

Press release

German start-up recycles mixed textiles containing polyester

- **RITTEC technology closes the loop for blended textiles in the DiTex research project**
- **Used textiles become sources of raw materials**
- **Up to 60 percent energy savings in the manufacturing process**

Lüneburg/Berlin/Düsseldorf, 24 October 2022 - RITTEC Umwelttechnik GmbH from Lüneburg has succeeded in recycling textiles containing polyester and creating new textiles from the material itself as part of the DiTex research project.

So far, there are hardly any suitable technologies for the high-quality recycling of textiles. Essentially, recycling is limited to the second-hand business and the production of low-quality goods such as insulation materials. With the help of its revolPET® technology, RITTEC has now succeeded in breaking down the polyester-cotton mixture from worn workwear into the basic chemicals for the production of new polyester. From these basic chemicals, the Thuringian Institute for Textiles and Plastics (TITK) produced new polyester yarn and finally new textiles. The production of the basic chemicals for PET production from textile waste reduces CO₂ emissions by over 60 percent compared to production from fossil raw materials.

"This is a great breakthrough for us and the textile industry. In the future, we can save huge amounts of fossil raw materials, energy and avoid waste. We are currently working with partners from the textile industry and the recycling industry to apply our technology on an industrial scale," says Carsten Eichert, managing partner of RITTEC.

Breakthrough for the circular economy in the textile industry

Polyester is by far the most used material in the textile industry. More than 60 percent of all textiles produced are made of or contain polyester. A total of 2.25 million tonnes of polyester textiles are put on the market in Europe every year, divided between pure polyester garments or blended fabrics. Today, there are only few high-quality recycling options for this quantity. The revolPET® technology, which was technically further developed for the DiTex project, piloted the recycling of workwear containing polyester with the aim of increasing resource efficiency in the textile sector.

As part of the Green Deal, the EU Commission has published the EU Textile Strategy, which, among other things, calls for more recycling and makes manufacturers responsible for the disposal and recycling of their sold textiles. Especially textiles with high polyester content often end up in thermal recycling at the end of their use, which means that the textile industry remains dependent on fossil raw materials.

Turning old into new: this is how the new recycling technology works

RITTEC's revolPET® technology is a continuous process for the recycling of polyester. The selective decomposition of polyester into its basic building blocks is realised for over 95 percent and at less than 160°C. The ecologically and economically efficient process eliminates impurities and produces pure chemicals that are used in the production of new polyester fibres. These fibres have the same quality as virgin material. Other textile components such as cellulose, e.g. from cotton, are separated and fed into their own recycling channels. In this way, RITTEC also reduces its dependence on fossil raw materials. Textile waste thus becomes a source of raw materials for new clothing. The process secures raw materials and can significantly reduce the ecological footprint of textiles.

The production of the basic chemicals for PET production from textile waste reduces CO₂ emissions by about 60 percent compared to production from fossil raw materials. This is achieved through intensive process-integrated energy recovery in the revolPET® process. The continuous mode of operation ensures that released reaction energy is absorbed directly. Thus, the energy supply remains limited to the operation of the aggregates.

circularity.ID from circular.fashion as a digital product passport essential for data flow and networked cycle management

Digital product passports (DPP) are recognised by the EU as an important prerequisite for implementing the circular economy. It is essential that there is a continuous and standardised flow of data and information between the actors of the entire textile cycle, from manufacturers to users and finally to recycling. Through the availability of product data such as material composition, recycling can be greatly optimised. As a pioneer, the innovation company circular.fashion launched circularity.ID in 2018, which was also used as a digital product passport (DPP) in the DiTex project funded by the BMBF.

"Digital product passports and intelligent ID-based sorting are essential parts of a circular economy, because they enable quality-oriented recyclers to provide suitable feedstock according to their requirements. We were the first company in the world to develop ID-based sorting stations and install them at pioneers in the sorting of used textiles. This way, products can be scanned with circularity.ID and assigned to suitable recycling channels, such as RITTEC's innovation," explains Ina Budde, Managing Director of circular.fashion.

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About RITTEC Umwelttechnik GmbH

RITTEC develops technological solutions for securing resources and thus increases the added value in waste treatment. The motivation for RITTEC is that the qualitative performance of the treatment and recycling processes is particularly decisive for the success of the circular economy. RITTEC's goal is to develop technologies for a circular economy that avoid downcycling of secondary raw materials and produces virgin-quality products. With its patented revolPET® technology, RITTEC makes a significant contribution to the complete recycling of products containing PET or polyester from the packaging and textile sectors.

<https://www.rittec.eu>

About circular.fashion

circular.fashion is an innovation company that drives the implementation of a circular economy in the fashion and textile industry with systemic and digital solutions. The Berlin-based company offers services and software for circular design and recycling in closed loops in order to enable the recycling of textile products from material suppliers, fashion brands and consumers to sorters and recyclers with a transparent flow of information. Currently, the company, commissioned by the EU Commission in the CIRPASS consortium, is contributing the principles and findings of circularity.ID to support the development of the planned EU-wide DPP for textiles.

<https://circular.fashion/de/>

Background information on the DiTex project

The DiTex research project tested and evaluated the quality, resource and sustainability effects of textiles that are recycled. In the research project, textile companies and researchers worked together on the textile cycle management of workwear and bed linen. The team developed three new product lines and tested the textile rental/leasing and recycling business model. The aim is to increase resource efficiency and productivity in the textile sector. The project was funded by the Federal Ministry of Education and Research.

Project duration: 08/2019 - 12/2022; funding code: 033R228

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