

Project title: 3DTexPrint - Development of a manufacturing system for 3D printing on textiles

Partner: Schneider Technologies GmbH & Co. KG

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Mission Statement

Additive manufacturing is one of the key technologies of the 21st century. If textiles are printed using additive manufacturing processes such as fused deposition modelling (FDM), there is the potential to achieve completely new features and functionalities. This ranges from simple design aspects to shape-changing structures, the so-called 4D textiles. For example, shape memory materials are used here to achieve a specific change in geometry. Shape-changing materials allow more freedom of design and individualisation of products over their life cycle. In addition, the production and construction of products can be simplified. Despite the many potentials that have been identified, a technology push towards innovative products of the future is still lacking. This is primarily due to the fact that suitable printers and associated components that are specifically suited for printing textiles are not available on the market. The challenges here are the handling and fixing of elastic and flexible textiles in the printing area as well as the surface adhesion of the printing material during the application of the first layer on the textile substrate.

Approach

The main objective of this project is to develop an industrial production system for 3D printing on textiles. The printing area should cover an area of 1.2 m x 1 m and allow the processing of common textile semi-finished products as well as the input of roll material. The research and development process initially comprises the conceptual design of the overall system and the preparation of a specification sheet. In addition to the design of the printing portal and the automation technology, the core components are the development of a textile-compatible clamping and feeding device. Within the scope of validation tests, a material and parameter database is elaborated

and a modular solution for linking the production system within a network in the company is developed.

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