

European Good Practices in New materials & new applications

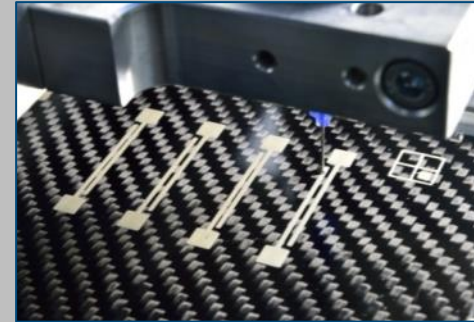
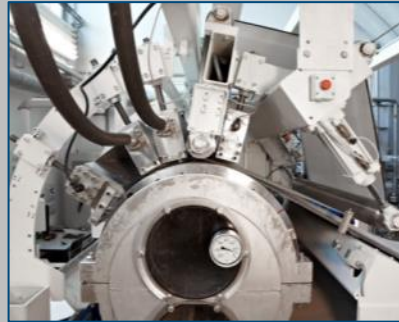
Protection against piracy – Counterfeitproof thread

Marco Barteld/Romy Naumann
Saxon Textile Research Institute (STFI)/DE

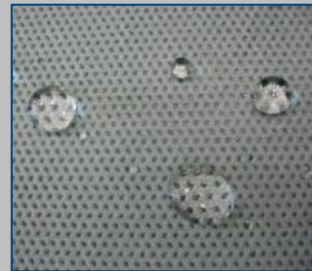
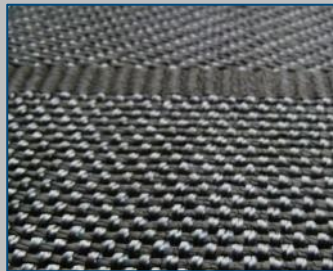
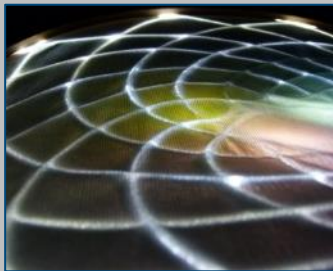
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Huddersfield (GB), 31st January 2018

Saxon Textile Research Institute (STFI)

Affiliated Institute of Chemnitz University of Technology



International Competence
in Nonwovens – Textile Lightweight Engineering – Technical Textiles



Saxon Textile Research Institute (STFI)

Affiliated Institute of Chemnitz University of Technology

- Non-profit, founded in 1992
- Since 2006 associated to Chemnitz University of Technology
- About 150 employees (researchers, laboratory assistants and technicians)
- More than 100 R&D projects on regional, and national level are carried out each year
- 5 to 10 patent applications are submitted per year
- Member of TEXTRANET, EDANA, European Technology Platform, Euro Textile Region, standardisation working groups, etc.



The institute is located in Saxony.

Profile of STFI – Competencies

Center of Excellence in Nonwovens

- Fibre nonwovens
- Extrusion nonwovens
- Textile recycling



Center for Textile Lightweight Engineering

- Processing of glass, carbon, aramid, basalt
- Manufacturing of pre-forms and composites
- carbon recycling



Innovation Center of Technical Textiles

- Technical Woven & Knitted Fabrics/Reinforcing Structures
- Finishing/Coating/Lamination / Ecology
- Development of materials and testing methods



Services

- Accredited Test Laboratory
- Certification Department for PPE
- Certification Body Geosynthetics



CE 0516

Transfer Center

- Communication and process management
- International cooperation





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Background of the GP

Problematic situations in medium-sized businesses due to counterfeiting and brand piracy

- Lost turnover, about 5% to 7% of the worldwide trade is affected by counterfeiting and product piracy → corresponds to an annual financial loss of 300 bn €
- Loss of image
- Time-consuming evidence for complaints (counterfeit product)
- Risk for product liability especially in the field of technical textiles (assembly of components)
- Verification of origin of components within the textile chain



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Background of the GP

Opportunities in technical product protection

- Reliable distinction between original and counterfeit product (Loss prevention)
- Integrated product protection also for intermediate products in the textile chain (new products)
- Adaption of technologies for product protection towards integration of functions and hybridisation (novel business areas)
- Detection technologies (novel industrial branch)



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Background of the GP

Requirements from medium-sized businesses

- Integration of technical product protection into the textile value chain
- Prevention of additional value added stages through technical product protection
- Technical product protection also for textile pre-products and intermediate products
- price sensitivity for technical product protection at 5% maximum of the turnover
- Detection technologies easy to verify in case of complaint



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Description of the GP

Insertion of potential markers into the yarn using medium-term technologies

- Luminescent pigments
- Ceramic particles
- Color codes (micro-colour particles)
- DNA-markers
- Special inks
- Fluorescent dyes

Luminescent pigments

Ceramic particles

Micro-colour particles

Description of the GP

Luminescent pigments

expensive in detailed evaluation //
information can only be placed spectrally //
eroded after 10 processing cycles

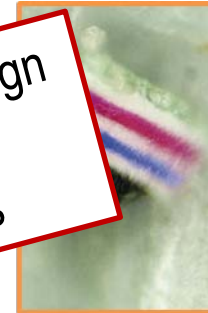


- Use of inorganic luminescent materials from oxidic materials (e. g. yttrium or alumina)
- Protective safety marking by integrating pigments in/onto chemical fibres using varnishing and printing methods, also applicable for natural fibres
- High stability against physical and chemical influences, heat resistant up to ca. 1700° C
- Identification by spectroscopic analysis with a mobile handheld spectrometer (TailorScan) or by lab analysis

Description of the GP

Colour codes / micro-colour

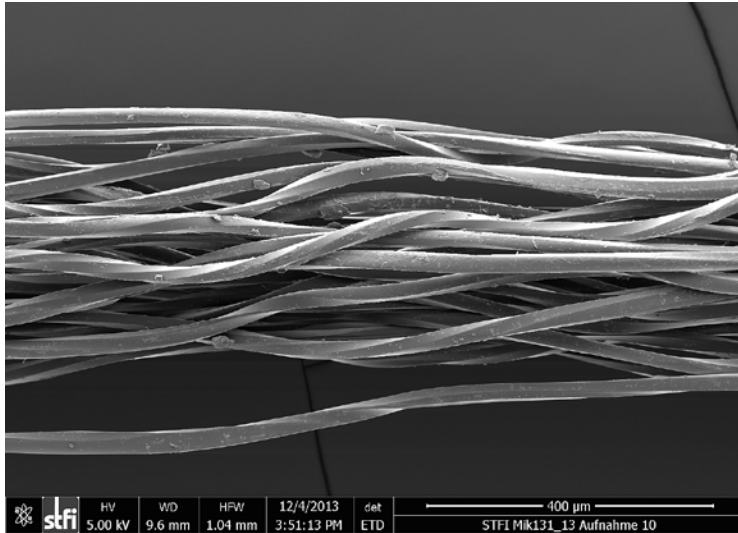
detection using a rod microscope // assign
each color code to a single user //
resistant over many processing cycles



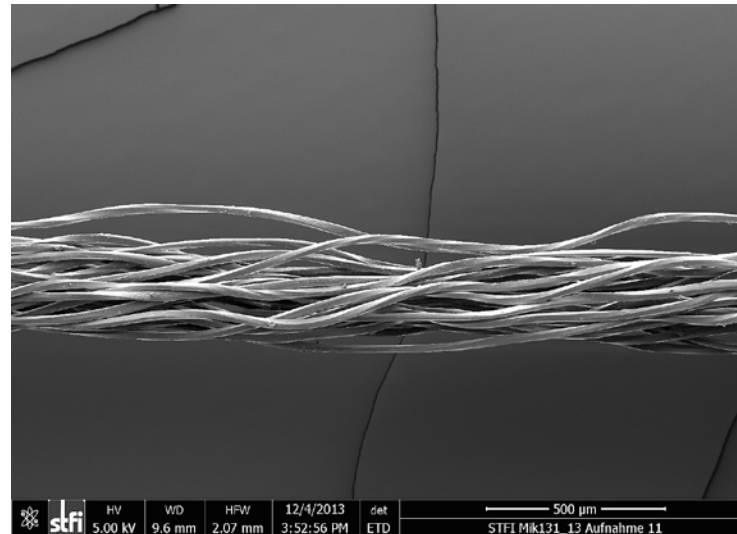
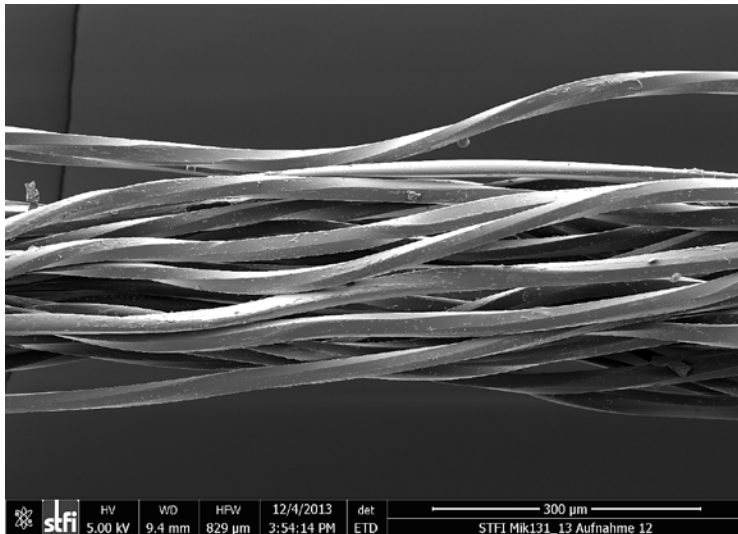
Source: 3S GmbH

- Micro colour code SECUTAG® of company 3S Simons Security Systems GmbH
- Microscopically small melamine-alkyd-polymer-particles form the core of the protection system (Ø 5 up to 45 µm)
- Code is formed by means of a sandwich method → 5 to 10 layers different in colour are placed on top of each other
- Temperature resistance up to 200°C (short-term up to 350°C)
- Chemically resistant against chemicals such as organic solvents (not against concentrated hot acids)

Description of the GP



Source: 3S GmbH

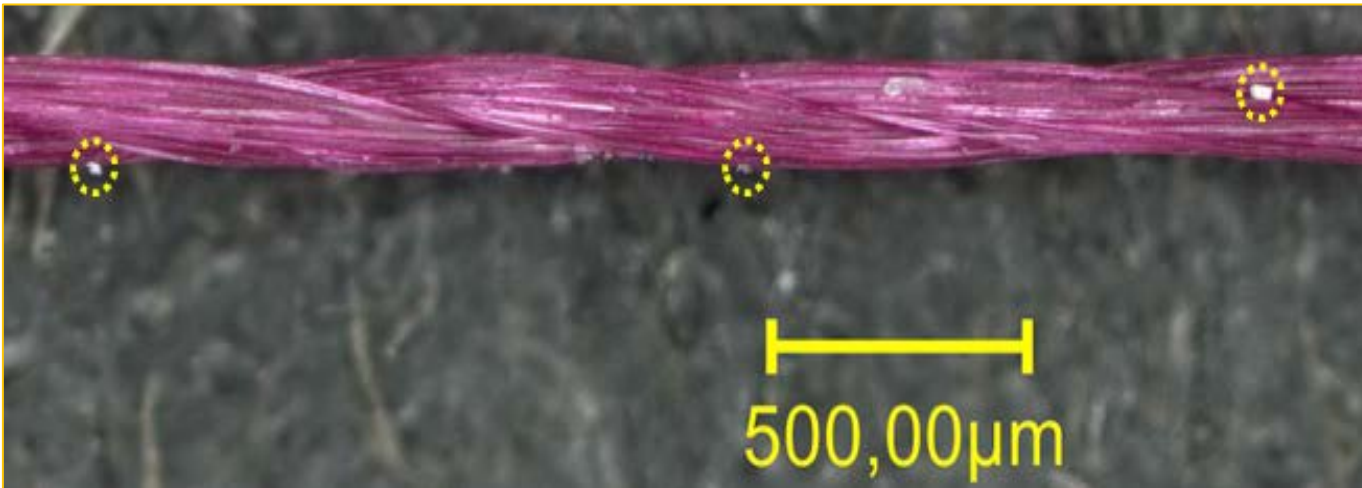
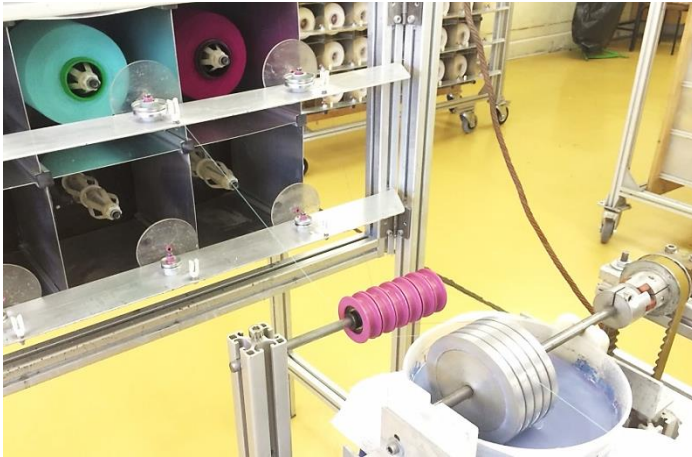


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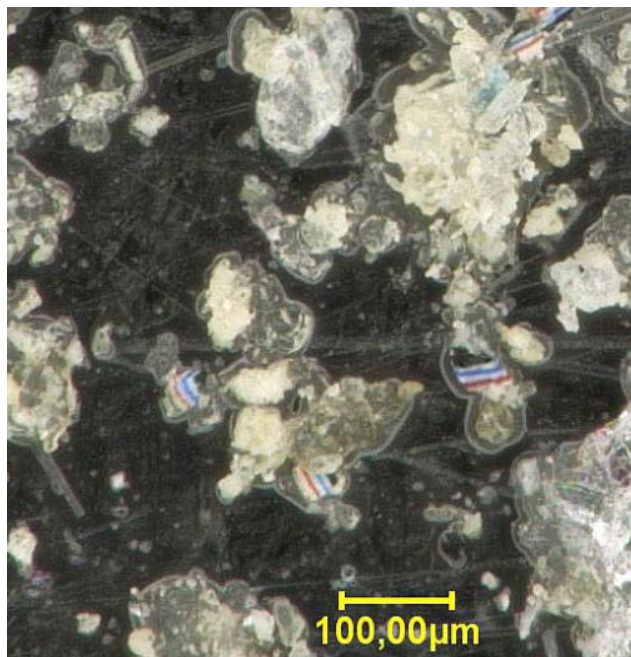
Description of the GP

- Sewing threads and micro colour particles (micro colour sandwiches) are bonded into a suspension
- Developed composition of the suspension is the company's "Coca-Cola-recipe"
- The yarn surface is coated with the suspension using an adapted coating unit adjusted to industrial conditions
- Use of a magnetic stirring system for homogenous distribution of micro colour particles in the coating suspension
- Transfer to the industrial coating line for the production of special yarns (production speed up to 400 m/min max.)

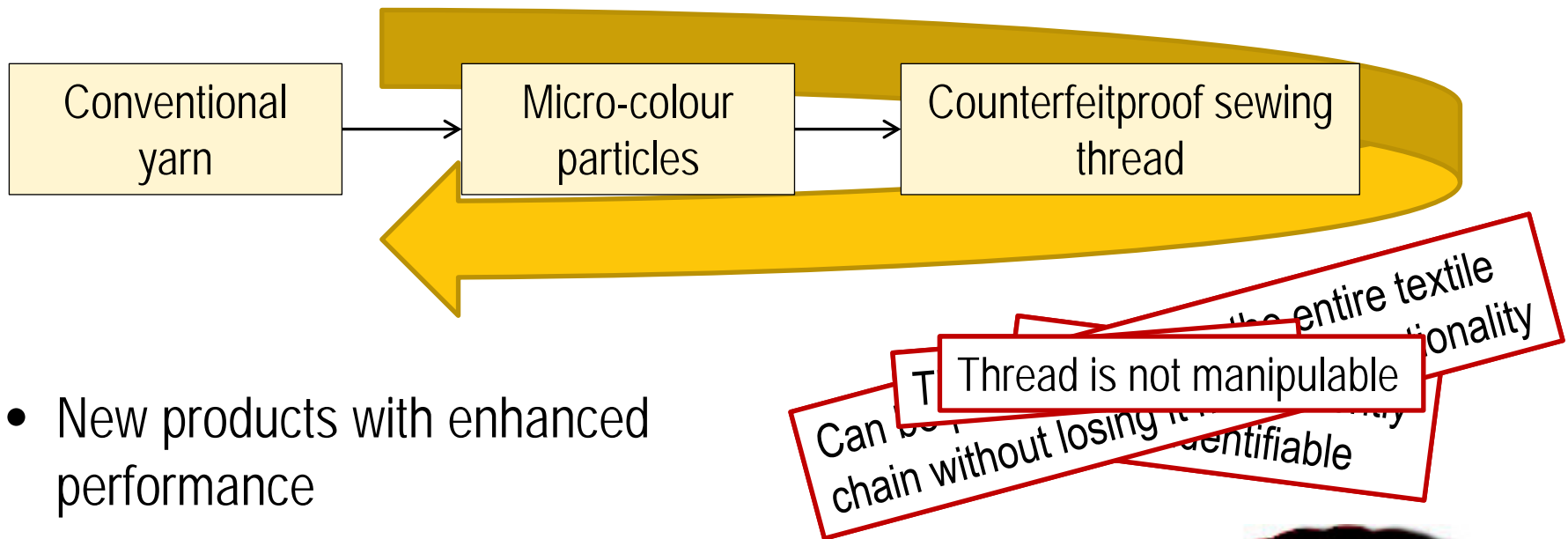
Description of the GP



Description of the GP



Transferability of GP - Success factors



- New products with enhanced performance
- Development of a process with high efficiency and high performance materials
- Modification of sewing threads at reasonable costs
- Protection against piracy
- Opening up new markets with innovative threads

We respond well-founded, flexible and fast to the current market and open up an innovative growth segment



Good Practice value added at regional and transregional (EU) levels

- Successful measures against worldwide product and brand counterfeiting
- Gaining expertise in a specialized technological field
- Creating of EU standards for product labelling and identification
- Establishing innovative technologies and new products
- Meeting the requirements of customers, solving their problems with the innovative product
- Transferability of Good Practices to other regions
- Launching follow-up projects such as "Textile Label of the Future"

Protection against piracy – Counterfeitproof thread

GP Contact

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Thank you!



Project smedia