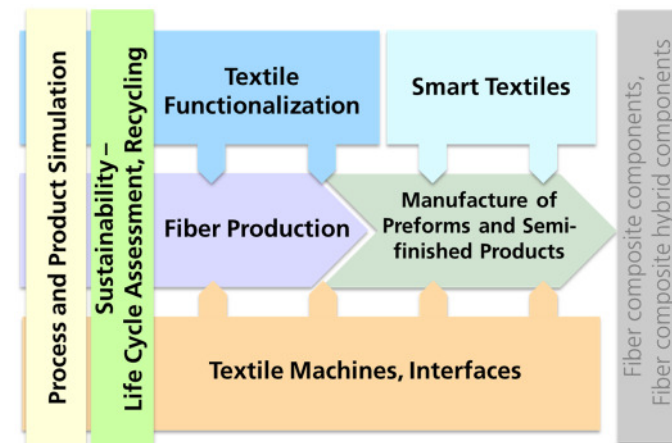


TEAM

The Fraunhofer Institutes of Technical Textiles Alliance have teamed up in order to map the entire textile value creation chain from textile machinery, fiber production, preform and semi-finished product manufacture, textile functionalization, smart textiles, process and product simulation, sustainability to fiber composite components by bundling individual competences. Dialogue creates the best solutions. Contact us!



Fraunhofer Alliance Technical Textiles: Research areas along the textile value chain

CONTACT US!



Spokesperson

Univ.-Prof. Dr.-Ing. habil.
Prof. h. c. Dr. h. c. Prof.
Lothar Kroll



Deputy Spokesperson

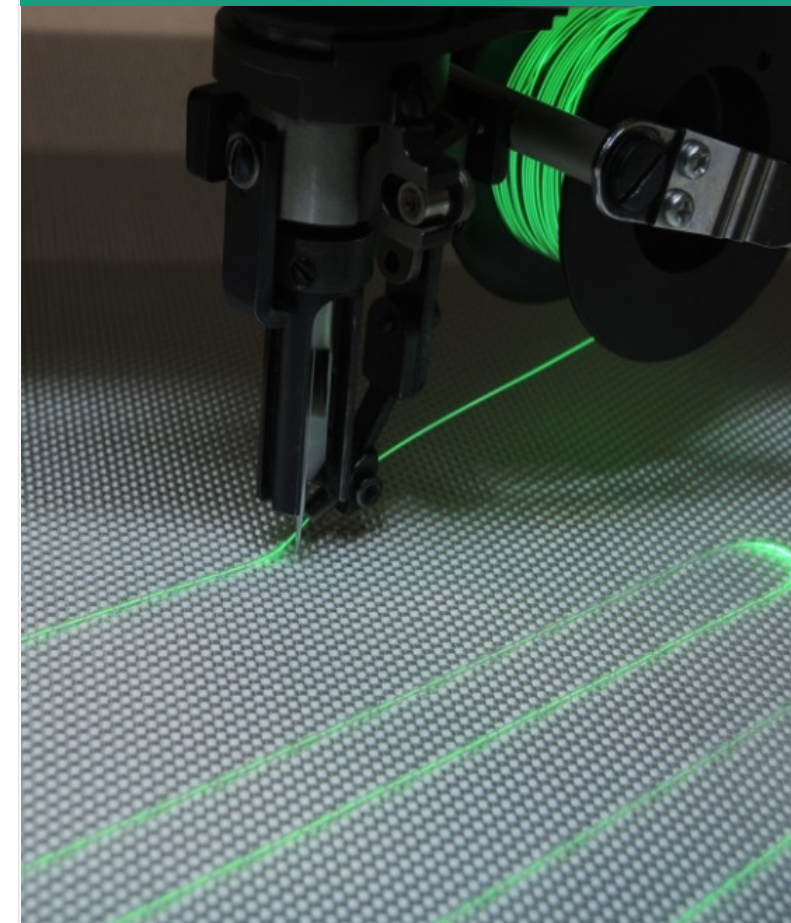
Prof. Dr.-Ing. Frank Ficker

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ADDED VALUE BY TEXTILE PROCESS CHAIN

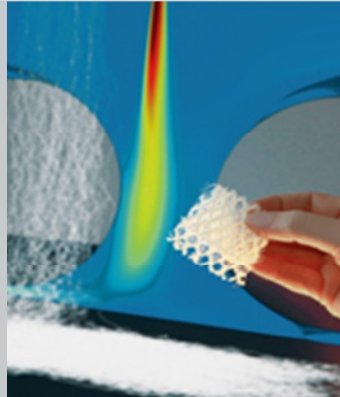
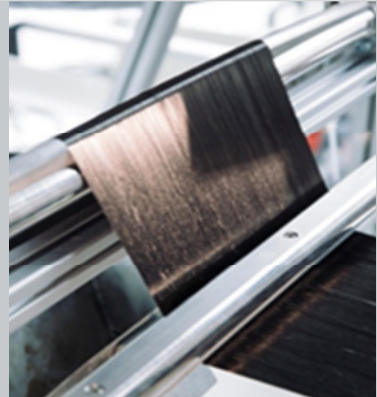
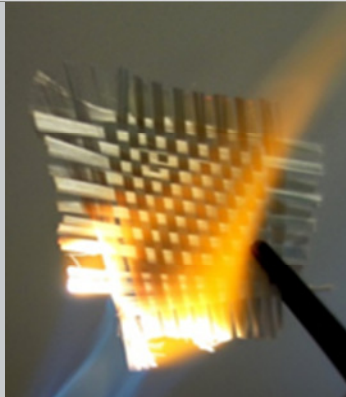
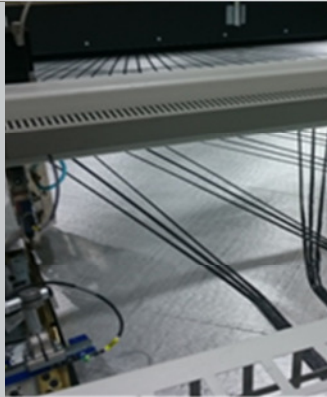


VISION

New growth potential for the textile industry arises from the increasing demands on environmental and climate protection and the associated lightweight thinking, our inexhaustible need for comfort and functionality of textiles and the enormous potential for use as reinforcing material in building structures and other technical applications. Textile fibers and surfaces, individually and in hybrid composites, gradually replace conventional materials due to their outstanding properties. Resource-efficient and sustainably manufactured with functional and smart properties, textiles are a guarantor for opening up new markets.

COOPERATION

The trend towards new technical textiles demands from companies an increasing need for innovation and research for the production of load-adapted or function-integrative textile structures, reproducible and in series. The Fraunhofer Institutes of the Technical Textiles Alliance work together in an interdisciplinary manner to generate optimal, application-specific, product-specific developments of textile-based technologies and plant systems.



MEMBER INSTITUTES OF TECHNICAL TEXTILES ALLIANCE

COMPETENCES

Textile Machines, Interfaces

- Roll-to-roll systems for the continuous production of fiber layer composites
- In-line textile processes for near net shape structures
- Machines and equipment for the textile processing of Smart Textiles
- Special machines for thermo- and duroplastic prepreg technologies

(IWU)

Fiber Production

- Wet spinning processes on customer-specific polymers
- Polymer solutions according to Lyocell technology
- Dry and melt spinning technologies
- Melt spinning of new thermoplastic materials
- Development of high-performance materials
- Oxide and non-oxide ceramic fibers
- Synthesis of fiber precursors from renewable raw materials
- Yarn production

(IAP, ISC, IGB)

Manufacture of Preforms and Semi-finished Products

- Continuous and short fiber reinforced thermoplastics
- Hybrid semi-finished products, ceramic semi-finished products
- Bionic reinforced lightweight structures

- Spacer preforms, spacer and multilayer fabrics for ultra-light supporting structures
- Textile membrane systems and textile systems in mineral building materials, e. g. fiber-reinforced concrete
- Weaving, knitting, braiding and nonwoven production
- Automated layer and preform production
- RTM and wet pressing processes, generative production, injection molding
- Fiber, semi-finished and composite analysis
- Non-destructive characterization of structures and components

(IBP, IKTS, IMWS, IWU, ISC, WKI)

Textile Functionalization

- Modification of bulk and surface properties of fibers and textiles using wet and/or plasma chemical processes
- Biocompatibility, REACH conformity
- Improved properties: water and dirt repellency, self-cleaning ability, dyeability, printability, fiber-matrix adhesion
- Halogen-free flame retardants
- Coating, finishing, patterned treatment of textile surfaces

(IST, IGB, IKTS, IMWS, WKI)

Smart Textiles

- Textile specific design of hardware and software
- Interconnection and encapsulation technologies for smart textiles
- Functional integrated sensors and microsystems in textiles and hybrid laminates

- Reliability testing and evaluation
- Development of communication and power solutions for smart integrated systems
- Intelligent data evaluation
- Structural Health Monitoring
- Development of tools for sensor calibration
- Prototyping

(ENAS, ISC, IFF, IZM)

Process and Product Simulation

- Spinning processes
- Fiber dynamics
- Fluid dynamical process design
- Microstructural simulation
- Design and optimization of components
- Computation of mechanical properties
- Quality control

(ITWM)

Sustainability - Life Cycle Assessment, Recycling

- Development of composite materials considering circular economy
- Biobased textile additives as substitutes for fossil substances
- Recycling management of lightweight structures
- Production of textiles from recycled material
- End-of-Life and New-Life-Scenarios
- Life Cycle Assessment

(IBP, IGB, IWU, WKI)

Fraunhofer Institute for

- Applied Polymer Research **IAP**, Potsdam-Golm
- Building Physics **IBP**, Holzkirchen
- Ceramic Technologies and Systems **IKTS**, Dresden
- Electronic Nano Systems **ENAS**, Chemnitz
- Factory Operation and Automation **IFF**, Magdeburg
- Industrial Mathematics **ITWM**, Kaiserslautern
- Interfacial Engineering and Biotechnology **IGB**, Stuttgart
- Machine Tools and Forming Technology **IWU**, Chemnitz
- Microstructure of Materials and Systems **IMWS**, Halle
- Reliability and Microintegration **IZM**, Berlin
- Silicate Research **ISC**, Munchberg
- Surface Engineering and Thin Films **IST**, Brunswick
- Wood Research Wilhelm-Klauditz-Institut **WKI**, Hanover

