Filament-Based Resistive Sensors for Smart Textile Applications

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According to the McKinsey "State of Fashion Report 2019", the fashion industry is growing at a rapid speed and will continue. The industry as a whole is embracing promising opportunities, as the technology integration level in the sector is constantly increasing. Especially the sports and leisure clothing market is subjected to growth. Having a look at consumer needs, it gets apparent that three trends dominate the market: digitization, security and individualism. A possibility for the textile and clothing market to serve these trends is the development of smart clothing products that can interact with the wearer, increase the security level and can measure individual data. Against this background the aim of the SmartSeam project is based on using well-established technologies in the textile and clothing industry and to add functionalities into textile products with no additional processing steps. Focus will be put on developing hybrid yarns, processing these hybrid yarns into functional seams and developing, among others prototypes being able to track body movements and pressure.

In this presentation, a brief overview will be given on a filament coating technology used to apply a piezoresistive coating on conductive, metallized yarns. The resulting yarn characteristics will be presented and their potential application in seams and other textile structures to act as piezoresistive sensors to detect deformation and pressure.