

Abstract for the International Cellulose Conference 2023

Title: Nature meets functionality – development of a sustainable knitted jacket in 100% hemp

The aim of the HanfKnit research project is to improve the processing of hemp fibres into attractive, sustainable natural products with a regional production chain in Germany and to develop a functional, sustainable cardigan made from 100% hemp. This combines positive physiological properties of hemp, such as good moisture and temperature management, with comfort of a knitted garment.

A sustainable design and product concept focusing on mono-materials was developed. Yarn blends and different knitted fabric constructions of natural hemp and Lyohemp® (a regenerated fibre from plant waste > hemp straw) were produced to achieve different properties of the final textile product. The cardigan is produced waste-free using the full-fashion or seamless 3D knitting process. A body mapping concept was developed according to the different physiological requirements of leisure, work and outdoor activities. Corresponding knitted fabric constructions were developed to match the identified functional zones and integrated into the areas of the cardigan in terms of 3D knitting technology. Due to its mono-materiality, the resulting prototype also fulfils the most important requirement for recycling at the end of the product's life and for the circular economy.

This project is funded as part of the European Union's response to the COVID-19 pandemic, REACT-EU project (EFRE-0802061).