high-precision laser material processing of textile preforms using ultra-short pulsed (UKP) laser radiation and fully automatic handling of individual preforms with integrated metallic inserts.

The technologies are integrated into a robotic cell that creates a highly flexible, hybrid production system with flexible software/hardware interfaces and sensors in the production process (see Fig. 1). The process cell thus permits just-in-time production of FVK components, independent of component geometry and batch size.

Industry and research work closely together in this project. The Fraunhofer Institute for Laser Technology ILT is working together with Amphos GmbH on laser technology tasks in the project context. As a system integrator, LUNOVU GmbH accompanies the networking of individual process steps and implements the integration of sensors into the robotic cell at the Institute of Textile Technology at RWTH Aachen University ITA. Kohlhage Fasteners GmbH & Co. KG develops the automated provision and integration of functional elements (inserts). The ITA takes over the implementation of the automated process chain for the production of the laser-machined preforms in close cooperation with all project partners.

**Univ.-Prof.**  
**Prof. h.c. (Moscow State Univ.)**  
**Dr.-Ing. Dipl.-Wirt. Ing.**  
**Thomas Gries**  
Director

**Sebastian Oppitz**  
Research Assistant



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### Contact

M.Sc. Sebastian Oppitz  
Mail: Sebastian.Oppitz@ita.rwth-aachen.de  
Tel.: +49 (0)241 80 – 22096  
Institut für Textiltechnik der RWTH Aachen University  
Otto-Blumenthal-Str. 1  
D-52074 Aachen