

WELCONTEX - Reliable ultrasonic welded electrical interconnection technology for smart textiles



Collective Research networking CORNET - 22nd Cornet Call



Project partners: Fraunhofer IZM Berlin
UWB - University of West Bohemia, Pilsen
VUB a.s. Ústí nad Orlicí

Project Coordinating Association CLUTEX - cluster technical textiles (CZ)
Participating Association DVS - Deutscher Verband für Schweißen und verwandte Verfahren e.V.

Solution time: 07: 09/2017 – 08/2019

Project objective:

The project is aimed at application of ultrasonic plastic welding as a technology suitable for interconnection of conductive tracks in smart textiles.

Except for this the project focuses on the development of new conductive threads able to be embroidered and welded together and on the integration of PCB-based interposers into textiles.

The welded interconnections will be deeply tested with a focus on high stability, durability and resistance against washing cycles and mechanical stress.

The expected results of the project are:

- Flexible conductive hybrid threads suitable for embroidery.
- Realization of mechanically reliable connection showing low electrical contact resistance between two crossed conductive threads and electronic modules with conductive textile structures by means of ultrasonic plastic welding.
- Qualitative and quantitative testing of the mechanical stability of the created interconnection and long-term reliability.
- Applicability in mass production, compatibility with standard textile production technologies, short production cycle compared to conventionally commercially available interconnection technologies.

The results of this project will be used in new smart-textile applications in the automotive, healthcare and personal protective equipment.