

**Autefa Solutions**

## Innovations with a focus on sustainability

The sustainable use of resources is a key challenge. Nonwovens technology originated from the concept of recycling to reduce manufacturing costs and process textile waste and previously unusable materials into fabric structures. With growing environmental awareness, there is an increasing demand for textile recycling solutions or the conversion of used textiles into new products (upcycling).

The manufacturer of textile machinery Autefa Solutions Germany GmbH, Friedberg/Germany, will present innovations in nonwoven technology with a focus on sustainability, including energy efficiency, fiber selection, life cycle management and emission reduction. The company offers needle punching lines, aerodynamic web forming lines, spunlace and thermobonding lines.

The aerodynamic web forming machine Airlay V21/R - K12 from Autefa Solutions is the versatile solution for various recycling possibilities. The aerodynamic principle ensures a 3-dimensional fiber orientation and total randomization. Airlay systems are characterized by highest product quality, economic efficiency, and reliability. During the process, the material is opened down to the individual fiber, which allows high flexibility in fiber selection and provides a solution even for very short fibers. In principle, all known fiber types and their blends can be processed. The design of the Airlay V21/R - K12 Futura allows easy opening and quick access for cleaning and maintenance. In combination with the Autefa Solutions Stylus needle loom, the Hiperterm thermobonding oven or the V-Jet Futura spunlace machine, the company offers nonwoven lines from a single source. The products manufactured with these lines, such as linings and interior linings, cleaning and wet wipes, upholstery material and insulation, can be produced in a true closed loop concept.

Fibers are often used up to four times in a product. Autefa Solutions supports the principles of the circular economy by optimizing the entire life cycle of textile fibers through recycling and reuse, thereby reducing resource consumption.



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Autefa Solutions supports the principles of the circular economy.

**Bäumlin & Ernst**

## PFAS-free elastic yarns

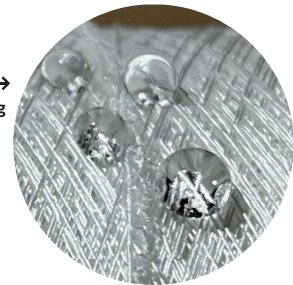
Textiles should be soft, breathable, durable, comfortable, and quick drying, all without harmful chemicals. Fluorocarbon-free functional textiles are a major topic. The EU is rightly committed to protecting the environment and people from so-called persistent (non/hardly degradable) chemicals.

With a new concept called "ECO-Tex," the manufacturer of elastic-covered yarns, Bäumlin & Ernst AG, Wattwil/Switzerland, will be able to coat even elastic yarns wafer-thin fluorine-free, resulting in permanently water-repellent and therefore quick-drying yarns and textiles. The concept was tested with a beag X Airlastic yarn. The company is further developing the technology right now.

Covered yarns consist of a core and 1 or 2 covering yarns. The core yarn, usually an elastane yarn, provides elasticity and recovery. The first (inner) covering thread determines the elasticity of the yarn. The second (outer) covering yarn is mainly responsible for covering the core yarn and providing the touch. Elastic covering yarns are used in compression stockings, riding breeches, workwear, or sportswear such as yoga leggings. Non-elastic functional yarns based on electrically conductive or discharging components are used in shielding fabrics (5G radiation), heating textiles, antenna threads for RFID textile labels, cleanroom clothing, and allergy textiles.

With beag X Airlastic, Bäumlin & Ernst produces classic single- and double-covered elastic yarns. The texturized yarns are 100% knit-dye-sorted and are therefore particularly suitable for use in circular knitting and weaving warp threads. For use in outdoor, sports, and safety clothing, the company also offers elasticated beag M-Tec-covered yarns made from abrasion-resistant, high-tenacity PA yarns.

→  
PFAS-free coating with "ECO-Tex".



**Baldwin / Elmatex**

## Partnership to drive sustainable finishing

With a cost-sensitive global economy and an increased focus by brands and consumers on the environment, customers are placing a key emphasis on sustainability in textile production. The manufacturer of process-automation equipment, Baldwin Technology Company Inc., Saint Louis, MI/USA, will join his distribution partner, Elmatex GmbH, Krefeld/Germany, at Techtextil to demonstrate how its Texcoat G4 precision spray finishing system eliminates chemistry waste on changeover, saves water, and achieves faster speeds through the stenter frame.

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The non-contact technology Texcoat G4 helps textile finishers achieve consistent, high-quality finishing without chemical waste and minimizes water and energy consumption. With Baldwin's innovative system, the chemistry is precisely distributed across the textile surface and is applied only where it is required, on one or both sides of the fabric. It eliminates chemistry dilution in wet-on-wet processes, allowing full control over maintaining consistent chemistry coverage rates. Plus, pad bath contamination is eliminated, and changeovers are only required when there is a change of finish chemistry.

More specifically, with Baldwin's Texcoat G4, textile finishers can expect reliable tracking and control of the finishing process for consistent quality. Changeovers are easily and quickly performed thanks to recipe management, including automated chemistry and coverage selection. Furthermore, the system offers automated speed tracking, fabric-width compensation, and real-time monitoring to track system uptime, performance, and chemistry usage, as well as active care alerts.

In addition, the Texcoat G4 system can process a wide range of low-viscosity water-based chemicals, such as durable water repellents, softeners, antimicrobials, flame retardants, and more. Baldwin's technology utilizes the same chemicals used in the traditional pad bath, and no special auxiliaries are required. The recipe is adjusted by increasing the concentration and reducing the pick-up by a corresponding amount, so that the same level of solids is applied.

## Barnet

# Customized fiber and yarn solutions

For more than 125 years, the producer of fibers, polymers, and yarns, William Barnet & Son, LLC, Spartanburg, NC/USA, is able to offer a wide range of products for technical textile applications. The intensive involvement and resulting experience with high-performance materials such as aramid and carbon make the company an experienced solution provider in this segment today. The product portfolio is primarily aimed at companies that produce woven and knitted fabrics, ropes, nonwovens, and spun yarns.

Since the company was founded in 1898, Barnet has also been a pioneer in the recycling of textile production waste and post-consumer waste, such as bulletproof vests. The statement "Recycling is in our DNA" led to the consequence of grouping all products that are part of the company's sustainable product portfolio under the Ecoware label.

Ecoware products must meet certain, clearly defined characteristics to comply with the company's sustainability standards and are supplemented by international standards such as GRS, Oeko-Tex, FSC, or the United Nations Sustainable Development Goals (SDGs). The Ecoware product range will continue to grow and be adapted and expanded to meet the customers' needs.



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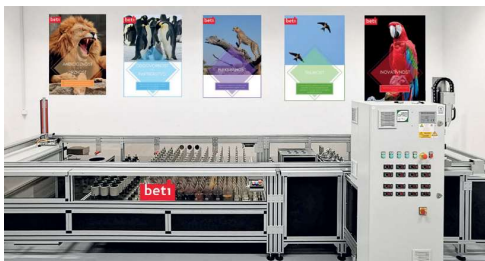
## Betri

## Reduced water consumption with Dye Care 1.0

The supplier of special dyed and technical yarns Betri d.o.o., Metlika/Slovenia, has further expanded its product portfolio with recycled and sustainable products. The newest innovation is the Dye Care yarn which is a sustainable substitute for batch dyed yarns for all applications. Dye Care 1.0 is a dyeing process carefully designed to reduce the impact on the environment. This process saves 51% water, 34% gas and 21% electricity. The savings were verified by Bureau Veritas.

Advanced Dos & Dye robot Industry 4.0 guarantees fast, efficient, and accurate recipe preparation. Upgraded dyeing machines with continuous water-flow monitoring systems ensure balance between cost and sustainability/quality.

The conventional 6-step-dyeing process was replaced with the 3 or 4 steps Dye Care 1.0 process (depending on the color shade). The average water consumption of the conventional dyeing process is 160 l/kg and was reduced with the Dye Care 1.0 process by more than 50%. At the Dye Care 1.0 process also the temperatures of the dyeing are reduced. In general, also the time intervals are shortened.



↑ Advanced Dos & Dye robot Industry 4.0 guarantees fast, efficient, and accurate recipe preparation.

## Biella Shrunken Process

## Washing solution with reduced water consumption

The manufacturer of textile equipment, Biella Shrunken Process SAS, Quaregna/Italy, presents Kinetika, a dynamic washing solution suitable for all types of fabrics. The peculiarity of this new system (already applied in the automotive field as well as in the clothing fabrics sector) is that it treats the fabric, conveyed by a pair of permeable belts, through 4 washing sections consisting of 700 high-pressure fluid jets. The function of the belts is not only to transport the fabric, but also to ensure constant flatness, the absence of longitudinal tension, the risk of creases and similar inconveniences.

High-pressure washing exploits the kinetic energy of the fluid, thanks to which a crossing action is realized, which guarantees an effective washing effect. By modulating the pressure of the washing circuit pumps, it is possible to create the right conditions for any type of weave, yarn, and material: Kinetika washing is used both for the processing of particularly fine and delicate fabrics (orthogonal or non-wovens) and for high-density fabrics. With Kinetika it is possible to create compact modular process lines with reduced water consumption.



↑ Kinetika is used for the processing of particularly fine and delicate fabrics and for high-density fabrics (Biella Shrunken Process).

## Biotex Malaysia

## PFC-free water repellent with high durability

Fluorocarbons/perfluorocarbons (PFC/PFOA) were the standard technology in the textile finishing market for water and oil repellent finishes and also a very convenient /cost-effective solution, but also ecologically harmful. The manufacturer of specialty chemicals Biotex Malaysia Sdn. BHD, Kajang/Malaysia, will present its PFC-free water repellent Bioguard Zero that offers high durability and repellency performances. It is based on smart raw materials, such as recycled raw materials, which reduce the overall CO<sub>2</sub> footprint. While using recycled raw material, the production is not in competition with the food supply chain and the starting material is CO<sub>2</sub> neutral.

Biotex Malaysia is determined to completely eliminate the use of ecologically harmful fluorocarbons from its technical textile repellents.

**Carl Stahl**

## Upcycling products made out of webbing remnants

For more than 100 years, the weaving company Carl Stahl GmbH & Co. KG, Herbrechtingen/Germany, has been a manufacturer of narrow webbing for safety belts and roller shutter pulls. Now the company is also focusing on and transferring into a lifestyle-product manufacturer, such as the DIY bags made of webbing remnants.

The upcycling product combines sustainable principles with trendy designs, as the use of surplus stock reduces waste and transforms it into new products. With easy-to-understand instructions, a unique 3-dimensional item is created step by step from 2-dimensional webbing. Fashion and function form an innovative synthesis in the DIY shoulder bag made from braided webbing. Colors, buckles, and sizes of the DIY bag can be configured according to individual preferences. The patent-pending DIY bags are the result of a collaboration between students at Albstadt-Sigmaringen University of Applied Sciences and the Carl Stahl product development team.



← The DIY bags are the result of a collaboration between Albstadt-Sigmaringen University and Carl Stahl.

**Carmo**

## High frequency eyelet welding machine

The producer of injection molded plastic components Carmo A/S, Espergaerde/Denmark, will present the next generation of eyelet welding. The CP9 is a fast HF welding machine for high quality single-sided punching and welding of eyelets. Setting, punching, and welding take place in one process. CP9 provides a stable and uniform high-quality weld that ensures a robust product with a long shelf life. The CP9 is suited for HF welding of plastic eyelets for banners and screens, oil booms, tarpaulins, shelters, tents and much more.

The upgraded version of the CP9 features a redesigned eyelet change mechanism for effortless operation and has also been updated for easier service and maintenance. It is the result of a new partnership between Carmo and the welding machine manufacturer Forsstrom High Frequency AB, Lysekil/Sweden, and sets a new standard in reliability and performance.

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Cetex

## Lab spinner and bending stiffness measuring device

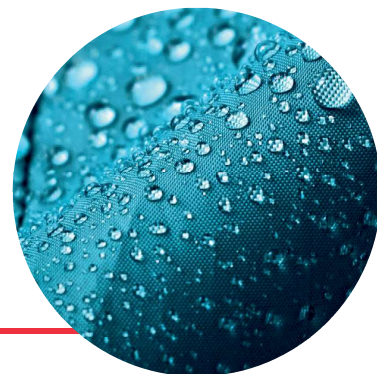
In staple fiber processing, ring spinning is still the dominant spinning process due to its extraordinary flexibility and the high yarn qualities that can be achieved, especially as it can cover a wide range of finenesses. By adapting additional modules, a wide variety of specialty yarns can now be produced in just one machine process, such as core, siro or fancy yarns.

With the LSE 2000-2, the Cetex Institut gGmbH, Chemnitz/Germany, offers a modern, multifunctional lab spinner in which a variety of additional equipment is integrated. The machine, which operates according to the ring spinning principle, is designed for processing staple fibers made of cotton, wool, man-made fibers, and their blends. The basic machine can be equipped with 3 different interchangeable drafting systems (classic 3-roller drafting systems for long or short staple processing and 4-roller short staple drafting system for sliver spinning). With the integrated additional modules, all common standard or specialty yarns can be produced on the machine: core yarns, compact yarns, siro yarns, S and Z yarns as well as programmable fancy yarns. In addition, the adjustable drafting system inclination and geometry as well as infinitely variable adjustment of the drafts ensure maximum flexibility. 6 individual synchronous motors guarantee identical spindle speeds at each of the working positions (up to 30,000 rpm).

Furthermore, the Cetex Institute offers the revised ACPM 200P bending stiffness measuring device for automated testing of the bending stiffness of flexible samples made of paper, textile surfaces and films. ACPM 200P works according to a measuring method with parallel measured value acquisition, which is based on the cantilever method according to DIN 53362. In contrast to the DIN 53362 method, the supply of the sample and the measurement itself are automated. This eliminates human influence on the measurement process and result. The device has 2 measuring levels and makes it possible to measure the bending stiffness of flexible samples made of paper, textile surfaces and films with thicknesses from 0.01-10mm.



↑ The LSE 2000-2 is designed for processing staple fibers made of cotton, wool, man-made fibers, and their blends.



CHT Group

## Finishing and coating systems for innovative functionalities

The circular economy is an important part of the corporate strategy by the supplier of specialty chemistry CHT Group, Tübingen/Germany. The company focuses on tailor-made and modern product and process solutions to optimize the performance and functionality of technical textiles. The CHT Group's product portfolio includes water-based as well as silicone-based finishing and coating systems for new innovative functionalities from a single source.

CHT offers product lines that have been specially developed for single-variety materials based on polyester (PET) so that the end products can be more easily recycled. Another example is a hydrophilic softener formulated from "end-of-life" silicones and emulsifiers made from renewable raw materials, as well as a high-quality textile finishing product made from recycled PET flakes for optimum moisture management in sportswear and activewear, which in turn can be recycled. Another new product is a finishing agent that absorbs more carbon from the atmosphere than it emits during production. The CHT experts will also be presenting "green" flame retardants and PFC-free water repellents as well as bio-based coating solutions.

Coatex Technology

## New PTFE/silicone coated fabric and PTFE conveyor belt

The manufacturer of high-performance textiles Coatex Technology LLC, Houston, TX/USA, focuses on the research of high-performance and technology materials. It offers a full range of products applied for the thermal insulation industry such as PTFE/silicone insulation jacket, silica cloth, fiberglass blanket and accessories which solve thermal insulation under extreme conditions.

At Techtextil, the company showcases a technological modified PTFE/silicone coated fabric for the thermal insulation industry and a film laminated PTFE conveyor belt for the food industry. The new cast film PTFE conveyor belts offer high performance, with high-temperature resistance, good friction, oil, and corrosion resistance. These features ensure stable performance and extended lifespan in food processing operations.

**Datatex**

## Specialized management software

The supplier of IT software solutions Datatex Consulting Srl, Milan/Italy, presents the management software Now, that is suitable for textile companies of all sizes. It covers the entire production process, from raw material processing to finished product distribution. Now uses object-oriented technology to provide web-based solutions for sales, planning, production, costing, stock management and purchasing. Its flexibility, adaptability to the needs of the textile industry and cost reduction capabilities provide competitive advantages in terms of agility and speed to market. With innovative modules, it monitors every stage of the production process and provides effective management tools for textile companies.

**Davy Textiles**

## High-performance fibers for challenging environments

The supplier of fibers and yarns Davy Textiles Ltd., Bradford/UK, has expertise across a broad range of synthetic and technical fibers and yarns, including para-aramid, meta-aramid, carbon fiber, Preox, PBO, polyimide, PPS, homopolymer acrylic (PAN), HMPE, PTFE, PBI, Novoloid, PEEK, LCP, polyamide, polyester, polypropylene and acrylic. The company's high-performance



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Fibers by Davy Textiles are used in a wide variety of applications and industries.

fibers are utilized across some of the most complex and challenging production environments, leading to their use in a wide variety of applications and industries. Key industries of operation include automotive, filtration, acoustic insulation, aviation, sports equipment, construction, filling, spinning, plastics, PPE, protective apparel, composites, gaskets, marine, cables, body armor, thermal insulation, and equestrian.

The company's core strengths are the in-house specialist expertise, its agility and flexibility in terms of customer requirements, and the culture of the firm itself. Davy Textiles is a family business, with the firm currently being overseen by the 5<sup>th</sup> generation of the Davy family. This bleeds into the overarching culture of the company, with both clients and employees benefiting from a local and family-centric approach despite the significant capabilities of the firm. Concerning the firm's flexibility, agility, and knowledge, Davy Textiles boasts process flexibility and the ability to cater solutions entirely around the requirements of its customers. Variation points of note include blend percentages, length, openness, loft, and just about anything else the customer may consider.

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Dienes

## Digitalization and sustainability topics

The current accelerated growing demand for technical textiles requests a more proactive approach which includes implementing frameworks and technologies for recycling and a broad use of biobased materials as an alternative to conventional polymers. Research work in this field is characterized by a high degree of adaptation needs, hence demanding an efficient, systematic and, in part, self-optimizing experimental working system, which must be intelligent in gathering data from the process and flexible in enabling its rearrangement.

Innovative technical textiles like precursor yarns for carbon fibers made from renewable raw materials are produced and improved with spinning systems by the producer of textile machinery Dienes Apparatebau GmbH, Mühlheim/Germany. Growing demands on the varying quality of recycled feedstock, the implementation of biobased materials and ensuring fiber performance require a continuous development and optimization of both technology and production parameters.

At Techtextil, Dienes will present its approach towards digitalization which is called Multimode. In a Multimode plant, each



**In a Multimode plant, all production parameters can be permanently visualized and recorded.**

process step is represented by a module which can be individually adapted to customer-specific requirements and has its own decentralized control. Thus, Dienes production lines consist of several intelligent modular units which can be exchanged and rearranged at any time with a reduced programming effort. Moreover, all production parameters can be permanently visualized and recorded, enabling a complete traceability of the process.

Furthermore, Dienes will show how the company is supporting its customers in shaping a more sustainable future for technical textiles and how its solutions are helping research teams on their way from the first laboratory tests to the modular construction of production lines.

Dilo Group

## Demonstration at technology center



**Hypertex line for specialty filtration.**

The manufacturer of nonwovens machines, Dilo Group, Eberbach/Germany, presents its recent technology and machine developments. On April 25, a Dilo bus shuttle is available at Techtextil, to pick up interested parties for a demonstration in the technology center of Dilo Group at their headquarters in Eberbach. There, the following technologies will be demonstrated:

- The Micropunch intensive needling line which has been reinstalled after the ITMA 2023 to showcase the reduction in energy consumption for lightweight applications in the sector of wipes, medical and technical products.
- The 3D-Lofter (Isofeed unit) for additive manufacturing in the nonwovens field with a range of applications as molded automotive interior parts or particular garment, pad and shoe applications for example.
- The Hypertex line for specialty filtration media as a high-speed version to incorporate reinforcing yarn and filament in a multi-layer structure.
- The Di-Lour IV high-speed unit for high throughputs and increased pile density.
- A complete web forming line from the ITMA 2023.

This will offer a good opportunity for a deeper insight into this array of Dilo machine and technology developments which focus on sustainability through the reduction of energy and fiber consumption as a top issue in the current nonwovens industry.

DITF

## Innovative projects on sensor technology



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Maura Zulic's complex sensory woven fabrics as part of the "Preatures" project.

The German Institutes of Textile and Fiber Research (DITF), Denkendorf/Germany, took part in 2 innovative projects regarding sensor technology. Together with the producer of knitted fabrics roma-Strickstoff-Fabrik Rolf Mayer GmbH & Co. KG, Balingen/Germany, the DITF experts combined the advantages of circular knitted fabrics, such as bending elasticity, dimensional malleability, a pleasant feel, and a wide range of visual design options with the functionality of a force sensor. The results are circular knitted fabrics with reliable sensor functionality while maintaining a good look and feel. This project was supported by the Federal Ministry for Economic Affairs and Climate Action (BMWK) on the basis of a decision by the German Bundestag.

The project "Preatures", a cooperation between the State Academy of Fine Arts (ABK), Stuttgart/Germany, and the DITF, dealt with the design-led examination of textile pressure sensors and their possible applications for the human body. The topic of textile pressure sensor technology was taken apart in terms of design and opened up conceptually in order to develop and design innovative aesthetic, formal and functional applications in the field of textile sensor technology that is worn close to the human body. The results range from visually and haptically stimulating garments (Lotta Bühler) to highly complex sensory woven fabrics that light up when physically

touched (Maura Zulic) and a mythologically inspired top that reacts with color-changing messages when pressure is applied (Lisa Dorfschmid); a suit that combines energetic and electrical circuits in a vibrant and dynamic way (Annika Frölich) to a bodysuit that allows dancing body movements to be experienced directly and acoustically (Leonie Walter). Maura Zulic's work will be exhibited at Techtexsil. The development of this sensory garment as part of the project "Mittelstand-Digital Zentrum Smarte Kreisläufe" was supported by the Federal Ministry for Economic Affairs and Climate Action (BMWK) on the basis of a decision by the German Bundestag.

DNFI

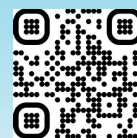
## Benefits of natural fibers for technical textiles

For the first time, the Discover Natural Fibres Initiative (DNFI), Bad Soden/Germany, is taking the opportunity to exhibit at the Techtexsil fair with a group of its members. As interest in biodegradable fibers has increased over the last 6 years, the DNFI will be providing information on the benefits and applications of natural fibers at the exhibition. Applications range from insulation and stabilization in composites to material innovations in automotive and lightweight construction. Some of the winners of the "DNFI Innovation in Natural Fibres Award" will meet at the stand and in the adjacent Nature Performance and Future Materials areas. DNFI will provide information on the 15 largest plant and animal fiber groups and promote the use of natural fibers as a CO<sub>2</sub>-neutral resource that contributes to a greener planet.



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